



**PEOPLE
CENTRED
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20 February 2024

Attention: Alexander Nikolic
Western Parkland City Authority
50 Belmore Street
Penrith NSW 2750

Dear Alexander,

Bradfield City Centre – Aboriginal Cultural Heritage Assessment Report

Scope of works

The proposed activity under this Review of Environmental Factors (REF) relates to the Stage 2A Enabling Works for Bradfield City Centre.

In summary, the proposed activity relates to site clearing, construction of new roads, the provision of service authority utilities, street landscaping, and drainage and stormwater infrastructure.

Specifically, the scope of works for the BCC Stage 2A REF will include the following:

- Construction of new roads, and associated stormwater, earthworks and civil works.
- Provision of waste water, potable water, recycle water infrastructure.
- Provision of electrical services network and reticulation infrastructure.
- Provision of data and telecommunications network infrastructure.
- Streetscape landscape works.
-

In addition, the BCC Stage 2A REF will also involve several activities which are ancillary to the construction of roads, including:

- Site clearance (including removal of vegetation).
- Provision of service authority utilities within the road corridors.
- Street landscaping.
- Drainage and stormwater infrastructure (including temporary stormwater basins).
- Stockpiling of excess soil.
- Construction of temporary haul roads during construction, (together with the construction of the new roads).
- Road works.

The REF is accompanied by design plans and a range of supporting technical studies which had been prepared to inform the proposed design.

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The proposed road alignments and civil infrastructure for the Stage 2A Enabling Works are generally in accordance with the Western Sydney Aerotropolis Precinct Plan and Western Sydney Aerotropolis DCP and is consistent with the BCC Master Plan.

Aboriginal Cultural Heritage Assessment Report

Extent Heritage was commissioned by Western Parkland City Authority to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) to investigate Aboriginal cultural heritage and archaeology within the Bradfield City Centre project site. Through the completion of background research, database searches, field survey and test excavations, a total of sixteen (16) Aboriginal archaeological sites were identified within the study area:

- B 17 (AHIMS ID 45-5-2779);
- B 18 (AHIMS ID 45-5-2620);
- B 19 (AHIMS ID 45-5-2621);
- B 20 (AHIMS ID 45-5-2622);
- B 21 (AHIMS ID 45-5-2639);
- B 22 (AHIMS ID 45-5-2640);
- B 23 (AHIMS ID 45-5-2641);
- B 38 (AHIMS ID 45-5-2628);
- ACAS01 (AHIMS ID 45-4-5481);
- ACAS02 (AHIMS ID 45-4-5815);
- BCC Isolated Artefact 1 (AHIMS ID 45-5-5588);
- BCC Isolated Artefact 2 (AHIMS ID 45-5-5589);
- BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
- ACIF01 (AHIMS ID 45-5-5480);
- Thompsons Creek (AHIMS ID 45-5-5491); and
- Moore Gully (AHIMS ID 45-5-5492).

These sites comprise surface artefacts, artefacts recovered and collected as part of the test excavation program, and unidentified artefacts likely to be in direct vicinity of known artefacts.

REF Stage 2A study area

REF Stage 2A comprises only a portion of the wider Bradfield City Centre study area which was assessed as part of the ACHAR process (Figure 1). As a result, the area has been fully assessed in regard to archaeological potential and known archaeological 'objects'. As outlined in Section 15 of the ACHAR, seven (7) AHIMS sites are located within the boundary of Stage 2A (Figure 2):

- B 18 (AHIMS ID 45-5-2620);
- B 23 (AHIMS ID 45-5-2641);
- B 38 (AHIMS ID 45-5-2628);
- ACAS02 (AHIMS ID 45-5-5815);

- ACIF01 (AHIMS ID 45-4-5480);
- BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
- Thompsons Creek (AHIMS ID 45-5-5491); and
- Moore Gully (AHIMS ID 45-5-5492).

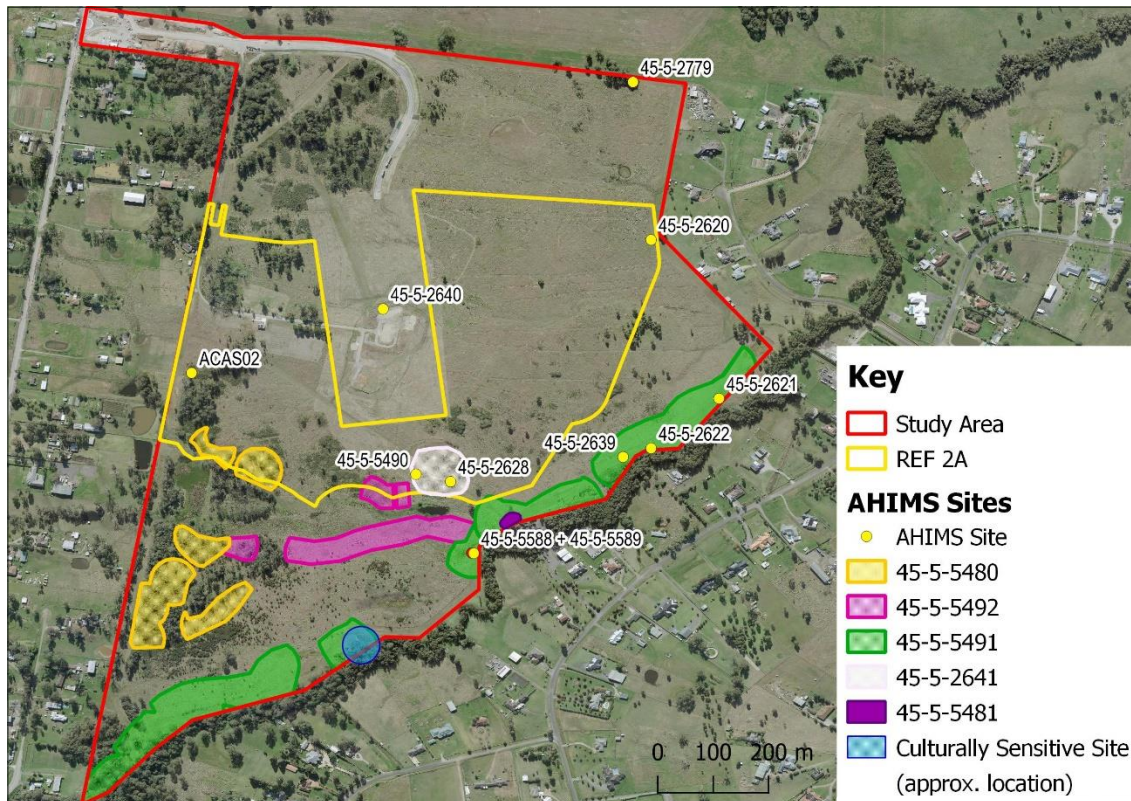


Figure 1: REF Stage 2A and AHIMS sites

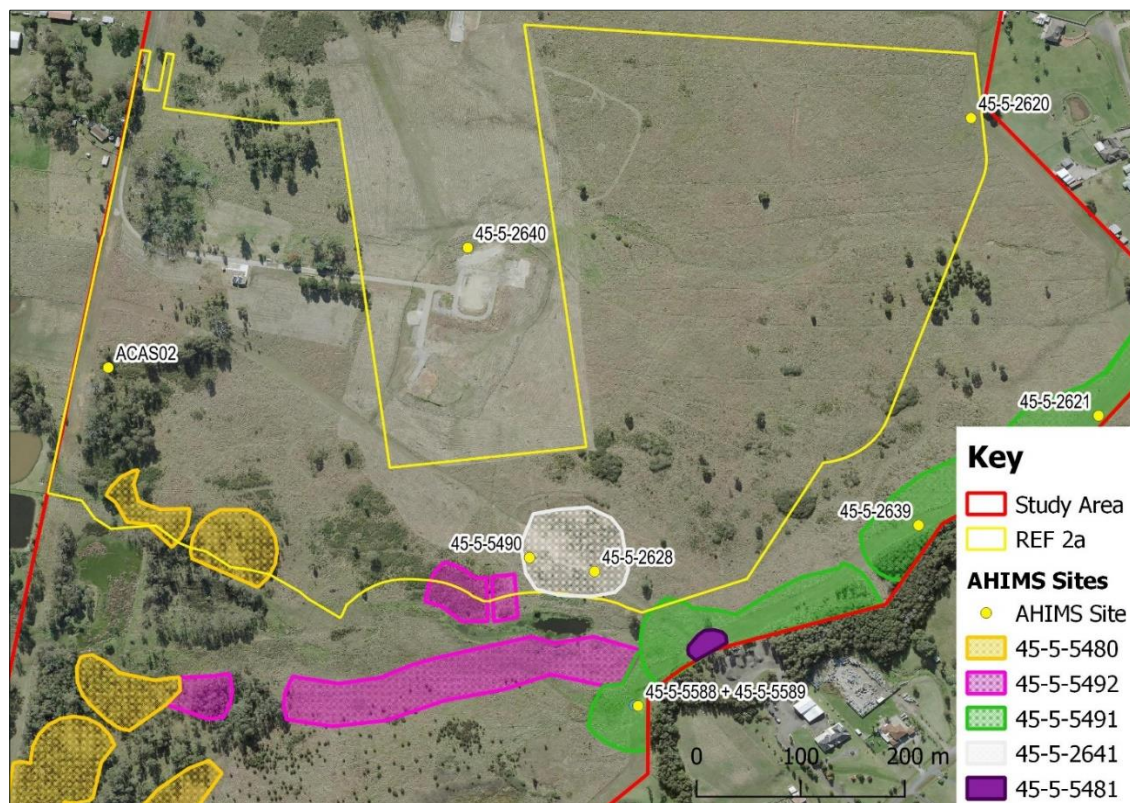


Figure 2: Detail of REF Stage 2A and AHIMS sites

Mitigation measures

Management measures for Aboriginal archaeological sites and cultural heritage within are that outlined in section 18 of the ACHAR. For sites within the Stage 2A boundary, these comprise the following:

Guiding principles

Where possible, cultural heritage should be conserved and protected *in situ*. However, where conservation is not practical, measures should be implemented to mitigate against the loss of archaeological value. These mitigation measures are based on the assessed significance of the site against the proposed impacts:

- Low significance – Conservation where possible. An AHIP would be required to impact the site before works can commence.
- Moderate significance – Conservation where possible. If conservation was not practicable further archaeological investigation would be required such as salvage excavations or surface collection under an AHIP.
- High significance – Conservation as a priority. An AHIP would be required only if other practical alternatives have been discounted. Conditions of this AHIP would depend on the nature of the site, but may include removal and preservation of scarred trees, or comprehensive salvage excavations.

- Unknown significance – Conservation where possible. Further investigation under the Code of practice will be required to assess the extent and significance of the PAD. Test excavation is not a mitigation measure.

Within the Stage 2A boundary, only the site of Thompsons Creek (AHIMS ID 45-5-5492) was assessed as holding moderate significance. The remaining identified Aboriginal archaeological sites have been determined to hold low significance, and as a result impacts may be considered negligible. However, consideration for protection should be given to reduce the cumulative impact to heritage.

Only two areas of moderate archaeological significance across the Bradfield City Centre project boundary were identified as requiring further investigation in the form of salvage excavations. These were TP15 located within the boundary of the site of Thompsons Creek (AHIMS ID 45-5-5491) and TP114 within Moore Gully (AHIMS ID 45-5-5492). Neither areas are located within the Stage 2A boundary and, as a result, do not need to be managed as part of this REF.

Archaeological test excavations

Conservation of all identified sites with low and moderate potential is considered best practice. As the development is substantial and covers a large area, this should be considered wherever possible within the Master Plan design. As many of these sites are located within the Thompson Creek Regional Park, conservation may be possible through low-impact revegetation such as the planting of seeds, the building up of the area with imported fill, and the strategic placement of services and other features.

Thompsons Creek (AHIMS ID 45-5-5491) was assessed as having moderate significance because of the high- density artefact assemblage recovered. The assemblage has provided appropriate scientific data and can be utilised for interpretation and educational purposes. Based on the low density of artefacts across the majority of the site, with the exception of TP 15 which is located outside the Stage 2A boundary, no additional information is expected to be recovered from additional subsurface investigations.

Where surface artefacts have been identified, the Aboriginal community should have an opportunity to relocate and collect them for reburial or relocation to a safe keeping place.

Aboriginal Heritage Impact Permit (AHIP)

- Where impacts to any of the identified Aboriginal sites cannot be avoided, an approved AHIP will be required to authorise impacts. Where any of these will be protected from harm, no AHIP would be required to manage the site.

An AHIP would be required to authorise harm to the known, registered AHIMS sites. These comprise:

- B 18 (AHIMS ID 45-5-2620);
- B 23 (AHIMS ID 45-5-2641);
- B 38 (AHIMS ID 45-5-2628);
- ACAS02 (AHIMS ID 45-5-5815);

- ACIF01 (AHIMS ID 45-4-5480);
- BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
- Thompsons Creek (AHIMS ID 45-5-5491); and
- Moore Gully (AHIMS ID 45-5-5492).

An AHIP would also be required to relocate the Aboriginal cultural artefacts associated with the above sites. This includes surface artefacts which remain in situ within the Stage 2A boundary, and artefacts that have been recovered from the site during the test excavations. Section 18 of the ACHAR outlines potential options for artefact relocation.

Finally, an AHIP would be required to authorise harm to any unidentified Aboriginal artefacts identified across the study area in the future. The test excavation program indicated it is highly likely that additional Aboriginal archaeology in the form of subsurface isolated artefacts and artefact scatters will be present across the entire Bradfield City Centre study area.

Surface collection

To prevent the unnecessary destruction and loss of archaeological material located on the ground surface, the Registered Aboriginal Parties (RAPs) should be provided with the opportunity to conduct a surface collection of Aboriginal objects across the mapped extent of the Stage 2A study area.

Management of Aboriginal objects and heritage values

It is important to the Aboriginal community that artefacts recovered from the surface collection and test excavation programme be managed appropriately. The temporary repository of any retrieved artefacts is currently in a locked cupboard on the premises of Extent Heritage (3/73 Union Road, Pyrmont, Sydney, 2009).

Two options for long term management of the Aboriginal objects have been proposed. The first option is that the recovered artefacts are reburied within the study area in an area not subject to future works. The reburial location would be recorded with a differential GPS and a site card lodged to the AHIMS database.

The alternative option is that the artefacts are placed on permanent display within the precinct for the local communities to be able to view and interact with when required. This space would be within a cultural centre or space designed within Bradfield City Centre.

Conclusions

Where possible, impact of Aboriginal archaeological sites should be avoided. Based on the current Masterplan, all identified AHIMS sites within the Stage 2A boundary would be impacted by the proposed development. Management of these objects must be undertaken in accordance with the recommendations above.



Kind regards,

Hannah Morris

Senior Heritage Advisor | Extent Heritage

Western Parkland City Authority

Bradfield City Centre
Master Plan Application

Aboriginal Cultural Heritage Assessment Report

Prepared by Extent Heritage

October 2023

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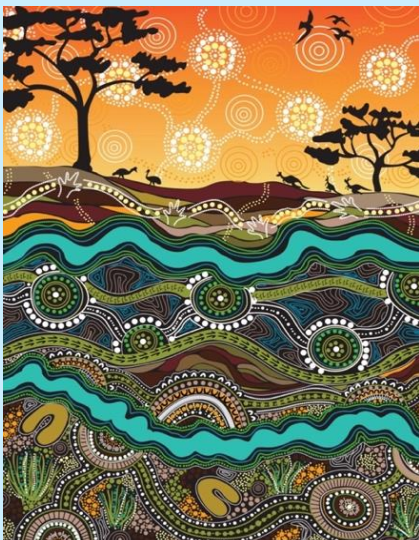
Acknowledgement of Country

Aboriginal people have had a continuous connection with the Country encompassed by the Western Parkland City (the Parkland City) from time immemorial. They have cared for Country and lived in deep alignment with this important landscape, sharing and practicing culture while using it as a space for movement and trade.

We Acknowledge that four groups have primary custodial care obligations for the area: Dharug/Darug, Dharawal/Tharawal, Gundungurra/Gundungara and Darkinjung. We also Acknowledge others who have passed through this Country for trade and care purposes: Coastal Sydney people, Wiradjuri and Yuin.

Western Sydney is home to the highest number of Aboriginal people in any region in Australia. Diverse, strong and connected Aboriginal communities have established their families in this area over generations, even if their connection to Country exists elsewhere. This offers an important opportunity for the future of the Parkland City.

Ensuring that Aboriginal communities, their culture and obligations for Country are considered and promoted will be vital for the future of the Parkland City. A unique opportunity exists to establish a platform for two-way knowledge sharing, to elevate Country and to learn from cultural practices that will create a truly unique and vibrant place for all.



Garungarung Murri Murri Nuru (Beautiful Grass Country)

Artwork created by Dalmarrri artists Jason Douglas and Trevor Eastwood for the Western Parkland City Authority

Version	Status	Date	Prepared By	Reviewer	Comments
Draft 01	Draft	18/02/22	Hannah Morris	Andrew Costello	
Draft 01	Draft	28/04/22	Hannah Morris		Template update
Draft 02	Draft	29/04/22		Hannah Morris	Template update
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Final 07	Publish	13/09/23		J Azucena	Amendment to Table 1
Final 08	Publish	19/10/23		H Gilvear	Update Lot and DP

Executive Summary

The Western Parkland City Authority (WPCA) is the NSW Government agency responsible for delivering, coordinating and attracting investment to the Western Parkland City. A key component of the WPCA's work is the delivery of the Bradfield City Centre. The Authority has been granted permission by the NSW Department of Planning and Environment (DPE) to prepare a master plan for the Bradfield City Centre.

The overarching aim of the Master Plan is to develop the study area into the Bradfield City Centre. The area is proposed for mixed-use development comprising industrial, commercial, open space and residential uses for a 115-hectare site centred around a new Sydney Metro station. The Master Plan assessed within this report includes four stages of development. The new development, in particular Stage 1, will command a prominent position of the top of a hill within a predominately rural landscape. Stage 1 of the Master Plan has been fully detailed and comprises land located within the central and north-west quadrant of the Master Plan Site, centred around the future Sydney Metro Station. Stages 2-4 have not been fully detailed as yet but will involve a major change to land use and will involve the construction of new buildings and infrastructure and demolition of existing buildings and structures within the study area.

Western Parkland City Authority (WPCA) propose to undertake development on approximately 115 ha of land at the Bradfield City Centre (formerly known as Stage 1 Aerotropolis Core Precinct) (Figure 5) (hereafter, referred to as the study area).

The Bradfield City Centre will be the nation's newest city centre, a 24-hour global metropolis with facilities for research, innovation and advanced manufacturing, education and training, and world-class technology industries and businesses. These businesses and facilities will be oriented around a new Sydney Metro station. Bradfield will complement the existing city centres of Penrith, Liverpool, and Campbelltown, but with a unique focus on advanced manufacturing and training that will drive ideas from conception to commercialisation and from manufacturing to markets.

Extent Heritage Pty Ltd (Extent Heritage) have been engaged by the WPCA to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) to identify any Aboriginal objects or places within the proposed study area. The results of this assessment will be used to inform the development of the master plan for the Bradfield City Centre.

The background research identified several registered Aboriginal Heritage Information Management System (AHIMS) sites and areas of Potential Archaeological Deposits (PADs) within the study area. As a result, a surface survey and test excavation program were undertaken. The test excavation program investigated three PADs — ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491) — and one comparative area expected to have low potential for Aboriginal archaeology, Northern Transect.

The test excavation program revealed evidence of low-density occupation of the waterways, Moore Gully and Thompsons Creek, during the Pleistocene to early Holocene period. All sites were determined to have low significance overall, with the exception of TP 114 in Moore Gully (AHIMS ID 45-5-5492) and TP 15 in Thompsons Creek (AHIMS ID 45-5-5491).

The study area also holds moderate aesthetic significance due to the presence of landscape features including waterways and kangaroo grass.

Through the completion of background research, database searches, field survey and test excavations, a total of sixteen (16) Aboriginal sites were identified within the study area:

- B 17 (AHIMS ID 45-5-2779);

- B 18 (AHIMS ID 45-5-2620);
- B 19 (AHIMS ID 45-5-2621);
- B 20 (AHIMS ID 45-5-2622);
- B 21 (AHIMS ID 45-5-2639);
- B 22 (AHIMS ID 45-5-2640);
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- B 38 (AHIMS ID 45-5-2628);
- ACAS01 (AHIMS ID 54-4-5481);
- ACAS02 (AHIMS ID 54-4-5480);
- BCC Isolated Artefact 1 (AHIMS ID 45-5-5588);
- BCC Isolated Artefact 2 (AHIMS ID 45-5-5589);
- BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
- ACIF01 (AHIMS ID 54-5-5480);
- Thompsons Creek (AHIMS ID 45-5-5491); and
- Moore Gully (AHIMS ID 45-5-5492).

Based on the current Masterplan, archaeology located within ENV will be protected from harm. These comprise all of B 20 (AHIMS ID 45-5-2622), part of ACIF01 (AHIMS ID 45-5-5480), part of Moore Gully (AHIMS ID 45-5-5492), part of Thompsons Creek (AHIMS ID 45-5-5491) [REDACTED].

Based on the findings of this assessment and the understanding of the proposed impacts, it is recommended that:

- An AHIP is required to authorise harm to the Aboriginal sites identified and registered with AHIMS that are located within the study area which will be impacted by the proposed development. These sites cannot be impacted until an approved AHIP has been obtained, and all impacts must conform with the AHIP conditions.
- The area surrounding TP 15 and TP 114, comprising a buffer of 50 m, should be protected from harm. If these areas are not able to be protected, a salvage excavation program would be required to fully understand the extent and significance of the Aboriginal archaeological remains in the area. An AHIP would be required to authorise the salvage excavations.
- The detailed design phase should provide an opportunity to explore the potential for further reducing harm to AHIMS sites.
- In accordance with the views of some stakeholders, the development should prioritise the use of sustainable materials and plant native plants that are from the area. Signage and information should also use correct terminology, should not use the past tense and should ensure that it is clear throughout the development that this is, always has been and always will be Aboriginal land.
- The ACHAR Community Consultation process demonstrated that Aboriginal stakeholders and the Indigenous community had a strong interest and desire to present feedback in the Bradfield City Centre development. Genuine engagement and collaboration with knowledge holders and the Gandangara Local Aboriginal Land Council should continue through the life of the project.
- The development of an ongoing community-driven research program to address specific issues raised by the Aboriginal community is recommended to ensure continued stakeholder engagement and ensure the best heritage outcomes to be addressed and incorporated into the project.
- Consideration should be given to recommendations for collaboration between community and ecologists and others working on and surveying Cumberland Plain (CP) vegetation given the strong recommendation

related to CP conservation for its cultural values. It is recommended that ecologists and conservation specialists engage with the Aboriginal community during survey and mapping work.

- Support the focus 'Recognising Country'. It is important to have genuine engagement and collaboration with Aboriginal communities to understand their priority risks and opportunities. Co-designed plan with Aboriginal communities to incorporate cultural values and use of local and traditional Aboriginal knowledge in conjunction with scientific research.
- In accordance with feedback from the RAPs, buffer zones should be placed around waterways () in order to maintain connections and healthy ecosystems.
- Where possible, impacts to identified Aboriginal sites should be avoided. The masterplan should work to ensure the retention of identified Aboriginal sites within the riparian corridor and associated green corridors.
- A heritage interpretation strategy should be prepared for the study area in consultation with the RAPs. This strategy would include methods of incorporating identified Aboriginal heritage values into the design process, such as use of native vegetation in replanting, use of local Aboriginal place names and interpretative signage providing information on Aboriginal land-use within the study area and surrounding area.
- Aboriginal representatives must be given an opportunity to collect the surface artefacts identified across the study area prior to the commencement of construction works.
- An appropriate Keeping Place or reburial site must be determined to house the Aboriginal objects. The location of this Keeping Place must be chosen in consultation with the RAPs and Gandangara LALC.
- Obtaining a site-wide AHIP is recommended prior to construction works being undertaken on site in order to manage any unexpected Aboriginal objects being uncovered during works.
- If unexpected Aboriginal objects are uncovered during construction, work must cease and a qualified archaeologist, Heritage NSW-DPC, and the Gandangara LALC should be informed to determine whether further Aboriginal heritage assessment or permit approvals are required.
- If suspected human remains are located during any stage of the proposed works, work must stop immediately, and the NSW police and Coroner's Office must be notified. Heritage NSW-DPC, Gandangara LALC, and the Commonwealth Minister for the Environment must be notified if the remains are found to be those of an Aboriginal person and greater than 100 years old.
- If changes are made to the proposed works which result in impact to locations outside of the current study area, further archaeological investigation and survey may be required.
- The Master Plan should be referred to Heritage NSW for comment in relation to the Aboriginal Cultural Heritage.

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Glossary of Terms

ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AHMS	Archaeological and Heritage Management Solutions
AS	Australian Standard
ATER	Archaeological Test Excavation Report
Aerotropolis	Western Sydney Aerotropolis
BC Act	Biodiversity Conservation Act 2016
BP	Before present (AD 1950)
CIV	Capital Investment Value
CMP	Conservation Management Plan
CRM	Cultural Resource Management
DA	Development Application
DP	Deposited Plan
DPC	Department of Premier and Cabinet (NSW)
DPE	Department of Planning and Environment
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPI	Environmental Planning Instruments
ERS	Eastern Regional Sequence
GPS	Global Positioning System
Growth Centre SEPP	State Environmental Planning Policy (Sydney Region Growth Centres) 2006
HCA	Heritage Conservation Area
Heritage Act	Heritage Act 1977 (NSW)

IF	Isolated Find
JMCHM	Jo McDonald Cultural Heritage Management Pty Ltd
ka	Abbreviation for thousands of years ago (e.g., 1 ka equals 1,000 years ago)
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LGM	Last Glacial Maximum
Ma	million years ago
NHL	National Heritage List
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW Government	State Government for NSW
NTSCorp	Native Title Service Corporation
OEH	Office of Environment and Heritage (formerly DECCW, now Heritage NSW-DPC)
PAD	Potential Archaeological Deposit
TP	Test pit
RAP	Registered Aboriginal Party
REP	Regional Environmental Plan
RTK	Real-Time Kinematic
SEPP	State Environmental Planning Policy
SEPP (Infrastructure and Transport)	State Environmental Planning Policy (Infrastructure and Transport) 2021
SHI	State Heritage Inventory, NSW
SHR	State Heritage Register
SoHI	Statement of Heritage Impact
SU	Survey unit
WHL	World Heritage List
WPCA	Western Parkland City Authority

Statutory definitions

Aboriginal cultural heritage assessment report (ACHAR)	A document developed to assess the archaeological and cultural values of an area, generally required as part of an environmental assessment (EA).
<i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i>	Guidelines developed by DECCW to guide formal Aboriginal community consultation undertaken as part of an Aboriginal cultural heritage assessment report (ACHAR).
Aboriginal Heritage Impact Permit (AHIP)	The statutory instrument that the Director General of the Department of Planning and Environment (DPE) issues under section 90 of the <i>National Parks and Wildlife Act 1974</i> (NSW) to allow the investigation (when not in accordance with certain guidelines), impact and/or destruction of Aboriginal objects. AHIPs are not required where project approval under the state-significant provisions of Part 4 (Division 4.1) of the <i>Environmental Planning and Assessment Act 1979</i> (NSW).
Aboriginal object	A statutory term defined under the <i>National Parks and Wildlife Act 1974</i> (NSW) 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'.
<i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i>	Guidelines developed by DECCW (2010) to inform the structure, practice and content of any archaeological investigations undertaken as part of an Aboriginal cultural heritage assessment report (ACHAR).
Department of Environment, Climate Change and Water (DECCW)	Now known as the Department of Planning and Environment (DPE).
<i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i>	Guidelines developed by DECCW, outlining the first stage of a two-stage process in determining whether Aboriginal objects and/or areas of archaeological interest are present within a study area. The findings of a due diligence assessment may lead to the development of an Aboriginal cultural heritage assessment report.
<i>Environmental Planning and Assessment Act 1979</i> (NSW)	Statutory instrument that provides planning controls and requirements for environmental assessment in the development approval process. The Act is administered by the Department of Planning and Environment.
<i>Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW</i>	Guidelines developed by OEH to inform the structure and content of an Aboriginal cultural heritage assessment report (ACHAR).
Isolated find	An isolated find is usually considered a single artefact or stone tool, but can relate to any product of prehistoric Aboriginal societies. The term 'object' is used in the Aboriginal cultural heritage assessment report (ACHAR), to reflect the definitions of Aboriginal stone tools or other products in the <i>National Parks and Wildlife Act 1974</i> (NSW).

<i>National Parks and Wildlife Act 1974</i> (NSW)	The primary piece of legislation for the protection of Aboriginal cultural heritage in New South Wales. Part 6 of this Act outlines the protection afforded to and offences relating to disturbance of Aboriginal objects. The Act is administered by DPE.
Department of Planning and Environment (DPE)	The DPE is responsible for managing the Aboriginal Heritage (and other) provisions of the <i>National Parks and Wildlife Act 1974</i> .
Potential archaeological deposit (PAD)	An area assessed as having the potential to contain Aboriginal objects. PADs are commonly identified on the basis of landform types, surface expressions of Aboriginal objects, surrounding archaeological material, disturbance, and a range of other factors. While not defined in the <i>National Parks and Wildlife Act 1974 (NSW)</i> , PADs are generally considered to retain Aboriginal objects and are therefore protected and managed in accordance with that Act.
Proponent	A corporate entity, government agency or an individual in the private sector which proposes to undertake a development project.

References

Ref	Title	Author	Date
1	Cumberland Plain Predictive Model	McDonald and White; McDonald	2010; 1997
1	Western Sydney Aerotropolis Initial Precincts: Aboriginal and Non-Aboriginal Cultural Heritage Assessment		2020

1 Introduction

1.1 Purpose of this report

This report accompanies the Master Plan Application for the Bradfield City Centre submitted to the Department of Planning and Environment (DPE). It addresses the non-Aboriginal heritage requirements for the development of the Bradfield City Centre Master Plan within the heart of the Aerotropolis Core Precinct of the broader Western Sydney Aerotropolis.

The Western Parkland City Authority (WPCA) is seeking to secure Master Plan approval for a mixed-use development, comprising industrial, commercial, open space and residential uses for a 115-hectare site centred around a new Sydney Metro station. This will include a Stage 1 Complying Development Code intended to facilitate development of a variety of land uses including commercial, advanced manufacturing, research and development (R&D), innovation, residential, education, retail and recreation uses.

This report has been prepared to address the Aboriginal cultural heritage within the study area and specifically to respond to the relevant Secretary's Master Plan Requirements. The technical report addresses the impacts to Aboriginal archaeology and cultural heritage values and provides relevant information to ensure all considerations are appropriately identified and assessed. The following sections introduce the site, context and nature of the Bradfield City Centre Master Plan.

All matters were considered to have been adequately addressed within the Master Plan Application or in the accompanying appendices.

1.2 The Western Sydney Aerotropolis

The Western Sydney Aerotropolis is an 11,200-hectare region set to become Sydney's third city (the Western Parkland City), and the gateway and economic powerhouse of Western Sydney.

The Aerotropolis comprises of the new Western Sydney (Nancy-Bird Walton) International Airport surrounded by five initial precincts which include the Aerotropolis Core, Wianamatta– South Creek Northern Gateway, Agri-business and Badgerys Creek outlined in **Figure 1** below.

The final Aerotropolis planning package, including the Precinct Plan and State Environmental Planning Policy (SEPP) Amendment, was gazetted by DPE in March 2022 and the Development Control Plan Phase 2 was finalised in November 2022. These documents have been used to inform the preparation of the Bradfield City Centre Master Plan.

The proposed Master Plan Application for the site has also been prepared using the Western Sydney Aerotropolis Master Plan Guideline and Master Plan Requirements.

2 Bradfield City Centre

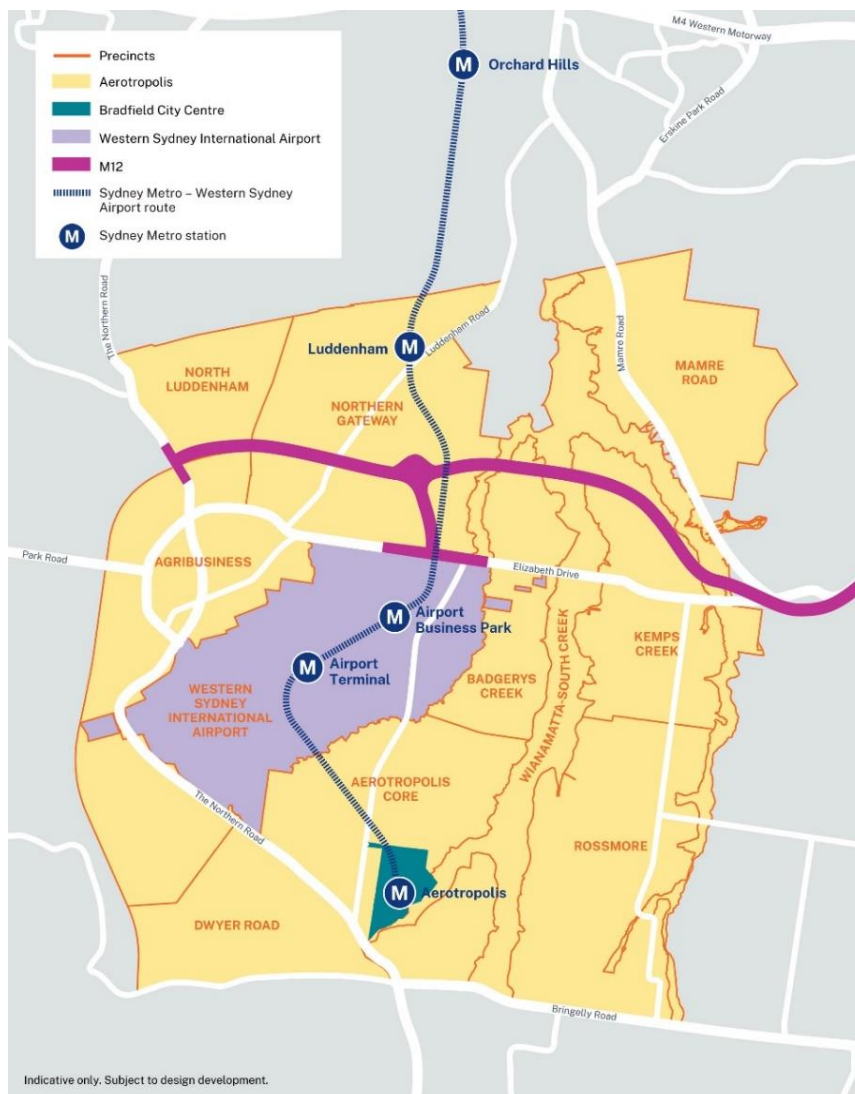
2.1 Strategic Context

The Bradfield City Centre is located to the south-east of the new Western Sydney International (Nancy-Bird Walton) Airport at the intersection of Badgerys Creek Road and The Northern Road (see **Figure 1** below).

The Sydney Metro Western Sydney Airport line runs through the site, providing connections from the key centre of St Marys through to stations at Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and the Aerotropolis which is located within the site.

The site is surrounded by several key roads and infrastructure corridors including Bringelly Road, Badgerys Creek Road, Elizabeth Drive, M12 and The Northern Road.

Figure 1 Strategic Context



Set on natural waterways, Bradfield City Centre presents a rare opportunity to showcase the best urban design and to create a thriving, blue and green, connected City in which Australians will want to live, learn and work. The Bradfield City Centre will be a beautiful and sustainable 22nd Century City. It will foster the innovation, industry and technology needed to sustain the broader Aerotropolis and fast track economic prosperity across the Western Parkland City.

2.2 The Master Plan Site

The street address for Bradfield City Centre is 215 Badgerys Creek Road, Bradfield (the Site) within the Liverpool Council Local Government Area (LGA). The site is legally described as Lot 3101 DP 1282964 and has an area of 114.6 hectares, with road access to Badgerys Creek Road located at the north-western corner. The site spans across the Aerotropolis Core and Wianamatta-South Creek Precinct, within Western Sydney Aerotropolis. The Site is outlined in **Figure 2** below.

The Site is predominantly zoned Mixed Use under the Western Parkland City SEPP, with a small portion of Enterprise zoned land located on the north-western corner of the site. The site also includes Environment and Recreation zoned land mostly along Thompsons Creek.

Figure 2 Master Plan Site



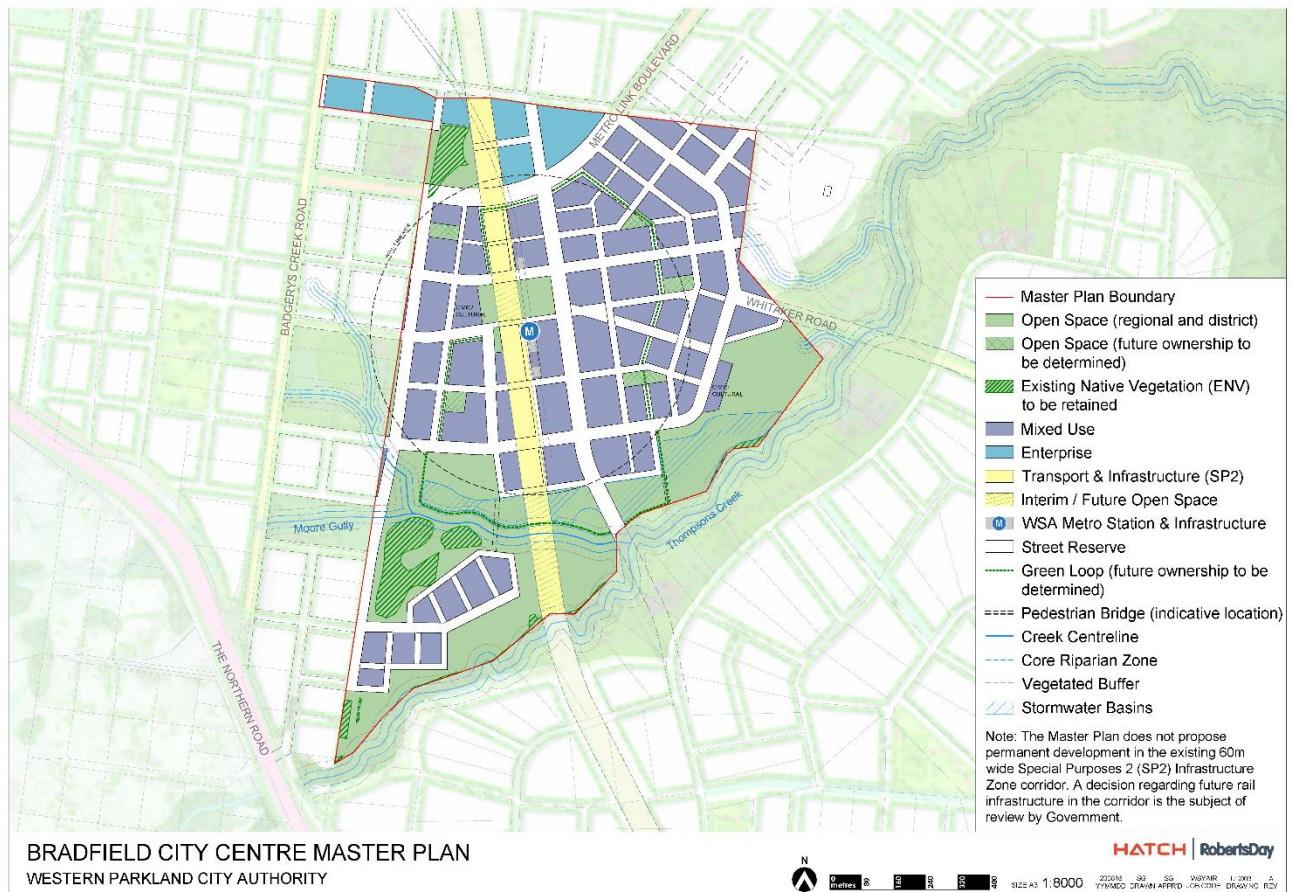
2.3 The Bradfield City Centre Master Plan

The Western Parkland City Authority has prepared a Master Plan (**Figure 3** below) in accordance with the DPE Master Plan Requirements.

The Master Plan sets out a framework for future development within the Bradfield City Centre which includes:

- Road network, key connectors to adjoining land and the regional road network (existing and future)
- Block structure
- Indicative open space network
- Sustainability strategy
- Social and infrastructure strategy
- Arts and culture strategy
- Infrastructure servicing strategy

Figure 3 Bradfield City Centre Master Plan



2.4 The Proposal

The Bradfield City Centre Master Plan is intended to facilitate the growth of the centre over time. The Master Plan has established the following three planning horizons for technical assessments.

Table 1 - Planning & Development Horizons

Phase	Indicative Timeframe	Estimated employment	Estimated residential population	Estimated Gross Floor Area (cumulative)
Immediate	2026	1,000 - 1,200 jobs	0 residents	48,500 sqm
Medium-term	2036	8,000 - 8,300 jobs	3,000 - 3,100 residents	341,000 sqm
Long-term	2056	20,000 -24,000 jobs	15,000 – 15,200 residents	1,258,000 sqm

Note: The table above is an estimate of the population and employment forecast used for the purposes of modelling only.

The master plan has the capacity to accommodate ~10,000 residential dwellings. In accordance with NSW Government policy a proportion of the residential dwellings will be affordable housing. The timing and delivery of residential dwellings will be subject to market demand and future master plan reviews that consider the impact of additional population on the scope and timing of social and physical infrastructure.

3 Approach and methodology

3.1 Study area

The study area is defined as Lot 3101 DP 1282964 and is located at 215 Badgerys Creek Road, Bringelly. The study area is surrounded by private properties and is currently comprised of rural residential and rural lots.

The study area lies within the boundaries of the Liverpool Local Government Area (LGA) and Gandangara Local Aboriginal Land Council (LALC). The study area is entirely within the county of Cumberland and Cabramatta parish and is on land traditionally associated with the Darug people.

3.2 Approach and methodology

This ACHAR has been prepared in accordance with the:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (the Code of Practice) (Department of Environment Climate Change and Water [DECCW] 2010a).
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW [the Guide] (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 [the Consultation Requirements] (DECCW 2010b).
- The Burra Charter 2013 (Australia ICOMOS 2013).

The objectives of this report are to:

- Identify the Aboriginal cultural heritage values of the study area, including archaeological and cultural values.
- Assess the significance of any identified values.
- Identify Aboriginal cultural heritage values that may be impacted by the proposed works, including consideration of cumulative impacts, and measures to avoid significant impacts.
- Ensure appropriate Aboriginal community consultation in the assessment process.
- Identify any recommended further investigations, mitigation and management measures required.
- To satisfy the objectives of this report, the following tasks will be completed:
- Review of existing archaeological data, including assessments previously completed within the vicinity of the study area and relevant heritage databases.
- Investigate the environmental context of the study area.

- Synthesise background information into a predictive model to inform an assessment of archaeological potential across the study area.
- Complete a full coverage survey of the study area to test the results of the predictive model and further inform an assessment of archaeological potential.

3.3 Limitations

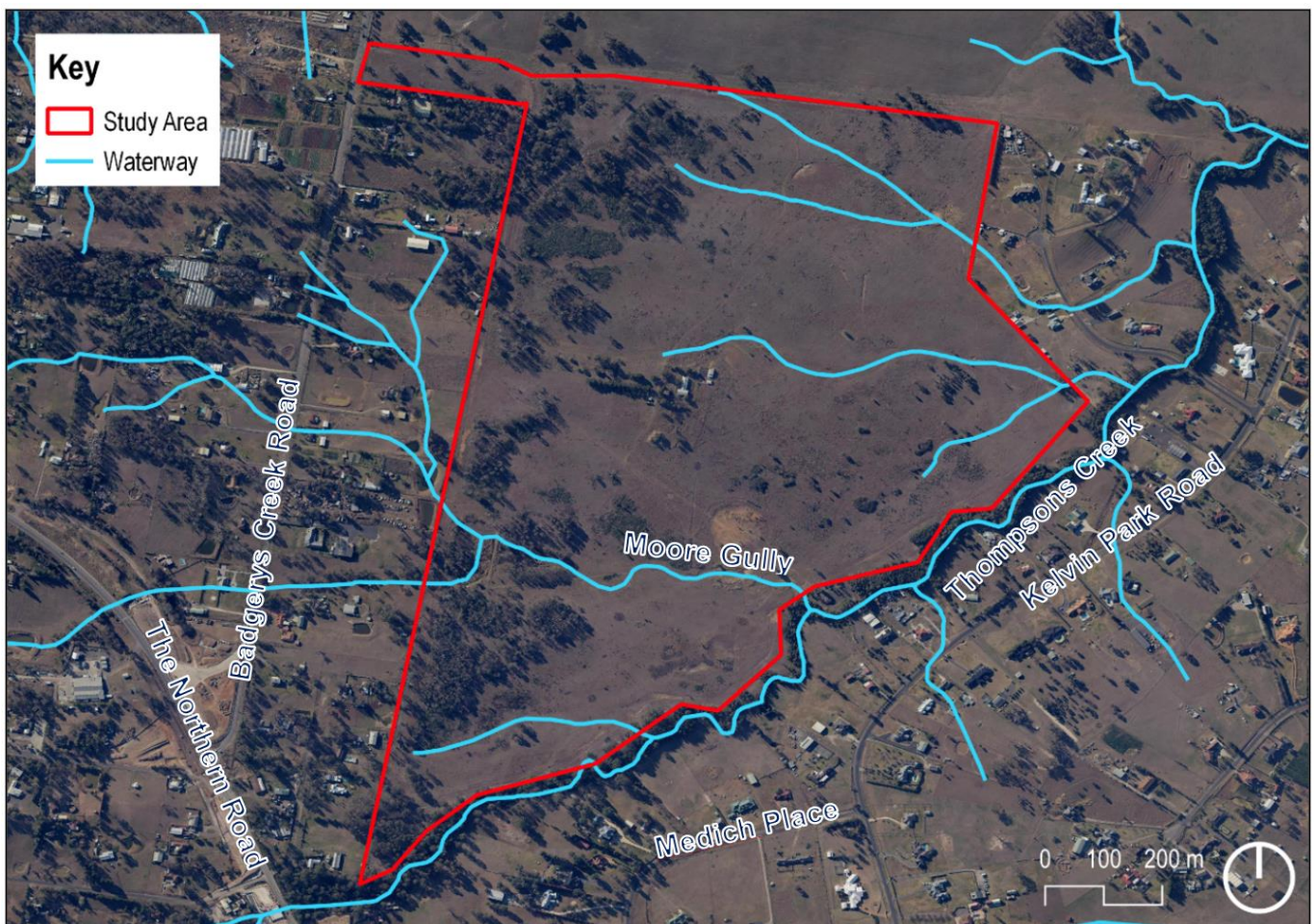
The site was inspected and photographed by Hannah Morris (of Extent Heritage) on 18 October 2021. The inspection was undertaken as a visual study only.

The historical overview provides sufficient historical background to provide an understanding of the place in order to assess the significance and provide relevant recommendations, however, it is not intended as an exhaustive history of the site.

3.4 Investigators and contributors

This report was authored by Hannah Morris (Senior Heritage Advisor, Extent Heritage), with review by Dr Madeline Shanahan (Senior Associate, Extent Heritage) and Oliver McGregor (Principal, Extent Heritage).

Figure 4 Study area



4 Assessment requirements and policy context

4.1 Master Plan requirements

The DPE have issued Master Plan Requirements (MPRs) to the Authority for the preparation of a Master Plan for Bradfield City Centre. This report has been prepared to address the following MPRs.

Table 2 - Master Plan Requirements

Reference	Master Plan Requirement	Where addressed
13	Aboriginal Cultural Heritage: The draft master plan must be accompanied by an Aboriginal Cultural Heritage Assessment Report (ACHAR) in accordance with relevant guidelines and requirements provided by Heritage NSW (Attachment A). The draft master plan is to also address the Recognise Country Guidelines, and specifically include details of genuine engagement, cultural values research and cultural values mapping.	Throughout ACHAR

Table 3 - Agency and Council Comments

Reference	Agency and Council Comment	Where addressed
Department of Planning and Environment DOC22/590143-1	Identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the development. This may include the need for surface survey and test excavation. The identification of cultural heritage values must be conducted in accordance with the Code of Practice for Archaeological Investigation in NSW (OEH 2010), and be guided by the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales (DECCW 2011).	Sections 4, 7, 10, 14 and 11

Reference	Agency and Council Comment	Where addressed
	Consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.	Section 7
	Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHA. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the Master Plan must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to Heritage NSW.	Sections 16 and 17
	The assessment of Aboriginal cultural heritage values must include a surface survey undertaken by a qualified archaeologist. The result of the surface survey is to inform the need for targeted test excavation to better assess the integrity, extent, distribution, nature and overall significance of the archaeological record. The results of surface surveys and test excavations are to be documented in the ACHA.	Section 10 and 11
	The ACHAR must outline procedures to be followed if Aboriginal objects are found at any stage of the life of the project to formulate appropriate measures to manage unforeseen impacts.	Sections 4 and 17
	The ACHAR must outline procedures to be followed in the event Aboriginal burials or skeletal material is uncovered during construction to formulate appropriate measures to manage the impacts to this material	Section 17.5

5 Planning context

The study area is subject to several legislative Acts and statutory controls that govern the management of environmental heritage. An overview of the legislation relevant to heritage matters is provided below.

5.1 Commonwealth legislation

5.1.1 Native Title Act 1993 (Cth)

The Native Title Act 1993 (Cth) (NTA) recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs. Section 24KA of the Native Title Act 1993, requires that native title claimants are notified of any 'future act' which may result in a change in land use for Crown lands affected by claims. 'Future act' is defined in section 233 of the Act as a proposed activity or development on land and/or waters that may affect native title, by extinguishing (removing) it or creating interests that are inconsistent with the existence or exercise of native title. If after one month there was no response, then the proponent will be deemed to have fulfilled their obligations under the Act.

A search of the National Native Title Tribunal database was completed on 28 April 2022. There are no Native Title claims currently registered in the study area.

5.1.2 Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) took effect on 16 July 2000. Subsequently, the Environment and Heritage Legislation Amendment Act (No.1) 2003 amends the EPBC Act to include 'national heritage' as a matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution. It also establishes the National Heritage List (NHL) and the Commonwealth Heritage List (CHL).

Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with approval of the Commonwealth Minister for the Department of the Environment (DoE). An action is defined as a project, development, undertaking, activity (or series of activities), or alteration. An action will also require approval if:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land; and,
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic cultural heritage items. Under the Act protected heritage items are listed on the World Heritage List (WHL), NHL (items of significance to the nation) or the CHL (items belonging to the Commonwealth or its agencies). These last two lists replaced the Register of the National Estate (RNE). The RNE is no longer a statutory list; however, it remains available as an archive.

A search of the heritage databases was completed on 28 April 2022. A summary of register searches is outlined below:

- WHL: No listed items are located within the study area.
- NHL: No listed items are located within the study area.
- CHL: No listed items are located within the study area.
- RNE: No listed items are located within the study area.

5.2 State legislation

5.2.1 National Parks and Wildlife Act 1974 (NSW)

The National Parks and Wildlife Act 1974 (NSW) (NPW Act), administered by DPE, provides protection to all Aboriginal places and objects in NSW. The NPW Act gives the Director General of Heritage NSW responsibility for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', defined under Section 5 of the Act as follows:

- an *Aboriginal object* is 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.
- an *Aboriginal place* is a place declared so by the Minister administering the NPW Act because the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm or desecrate them and includes a 'strict liability offence' for such harm. A '*strict liability offence*' does not require someone to know that it is an Aboriginal object or place they are causing harm to be prosecuted. Defences against the '*strict liability offence*' in the NPW Act include the carrying out of certain 'Low Impact Activities', prescribed in section 58 of the National Parks and Wildlife Regulation 2019 (NPW Regulation), and the demonstration of due diligence.

An Aboriginal Heritage Impact Permit (AHIP) issued under Section 90 of the NPW Act is required if impacts to Aboriginal objects and/or places cannot be avoided. An AHIP is a defence to a prosecution for harming Aboriginal objects and places if the harm was authorised by the AHIP and the conditions of that AHIP were not contravened. Consultation with Aboriginal communities is required under Heritage NSW – Department of Premier Cabinet (DPC) policy when an application for an AHIP is considered and is an integral part of the process. AHIPs may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or person or specified types or classes of Aboriginal objects, Aboriginal places, land, activities or persons. Section 89A of the NPW Act requires notification of the location of Aboriginal sites within a reasonable time, with penalties for non-notification.

5.2.2 Environmental Planning and Assessment Act 1979 (NSW)

The Environmental Planning and Assessment Act 1979 (NSW) (EPA 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. A combined SEPP – State Environmental Planning Policy (Precincts – Western Parkland City) 2021 – has come into effect from 1 March 2022.
- Minor or routine development requiring local council consent, are usually undertaken under Part 4. In limited circumstances, projects may require the Minister's consent.

- 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 Environmental Plans (LEPs) and State Environmental Planning Policies (SEPPs). LEPs commonly identify, and have provisions for the protection of, local heritage items and heritage conservation areas. The LEP relevant to this project is the Liverpool Local Environmental Plan 2008.

The objectives of the LEP with respect to heritage conservation is provided in Clause 5.10 which (amongst other objectives) aims to conserve identified local heritage places, including archaeological sites, and requires development consent for any works that affect that item. Schedule 5 of the LEP lists items of environmental heritage within the LGA, including archaeological sites, buildings, and conservation areas. These items may be of national, state, or local heritage significance. No listed sites were located within the study area boundary.

6 Aboriginal stakeholder consultation

6.1 Consultation process in NSW

Aboriginal stakeholder consultation for the project has been undertaken in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010b) (the Consultation Requirements).

6.2 Identification of RAPs

In accordance with Stage 4.1.2 of the Consultation Requirements, Extent Heritage corresponded with the following organisations to obtain the names of Aboriginal people who may hold cultural knowledge of the study area:

- Greater Sydney Local Land Services
- Liverpool City Council
- Native Title Service Corporation (NTSCorp)
- Gandangara LALC
- Heritage NSW – DPC
- National Native Title Tribunal
- Office of the Registrar, Aboriginal Land Rights Act 1983.

In accordance with Step 4.1.3 of the Consultation Requirements, an advertisement was placed on buysearchsell.com.au on 24 October 2020 inviting Aboriginal individuals or organisations to register an interest in the project by 5 November 2020. In addition, correspondence was sent to all Aboriginal individuals and organisations identified through the completion of Step 4.1.2 on 21 October 2020, inviting them to register an interest in the project by 5 November 2020.

The consultation process has resulted in the identification of 64 Registered Aboriginal Parties (RAPs) (See **Table 4**).

Table 4 - List of Registered Aboriginal Parties

Contact	Organisation
Carolyn Hickey	A1 Indigenous Services
Amanda DeZwart	Amanda Hickey Cultural Services

Contact	Organisation
Jamie Eastwood	Aragung Aboriginal Cultural Heritage Site Assessments
Karia Lea Bond	Badu
Mrs Jody Kulakowski	Barking Owl Aboriginal Corporation
Lee Field	Barraby Cultural Services
Daisy Stewart	Bidawal
Simalene Carriage	Bilinga
Louis Hockey	Birrungal
Lisa Dixon	Bullawaya
Whane Carberry	Bulling Gang
Jennifer Beale	Butucarbin Aboriginal Corporation
Glenda Chalker	Cubbitch Barta
Donald Smith	Curwur Murre
Andrew Bond	Dharug
Stephen Fields	Dhinawan Culture & Heritage Pty Ltd
Stacey Higgins	Dhurga
Lilly Carroll and Paul Boyd	Didge Ngunawal Clan
Jay Stevenson	Djanaba Gaxabara
Adam Johnson	Djiringanj
Lionel Brown	Elouera
Kahu Brennan	Eora
Clive Freeman	Freeman and Marx
Kathy Burns	Gadung

Contact	Organisation
Melissa Williams	Gandangara Local Aboriginal Land Council
Kim Carriage	Gangangarra
Donna Wray	Garranga Bumarri
Krystle Carroll	Ginninderra Aboriginal Corporation
Sam Peters	Golangaya
Caine Carroll	Goodradigbee Cultural & Heritage Aboriginal Corporation
Clayton Moore	Gulla Gunar
Kylie Ann Bell and Mundarra Drew	Gunyu
Phil Khan	Kamilaroi Yankuntjatjara Working Group
Toni Banda	Kurringgai
Aaron Broad	Minnamunnung
Kaya Dawn Bell and Jason Booth	Munyunga
Shane Saunders	Murrumbul
Kaarina Slater	Ngambaa Cultural Connections
Steven Pittman	Ngario
Edward Stewart	Ngunawal Aboriginal Corporation
Thomas Tighe	Nundagurri
Tarlarra Te Kowhai	Tarlarra Te Kowhai
John Stewart	Tharawal
Jeffery Daves	Thauaira
Greg Kerry	Thawa

Contact	Organisation
Ray Moffat	Thurumba
Rodney Gunther	Waawaar Awaa Aboriginal Corporation
Philip Boney	Wailwan Aboriginal Group
Hika Te Kowhai	Walbunja
Ronald Stewart	Walgalu
William Bond	Wandandian
Aaron Slater	Warragil Cultural Services
Steven Hickey and Donna Hickey	Widescope Indigenous Group
Mary Parsons	Wimbalaya Nura
Travis Dixon	Wingikara
Vivian Lacey	Wirambie
Daniel Chalker	Wori Woilywa
Kerrie Slater and Vicky Slater	Wurrumay Pty Ltd
Kerrie Slater and Vicky Slater	Wurrumay Pty Ltd
Violet Banda	Yaxa Burra
Nathan Walker-Davis	Yerramurra
Arika Jalomaki	Yulay Cultural Services
Bo Field	Yurrandaali

6.3 Assessment methodology

A copy of the proposed ACHAR methodology was provided to the RAPs for a 28-day review on 11 November 2020. At the end of this period, 15 groups provided a comment on the proposed methodology. See **Table 5** for a summary of comments.

Table 5 - Summary of comments of the ACHAR methodology

Organisation	Contact	Comments
A1 Indigenous Services	Carolyn Hickey	Agrees with the proposed methodology and would like to be involved in any future works within the project.
Barraby Cultural Services	Lee Field	Agrees with the proposed methodology.
DNC	Lilly Carroll	Agrees with the proposed methodology.
Freeman and Marx	Clive Freeman	Would like to be updated on the project and would like to participate in work.
Goobah	Basil Smith	Supports the proposed methodology, would like to be updated on future developments.
Kamilaroi Yankuntjatjara Working Group	Phil Khan	Supports the methodology and notes that the study area is significant to Aboriginal people of the past and present.
Ngambaa Cultural Connections	Kaarina Slater	Agrees with the proposed methodology.
Wailwan Aboriginal Group	Philip Boney	Agrees with the proposed methodology.
Walbunja	Hika Te Kowhai	Requested additional information regarding the survey and noted that the RAPs should be provided an opportunity to participate in the fieldwork program in addition to the LALC. Hika noted that the South Coast Groups have knowledge of the study area and would provide details in a written response to the ACHAR methodology.
Warragil	Aaron Slater	Agrees with the proposed methodology.
Widescope Indigenous Group	Steven Hickey	Agrees with the proposed methodology and would like to be involved in any future works within the project.
Wori Woilywa	Daniel Chalker	The study area is considered to be sacred land, as is all Aboriginal land. Notes that it is difficult to investigate Aboriginal land use and history, as the post-contact modification of the study area has removed archaeological material. Any works taking place within the study area should be cultural appropriate. A full coverage survey and test excavation program is recommended.
Wurrumay	Vicky Slater	Vicky noted that she holds ancestral knowledge of the study area and is a traditional owner. Vicky asked to be

Organisation	Contact	Comments
		included in all fieldwork.
Yulay Cultural Services	Arika Jalomaki	Agrees with the proposed methodology and would like to be involved in upcoming fieldwork.
Yurrandaali	Bo Field	Agrees with the proposed methodology and would like to be involved in any upcoming fieldwork.

6.4 Cultural values engagement

6.4.1 Wider Western Sydney Aerotropolis Cultural Values Workshop

A preliminary cultural values mapping workshop was undertaken during the Pre-Planning phase of the wider Western Sydney Aerotropolis project. The area explored in the workshop included Bradfield City Centre but covered all precincts within the project boundary. The workshop was undertaken through a separate Aboriginal community consultation process. It was convened on Tuesday 23rd June 2020 at Liverpool City Council, Liverpool.

The aims of the meeting were to identify and understand key social, cultural, and intangible values associated with the Western Sydney 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.

A focus group of Elders and knowledge holders were identified early in the planning process, 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 wider Aerotropolis study area. The organisations and representatives who were invited to be a part of the focus group and those who were able to participate are shown below.

Table 6 - Aboriginal community organisation workshop attendees

Organisation	Contact name	Attendance
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Glenda Chalker	Yes, attended workshop
Darug Custodians Aboriginal Corporation	Tylah Blunden	Yes, attended workshop
Deerubbin Local Aboriginal Land Council	Steve Randall	Yes, attended workshop
Gandangara Local Aboriginal Land Council	Darren Duncan and Dr Ruth Sheridan	Yes, attended workshop
Darug Land Observations	Jamie Workman and Anna Workman	No, did not attend Workshop
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton and Celestine Everingham	No, did not attend Workshop

Consultant and government attendees at the workshop were:

- Extent Heritage: Laressa Barry, Megan Sheppard Brennand, Tom Sapienza (via Zoom), James Wheeler (via Zoom)
- GHD/Zion: Elle Davidson (via Zoom)
- Western Sydney Planning Partnership: Ben Gresham

The following key conclusions were drawn from the cultural values workshop:

- The stakeholders stated that it is too early to comment with certainty on cultural values because the archaeological investigations have not taken place, and large parts of the landscape have not been extensively investigated during prior studies. Traditional Owner and Land Council access to walk Country will be needed for subsequent stages of investigation.
- The cumulative impact of the project is a key issue of cultural concern. When the stakeholders were asked what they would most like to see if they were to return to the study area in fifty years, the consensus answer was a large, conserved portion of the Cumberland Plain. The consensus was also that this conservation area would not just include conserved creek corridors, but also a representative range of remnant terrain. The stakeholders expressed a strong preference for natural vegetation patterns as opposed to human-designed plantings (e.g., not 'trees planted in rows').
- Unusual and well-preserved landforms such as exposed sandstone outcrops, areas of remnant old growth vegetation, and well-preserved creek corridors should be protected where possible.
- There is a need to investigate the results of archaeological assessments undertaken across the Badgerys Creek airport site, as they may shed important light on site and settlement patterns in the region.
- The stakeholders present said that it is critical that the Traditional Owners and LALCs play a key role in future consultation and are given the opportunity to participate in further studies. The stakeholders stated that it is offensive when Aboriginal groups with no connection to Country are engaged to do archaeological work.
- Any interpretation and story-telling needs to be reviewed by the Traditional Owners and LALCs to ensure it is culturally appropriate.
- There are some family connections to this country and nearby, and those should be recognised through further consultation with the key Traditional Owner and land council stakeholders.
- Section 14 of this report outlines the cultural values consultation in more detail.

6.4.2 Bradfield City Centre cultural values engagement

Following the work completed for the Western Sydney Planning Partnership, Extent Heritage were subsequently engaged by the Western Parkland City Authority to undertake cultural values assessment relating specifically to the Bradfield City Centre (referred to at the time as Stage 1 Aerotropolis Core Precinct). The details of the work have been included here as the findings are an important body of evidence to help assess the cultural and intangible values of the study area.

6.5 Methodology

GHD/Zion Engagement and Planning were commissioned by the proponent to provide advice on the selection of stakeholders for this more targeted engagement work. Extent Heritage were advised by GHD/Zion that the following groups should be invited to participate:

Table 7 - Aboriginal community workshop attendees

Organisation	Attendance
Dharug Strategic Management Group	Invited, but did not attend
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Participated through an interview
Gandangara Local Aboriginal Land Council	Participated through a discussion on site
Dharug Ngurra Aboriginal Corporation	Invited, but did not attend
Darug Custodian Aboriginal Corporation	Provided input via phone and written correspondence following the field survey
Darug Aboriginal Cultural Heritage Assessments	Invited, but did not attend
Darug Land Observations	Invited, but did not attend
Burbaga Aboriginal Corporation	Invited, but did not attend

The following summary conclusions can be made regarding the cultural values identified for the Bradfield City Centre precinct:

- The Cumberland Plan landscape needs to be protected and conserved.
- Intergenerational equity is critical, and younger generations will not be able to learn if there is nothing left of the Cumberland Plain.
- Culturally modified trees are highly important. Many have been destroyed throughout the region and those left need to be protected.
- The connections between trees need to be maintained. If they are left in isolation, they will not be protected.
- [REDACTED]
- Kangaroo grass is culturally important and was used to make damper.
- The waterways are very important. Development should stay away from the waterways and focus should be given to improving water quality and flow.
- The wildlife and animals here are important and require healthy waterways and Country for their protection.
- The connections across all of Country and between all things need to be understood. The land, trees, water, and animals cannot be seen in isolation. It needs to be understood and protected as a whole.
- Country is the direct link to spirituality, culture, language, family, lore and identity. Darug people are connected to Country and Country is connected to them.
- Key priorities for the development should be to use sustainable materials and to plant native plants that are from the area.
- Information and signage should use correct terminology, should not use the past tense and should ensure that it is clear throughout the development that this is always has been and always will be Aboriginal land.
- Section 14 of this report outlines the cultural values consultation in more detail.

6.6 Participation in field survey

On 20 November 2020, invitations to participate in the archaeological survey were issues to a limited number of RAPs. Four site officers representing the RAPs participated in the archaeological survey and tabled below.

Table 8 - Aboriginal site officers participating in the archaeological survey

Contact	Organisation
Darren Duncan	Gandangara Local Aboriginal Land Council
Tylah Blunden	Darug Custodian Aboriginal Corporation
Rodney Gunther	Waawaar Awaa Aboriginal Corporation
Mollie Saunders	Wurrumay Pty Ltd

6.7 Test excavation methodology

A copy of the proposed test excavation methodology was provided to the RAPs for a 28-day review on 15 June 2021. At the end of this period, six groups provided a comment on the proposed methodology. Comments and suggestions about improvements to the methodology were made and additional background research was undertaken. As a result, the original methodology was significantly modified to present a more extensive testing program. **Table 9** summarises the responses to the initial test excavation methodology.

Table 9 - RAP responses to the initial test excavation methodology

Organisation	Contact	Comments	Follow-Up
Warragil Cultural Services	Aaron Slater	Agrees with the test excavation methodology.	
Didge Ngunawal Clan	Lilly Carroll	Agrees with the test excavation methodology.	
Gandangara	Ruth Sheridan	Agreed with the test excavation methodology. Would like to be present during the test excavation program. Would like to speak to Extent Heritage about a site identified in the rural grasslands around Bringelly and Luddenham.	Extent reached out several times to have further discussions but have been unable to reach Ms Sheridan.
Wailwan Aboriginal Group	Philip Boney	Agrees with the test excavation methodology. Would like to be involved in the test excavation.	
Cubbitch Barta Native Title	Glenda Chalker	Believes the 30m interval between test trenches was too far apart and that the minimum should be 20m.	Extent Heritage staff called Ms Chalker to discuss concerns and provide assurance that the updated methodology has addressed all

Organisation	Contact	Comments	Follow-Up
		<p>Questioned why the western section of ACIF01 PAD was not being investigated and wanted to see the entire PAD tested unless it was not being impacted by the proposed development.</p> <p>Requested topographical information to be included in the methodology to understand the landscape.</p> <p>Suggested testing in an area to prove a lack of artefactual material presence in areas of low archaeological potential.</p> <p>Specified that all material should be wet sieved using a 3mm sieve rather than 5mm.</p>	<p>issues. The spacing between trenches was reduced to 20m intervals, additional trenches were added in the area of ACIF01, clearer mapping was provided, an additional area (the Northern Transect) was added to investigate an area of low archaeological potential, clarification was made that wet sieving would be used, and that the sieving mesh will be 3mm.</p>
Walbunja	Hika Te Kowhai	<p>Mr Te Kowhai expressed concern that the remainder of the study area outside the identified areas of PAD are not being subject to test excavation. Mr Te Kowhai would like to see the maximum area of test excavation permissible by the Code of Practice (0.5%) of the investigation area.</p>	<p>Extent Heritage staff explained that the study area was subject to major historical disturbances and previous excavations by AECOM recovered no artefacts. It was also discussed that the purpose was to keep testing limited in order to minimise harm without an AHIP. Extent Heritage confirmed that the feedback was considered and that three additional areas to be tested were added to the program to further investigate the landscape.</p>

The comments received focused around the placement of test pits and sieving methodology. Extent Heritage amended the methodology to incorporate the feedback. During this period, Extent Heritage was also able to access new additional information regarding historical disturbance within the site. The revised methodology clarifies these disturbances.

Due to the substantial changes to the test excavation methodology, a revised methodology (Appendix 4 – Consultation records) was sent to all RAPS for their review over a period of 28 days on 20 August 2021. **Table 10** summarises the responses to the revised test excavation methodology.

Table 10 - RAP responses to the revised test excavation methodology

Organisation	Contact	Comments
Wailan Aboriginal Group	Philip Boney	Wailan Aboriginal Group has no comments.
Arangung	James Eastwood	Arangung agrees with and supports the test excavation and methodology. Arangung would like to be updated to all future development and would like to be considered for participation in the test excavation.

Organisation	Contact	Comments
Yulay	Arika Jalomaki	Yulay Cultural has reviewed and agrees with the updated methodology.
Widescope	Steven Hickey	Widescope supports the recommendations outlined in the draft methodology.
KYWG	Kadibulla Khan	<p>“The study area is highly significant to Aboriginal people, especially since there are water ways within the study area and around. Aboriginal people would have and still do utilise these water ways, many daily activities would have taken place as the whole of the area, is of significance to us. Once flora fauna was thriving in this area, resource rich for the Aboriginal peoples.”</p> <p>“We would like to recommend further testing of the whole study area. It is important to also include a [sic] Interpretation plan for the project, this can be achieved through design, art, native gardens, apps, signage and many other ways. Interpretation is important as it is a way in which Aboriginal people are being recognised for being the[sic] one of the oldest live [sic] cultures in the world.”</p> <p>“A keeping place also should be sort of any artefacts found, to ensure they are kept on country rather than in and [sic] office on a shelf. Both keeping place and interpretation educates the wider community about Aboriginal culture and is a part of the connecting to country framework.”</p> <p>“We would like to agree to your methodology, and we support you [sic] report.”</p>
Didge Ngunawal Clan	Paul Boyd and Lilly Carroll	“We are happy with the process in this job and hold no restraints.”

6.8 Participation in test excavations

Test excavations at the Bradfield City Centre site were undertaken from 5 October to 12 November. The following groups were invited to participate:

Table 11 - RAP groups and Land Council participating in the test excavation program

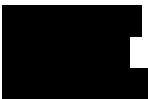


Organisation	Representative
Arangung	Raymond Adams
Cubbitch Barta Native Title	Kiahni Chalker Kirsty-Lee Chalker
Didge Ngunawal Clan	Paul Boyd Brayden Boyd-Carroll Joeleen Smith

Organisation	Representative
	Adam King Paul Middleton
Gandangara Local Aboriginal Land Council	Darren Duncan
Walbunja	Julia-Ann Narayan Tjala Campbell-Parsons

6.9 First building due diligence report

Nine test trenches were placed in the north-western corner of the site where the First Building development has been proposed. Once the excavation of these trenches was completed, a due diligence report (**Appendix 6 – Bradfield City Centre First Building Statement of Heritage Impact**) was produced to outline the results. The report was sent to the Aboriginal stakeholders prior to the completion of the entire test excavation program. The due diligence was sent for a 28-day period review on 14 October 2021. Three responses were received.

Table 12 - RAP responses to the First Building due diligence report

Organisation	Contact	Comments
Cubbitch Barta Native Title	Glenda Chalker	"I have no further recommendations for this proposed project, that could impact on this project from not proceeding as planned"
Waawaar Awaa Aboriginal Corporation	Rodney Gunther	Waawaar Awaa Aboriginal Corporation supports the attached report.
		

A preliminary version of this ACHAR was submitted to Heritage NSW with the due diligence report. Heritage NSW and DPE approved the recommendations in these reports on 19 November 2021. The recommendations stated that, as there was no identified Aboriginal archaeology in the area, works on the First Building could proceed prior the finalisation of the ACHAR and community consultation process.

WPCA provided responses to submissions for the First Building Bradfield City Centre (SSD-25452459) on 17 and 23 December 2021.

6.10 Review of the ACHAR

Prior to finalisation, the RAPs will be provided a draft copy of this report and the ATER to provide comment in accordance with Section 4.4. of the Consultation Requirements. The reports were sent to the RAPs and LALC on 18 November 2022, with comments provided by 19 December 2022. No comments were received, and the period of review was extended to 1 February 2023. Despite this extension, still no comments were received.

7 Landscape context

7.1 Geology and topography

The study area is located on the Cumberland Plain, an extensive low-lying sub-region within the wider Sydney Basin bioregion (DAWE n.d.). The surface geology underlying the study area is largely characterised by sandstone, siltstone and shale rocks of the Wianamatta Group (Geoscience Australia and Australian Stratigraphy Commission [GAASC] 2017). With a maximum thickness of 300 m, the Wianamatta Group was deposited during the Triassic period (c. 251.9–201.3 Mya) and includes three major geological units: Ashfield Shale (consisting of laminate and dark grey siltstones), Bringelly Shale (consisting of shale with occasional calcareous claystone, laminate and infrequent coal) and Minchinbury Sandstone (consisting of fine to medium-grained quartz lithic sandstone) (GAASC 2017; Office of Environment and Heritage [OEH] 2019). Over the course of the Holocene epoch (c. 11,650 cal. BP–present), channel and floodplain alluvium comprising of gravel, sand, silt and clay has also been deposited along the bank of Thompsons Creek, located along the eastern and western boundary of the study area (GAASC 2017). Arising from this geological background within the study area are two distinctive natural soil landscapes (OEH 2019): South Creek and Blacktown (**Figure 6**).

The South Creek soil landscape is located along the channels and floodplains of Badgerys, Cosgroves, Kemps, South and Thompsons creeks, as well as that of a minor unnamed watercourse at the northern boundary of the study area (OEH 2019). This landscape comprises flat to gently sloping floodplains and valley flats, drainage depressions and incised channels, with occasional terraces or levees providing low, local reliefs (**Figure 5**). Its soil generally consists of shallow to deep sediment layers with an A horizon topsoil of brown loam over a B horizon of brown clay. The South Creek soil landscape is an active floodplain that is presently reworked by fluvial processes, resulting in streambank and gully erosion during periods of concentrated flows.

The Blacktown soil landscape is located on higher elevations adjacent to the South Creek soil landscape and characterises most of the study area (OEH 2019). This landscape consists of gently undulating rises with broad crests and ridges that are rounded with convex upper slopes grading into concave lower slopes. Its soil generally consists of shallow to deep layered sediments with an A horizon topsoil of brownish black loam or clay loam over a B horizon subsoil of brown or grey mottled clay. In contrast to the South Creek soil landscape, the erosion hazard for the Blacktown soil landscape is generally slight to moderate which can increase to moderate or high during periods of concentrated flows.

7.2 Hydrology

The Hawkesbury-Nepean catchment consists of 30 sub-catchments, and the study area lies within the South Creek sub-catchment (HNCMA 2007a, 19; HNCMA 2007b, 7-102). The South Creek sub-catchment is presently the most degraded sub-catchment due to the dramatic alteration of hydrological and sediment regimes from historical vegetation clearance and increasing urbanisation (HNCMA 2007b, 69). Increasing impervious surfaces in the catchment are causing changes to the hydrology of the sub-catchment which has, in turn, greatly altered the geomorphology and ecology of its watercourses (HNCMA 2007b, 69).

Thompsons Creek, a fourth order creek, runs along the southern and eastern boundary of the study area, and five ephemeral tributaries of Thompsons Creek run east-west across the study area. Thompsons Creek is a branch of the Wianamatta-South Creek precinct, which is largely defined by the courses of both the South and Kemps Creek. These run almost parallel to each other on a broadly north-south axis, with two smaller

'arms' of the precinct following the course of Badgerys and Thompsons Creek.

Moore Gully, a third order waterway, runs west to east in the southern portion of the site. It joins Thompsons Creek just outside the study area boundary. An associated swampy, waterlogged area sits in the low-lying land along Moore Gully.

The non-perennial waterway has been affected by modern agricultural activities including ploughing and the construction of dams along its route. The 1947, 1965, and 1986 aerials of the site show the waterway clearly, with a pool toward its western extent (**Figure 11-Figure 13**). This catchment was artificially modified to form a clearer dam feature after this point, as is clearly visible by the marking seen in the present aerials of the site.

7.3 Past vegetation

The native vegetation in the study area and the rest of the Cumberland Plain has been extensively cleared since British colonisation. As the Blacktown soil landscape covers most of the land within the study area, the vegetation landscape of the study area is largely characterised by almost completely cleared open-forest and open woodland (dry sclerophyll forest), with individual trees or small stands of Mugga Ironbark (*Eucalyptus sideroxylon*) found occasionally on crests (OEH 2019).

Vegetation on the channels and floodplains of the South Creek soil landscape reflects its frequent inundation (OEH 2019). Common tree species present in this soil landscape include the Broad-Leaved Apple (*Angophora subvelutina*), Cabbage Gum (*Eucalyptus amplifolia*), and Swamp Oak (*Casuarina glauca*), while tall shrublands of paperbarks and tea trees may occur on more elevated streambanks. Exotic species such as the Blackberry (*Rubus vulgaris*) and other weeds are also observed to dominate areas where significant land clearance have occurred.

Figure 5 Contours (2m) of the landscape

Source: NSW Planning and Environment

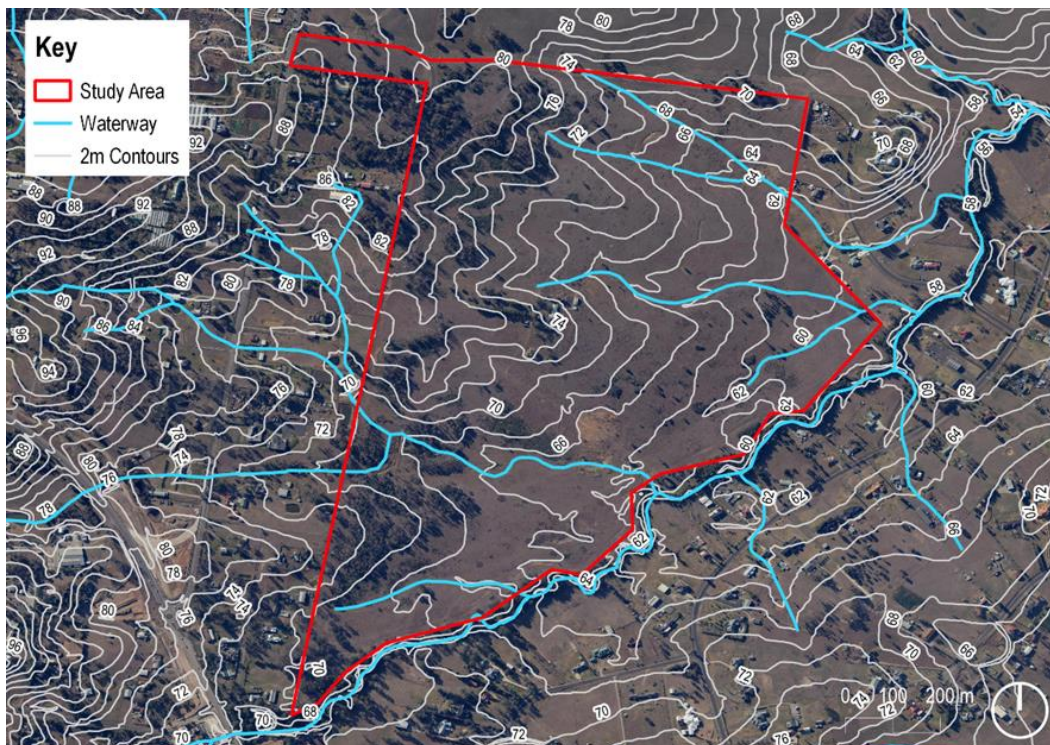


Figure 6 Soil landscapes within the study area

Source: NSW Planning and Environment with Extent Heritage additions 2021

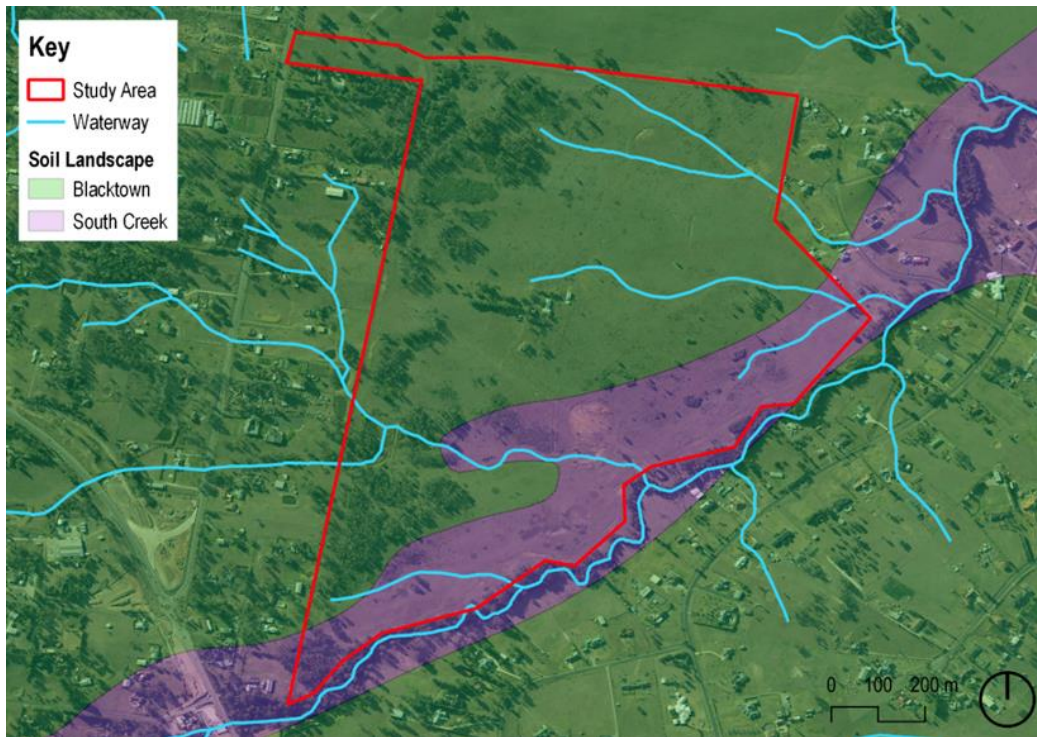
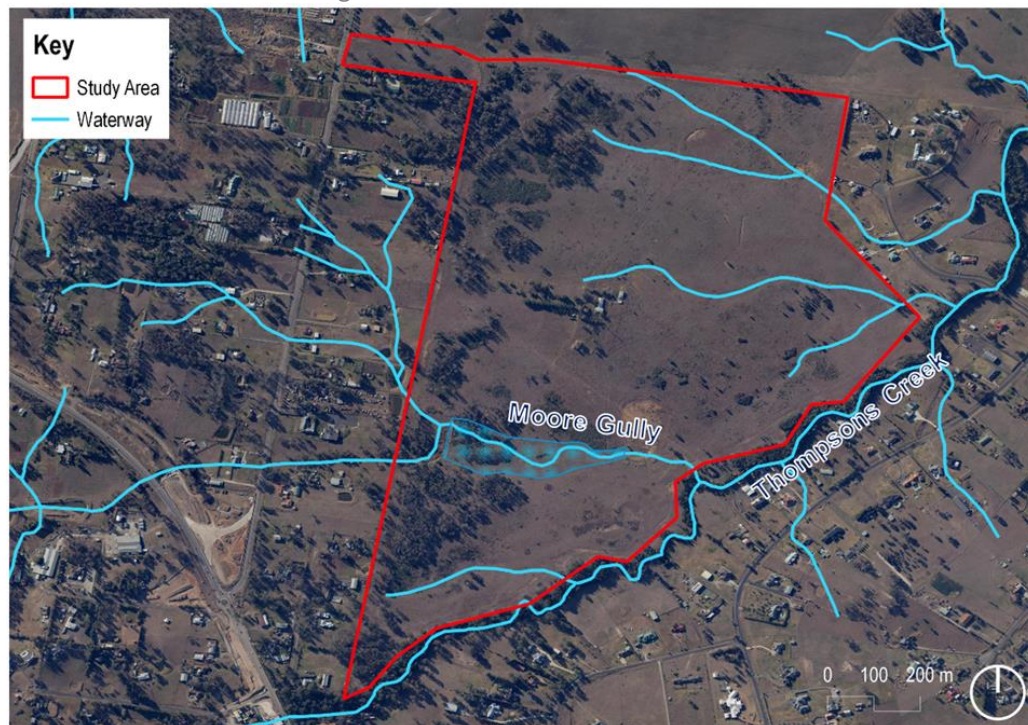


Figure 7 Waterways associated with the study area

Note: A waterlogged area associated with Moore Gully is also indicated

Source: DPE with Extent Heritage additions 2021



8 Research background

8.1 Aboriginal histories

8.1.1 Pre-contact Aboriginal history in the Sydney region

Aboriginal people have lived in the area known as NSW for at least 45,000 years (NPWS 2003, 14). To date, more than 38 Aboriginal language groups (previously referred to as 'tribes') have been identified within NSW (NPWS 2003, 14). Examples of these broader cultural-linguistic groups in NSW include the Darug (alternative spellings include 'Dharug,' 'Dharuk' and 'Dharook'), Darkinjung, Gandangara (also spelled as 'Gundungarra'), Tharawal (also referred to as 'Dharawal'), lower Barrington Tops/Lower Mid North Coast clan group, and Awabakal (Attenbrow 2010, 23, 32). Since the 1970s, archaeologists and anthropologists working in the Sydney region have largely adopted the nomenclature for cultural-linguistic groups compiled by Capell (1970) and amended by Eades (1976) (Attenbrow 2010). On the basis of this research, the study area is considered to have been occupied by Darug-speaking clans.

The Darug people are generally thought to have lived in clan-based bands of around fifty members each. Each clan retained its own hunting district and moved through Country seasonally (Murray and White 1988). The inland clans, in particular, are also thought to have moved more often according to the season, with summer attracting large numbers of clans to the land around the Nepean and Hawkesbury Rivers, and winter dispersing these clans over the plain and into the mountains (Kohen and Lampert 1987, 357).

Typical dwellings were two-sided bark tents (known as 'gunyahs' throughout NSW), while sandstone rock shelters were used in harsh weather if they were available (NPWS 2003, 189). In the map of NSW drawn by William Dawes in March 1791, some 'native hunting huts' were observed to be present on an area of 'tolerably good country' somewhere in Camden near present-day Catherine Field. Collins (1798) described how shelters were made of pieces of bark laid together over a framework of timber to form a low-lying, hut-like shelter that was large enough to hold eight people. According to Tench each hut was:

'... nothing more than a large piece of bark, bent in the middle and open at both ends, exactly resembling two cards set up to form an acute angle.' (Tench 1996, 112)

In addition to providing bark for dwellings, trees were an important source of bark and timber for a range of material culture including tools, weapons and vessels. Canoes were also used for accessing the major waterways of the Cumberland Plain for hunting and fishing activities. Tench (1996, 112) observed that the canoes used by the inland clans 'differed in no wise from those found on the seacoast'.

The typical Aboriginal tool kit on the Cumberland Plain was observed to comprise stone flakes, ground stone axes, hatchets, spears, clubs and bowls (Tench 1961). Stone tool technology on the Cumberland Plain appears to be dominated by the edge-ground hatchet made of Basalt pebbles recovered from the bed of the Nepean, ground on sandstone outcrops and hafted to a wooden handle with grass-tree resin or native beeswax (Kohen and Lampert 1987, 358). These hatchets were used to cut footholds in trees for climbing hunters, and to enlarge the base of a hollow tree so that fires could be lit to drive possums from their nests (Kohen and Lampert 1987, 358). Unlike the spears used by the coastal clans, however, the inland clans barbed their spears with stone instead of shell (Kohen and Lampert 1987, 356-357). Flaked chert from gravels at the Nepean River were also hafted on the end of spear throwers to be used as chisels (Kohen and Lampert 1987, 360). 'Red' and 'yellow' silcretes along South and Eastern Creeks, in particular, were used as the material for both barbs and chisels by the inland clans (Kohen and Lampert 1987, 360).

A range of animals were a critical source of food and materials. Skin cloaks were made using possum and kangaroo fur (Kohen and Lampert 1987, 357). Darug men were generally responsible for hunting possums, fish, birds and kangaroo, and often collaborated with other bands to hunt and eat the larger animals. The Darug were also known to have set traps and snares for quail and possums as well as dug pit traps for other small mammals (Kohen and Lampert 1987, 358). Fish traps were also built along rivers and creeks so that mullet and bass could be speared easily with a multipronged fishing spear similar to that used on the coast (Kohen and Lampert 1987, 358). Other animals that were hunted by the Darug included the platypus, bats, yabbies, freshwater mussels, tortoises and various water birds (Kohen and Lampert 1987, 358).

Nonetheless, the staple diet of the Darug clans consisted largely of yams gathered by the women and children with digging sticks, as well as roots, fruits and other small game (Kohen and Lampert 1987, 357-358; NPWS 2003, 189). The wild yam was so significant to the Darug that they adopted it as a name for themselves (Attenbrow 2002, 31; Pascoe 2014, 26). The banks along the Nepean River were often submerged by floodwaters which produced a rich soil that allowed these yams to grow in abundance (Kohen and Lampert 1987, 357-358). Another plant food, the 'burrawang' (*Macrozamia communis*) and a smaller species of *macrozamia* were also gathered by the Darug (Kohen and Lampert 1987, 357).

Fire was also an important part of managing Country and was central to Darug food procurement strategies. Fire was used to reduce undergrowth and to catch game (NPWS 2003, 189); an expedition mounted by George Caley (1801, 47) recorded their encounters with Aboriginal huts, walking tracks and the effects of burning the local environment between Prospect, South Creek and Cowpastures, observing that fires had left the area like an 'English Park... with large trees separated by a grassy understorey' (Keating 1996). The use of fire in this way helped to manage Country, but also encouraged growth and game.

8.1.2 British colonisation

Life changed irreversibly for the Darug after the invasion of their lands following the arrival of the First Fleet in 1788. Theft of Country, dispossession, alienation from resources, disease and violence became a reality of life for Aboriginal people in the Sydney Region, shaping this next chapter of history profoundly.

The Aboriginal people of the broader Sydney basin who survived the disease and violence wrought by colonisation were increasingly forced to live on the fringes of colonial society. With access to resources limited, they also became necessarily dependent on the state (see NSW Legislative Council 1845), and thus subjected to increasing levels of government control. Government allocations of blankets and slop clothing, and the bartering of fish and game for sugar, flour and alcohol also reflect the changes that occurred in Aboriginal economies, lifeways at this time.

Many of the sources that shed light on this period reveal only the voice of colonisers, but some allow us to also see and hear the perspectives of the Aboriginal people. In the words of Mahroot, an Aboriginal man identified by contemporaneous Europeans to be the last of his tribe in the Botany Bay area (that was originally four hundred-strong) sometime in 1845,

'Well mither [sic]... all black-fella gone! All this my country! Pretty place Botany! Little Pickaninny, I run about here. Plenty black-fellow then; corrobory; great fight; all canoe about. Only me left now, Mitter - Poor gin mine tumble down. All gone! Bury her like a lady, Mitter -; all put in coffin, English fashion. I feel lump in throat when I talk about her but - I buried her all very genteel, Mitter' (Troy 1990, 132-133).

8.1.3 Aboriginal resistance

Notwithstanding the devastation caused in this period, it is critical to note that while many of their kin had either perished or been forced away from their traditional lands, there are records of Aboriginal people who remained on Country throughout the nineteenth century. Campaigns of resistance were central to this survival and records of them across the broader Western Sydney region illustrate Aboriginal people's experiences of this period.

Two years after the arrival of the First Fleet, the Aboriginal warrior Pemulwuy (or ‘Bembilwuyam’, c. 1750–1802) was forced to resist British incursions on the lands of his people (NMA 2020). Pemulwuy began participating in several raids across the Sydney region from 1792 onwards. The first raid was conducted at Prospect (c. 20km from the study area) in May 1792 (NMA 2020).

Pemulwuy continued his campaign of resistance until 1802, when he was killed in an ambush (Kass et al. 1996, 49). Upon his death, Pemulwuy’s head was documented to have been subsequently cut off and sent to Sir Joseph Banks in England for his collection in 1802 (NMA 2020). Thereafter, Pemulwuy’s son, Tedbury, continued his father’s campaign in the Sydney and Parramatta districts. Tedbury was captured in 1805 but freed later that year. Active Aboriginal resistance in Parramatta largely came to an end following Tedbury’s death in 1810 (Kass et al. 1996).

The rapid expansion of British settlement in the Cumberland Plains from the early nineteenth century, led to increasing violence between colonists and Aboriginal people in the region. Between 1814 and 1816, tensions rose dramatically as a result of drought and the increasing numbers of Europeans moving to the area. This encroachment restricted Aboriginal people’s access to Country and resources. The violence escalated during this period, culminating on 17 April 1816 in what is referred to as the Appin Massacre (35 km south of the study area). These events of conflict did not occur within the study area. However, considering the broader context of this period is critical to understanding important historical narratives and the experiences of Aboriginal people in the region.

Records attest to frequent conflicts and retaliations close to the study area. On May 1814, the *Sydney Gazette* reported several attacks on a property owned by George Cox at Mulgoa (c. 5 km northwest of the Northern Gateway precinct) by an unknown Aboriginal group (DPC n.d.a; *Sydney Gazette* 1814a). Following the clash on the Cox property, the *Sydney Gazette* reported that ‘nearly 400’ ‘mountain natives’ attacked the Shancomore property owned by J.T. Campbell (c. 6 km southwest of the study area) whereupon,

‘... the overseer was speared through the shoulder, several pigs were killed, one of which, a very large one, was taken away, together with a quantity of corn, and other provisions; the overseer’s wearing apparel, and cooling utensils’ (*Sydney Gazette* 1814a).

With each raid, European farmers became increasingly scared that their properties would be attacked. This heightened state of fear meant they began to guard their farms more aggressively. Moreover, as Europeans were often unable to distinguish between groups, they frequently blamed the wrong Aboriginal people and clans for attacks. As a result, retaliatory attacks often targeted innocent individuals.

The following month, the *Sydney Gazette* reported ‘another unhappy instance of the dreadful effects of a warfare with the natives of the interior’, whereby two children on the Daly property (c. 4 km west of the study area) were killed by another raid by an unidentified Aboriginal group from the Blue Mountains to the west (*Sydney Gazette* 1814b). A year later, another unidentified ‘body of natives between 30 and 40’ attacked the overseer of Westwood property owned by H. MacArthur (also c. 6 km southwest of the study area), and his wife and thereafter, ‘plundered the hut of five or six bushels of wheat, a steel mill, a sieve, musket and other property,’ after stealing a blanket from one of the stockmen on the property a few days earlier (*Sydney Gazette* 1815).

In 1816, another Aboriginal uprising was reported to have occurred in the Bringelly district where around 20–30 Aboriginal people ‘plundered’ the servant dwellings on the Pemberton property owned by G. T. Palmer (c. 4 km west of the study area) (*Sydney Gazette* 1816; RPS Manidis Roberts 2015, 20). The following day, a party of seven European men crossed the Nepean River in the hope of recovering the stolen property from the raid but were promptly ‘perceived and immediately encircled by a large body of natives’, resulting in a clash where four Europeans were killed, one was wounded and two escaped (*Sydney Gazette* 1816).

Some members of this unidentified Aboriginal group pursued the survivors of this party across the river and into the property of S. Fowler (adjacent to Pemberton farm to its south) ‘up to the farm residence’ (*Sydney Gazette* 1816). The next day, a group of 60 Aboriginal people attacked the Fowler property and plundered the residence, carrying away a ‘great quantity’ of standing corn and ‘all provisions whatever’ (*Sydney Gazette* 1816).

Conflict south of the study area, towards the Campbelltown area, was particularly devastating. Twice, in 1814 and 1816, Governor Macquarie ordered British men to take up arms and apprehend perceived trouble making Aboriginal men. The men who were captured were sent to Parramatta and Windsor Gaol (Liston 1988, 51). Eighteen captured children were also sent to the Native Institute at Parramatta. The military was also told to shoot anyone who resisted. When a stockman who worked for the Macarthur family at their property near Menangle led soldiers to a group of Dharawal people, the Aboriginal people fled. In response, the soldiers opened fire, killing an unknown number and capturing a fourteen-year-old boy (Liston 1988, 52).

These records refer to just some instances of the violence brought about by British colonisation, and they highlight the important resistance that Darug people mounted throughout the period.

8.2 Survival and continuing connection

By 1821, all of the land within the study area had become the subject of government land grants, with most of the area falling within a 6,710-acre grant made to John Blaxland in 1813 (Robinson 1953). To maintain their connection to Country, the Darug needed to find opportunities within the new economy. According to colonial observer Peter Cunningham, by 1827 groups of Aboriginal people on the Cumberland Plain were already beginning to live and work among the British, assisting on farms and with the harvest (Cunningham 1827, 25).

Historical sources also record traditional Aboriginal practices continuing throughout the first half of the nineteenth century, with various corroborees documented to have occurred on the property owned by John Macarthur (Liston 1988) and the Denbigh homestead in Camden (Hassell 1902; Kohen 1985). A corroboree that occurred at the Denbigh homestead in the mid-1820s, in particular, was recorded to have involved over 400 individuals (Hassell 1902).

After the upheaval caused by colonisation, there was a necessary degree of social restructuring, as groups came together to form new ones, which are recorded in historical sources left by observers. Of particular relevance to the study area was the 'South Creek' tribe, documented by William Walker in 1821 (Kohen 1993, 19). Another Aboriginal group was also documented in the 1828 Census at Mulgoa and other places near the present study area. The 'South Creek' tribe was recorded again in the 'Return of Natives' taken between 1832 and 1843 to provide information on names, numbers, 'tribes' and location of various Aboriginal groups in the wider Sydney region (Kohen 1993, 19). According to Backhouse (1843), the South Creek people lived on a property named 'Mamre' in Orchard Hills (c. 10km north of the study area) in 1835. Owned by Reverend Samuel Marsden and his son, Charles Marsden, Mamre farm was established as a site for early sheep breeding experiments, specifically in the importing and breeding of Merino sheep in Australia (DPC n.d.b; n.d.c). Backhouse (1843) observed that the South Creek people often stayed at the junction of South and Eastern Creeks on the property, and that they 'often assist in the agricultural operations of the settlers' (Keating 1996; Martin 1988, 80).

Oral history records also indicate that there were Aboriginal people living on the property of James Badgery named 'Exeter Farm' between Badgerys and South Creeks (AHIMS #45-5-215, 27 January 1978; Commonwealth 2016, 410; Hardy 1989, 19). Within the collective memories of his descendants and that of other farming families associated with this district, there appears to be a long-standing tradition of Aboriginal interactions with the site of Exeter Farm- not far from the present study area.

It is important to note that these connections to the region were maintained throughout the nineteenth century and to the present. Contemporary Aboriginal people in the district who claim descent from these ancestors continue to have an association with Badgerys Creek (pers. comm. Ms Sharyn Halls, 24 April 2015; Commonwealth 2016, 410). Accounts discuss contributions to agriculture and other industries, and oral histories recall rabbiting expeditions as late as the 1960s (letter from Colin Gale (DTAC) to Kerry Navin, 17 February 1997; Commonwealth 2016, 410). Today's Aboriginal community in the region includes Darug descendants, as well as a range of groups who have memories and histories connected to the area.

8.3 Regional archaeological context

The archaeological record on the Cumberland Plain is well documented by many academic studies, regional management studies and compliance-based cultural heritage assessments over the past 30 years. More than 7,000 sites have been recorded and registered on the Aboriginal Heritage Information Management System (AHIMS) database on the Cumberland Plain, reflecting both the wealth of the archaeological record and the number of archaeological investigations undertaken in this region. Consequently, the Cumberland Plain is the most intensively investigated archaeological landscape in Australia.

The most common site types (see **Appendix A.1 Site type information**) in the greater Sydney region are artefact scatters and isolated finds (Attenbrow 2010). The next most common site types are Potential Archaeological Deposits (PADs), rock shelters, middens, art sites, grinding grooves and culturally modified trees. The landscape of the study area strongly restricts the types of sites that are likely to be found, and it is unlikely that further research will discover any currently unknown rock shelters, art sites (engraved or carved) or middens. Instead, it is likely that further archaeological investigations within the study area will reveal the location of additional artefact scatters, PADs, culturally modified trees and possibly additional grinding grooves.

The distribution, density and size of sites largely depends on their environmental contexts. For example, middens are typically found near marine, estuarine and sometimes freshwater bodies. On the other hand, rock shelters are only found in areas of exposed sandstone escarpment, whereas grinding grooves are in areas of exposed flat bedded sandstone near water sources.

8.3.1 Early Aboriginal occupation and the Last Glacial Maximum (c. 30,000–18,000 BP)

Aboriginal occupation of NSW spans at least 45,000 years (Stockton and Holland 1974; Nanson et al. 1987; JMCHM 2005b, 107-125), although older dates have been claimed for artefacts and human remains found within the barrier sands of Lake Mungo in the Willandra Lakes Region (Bowler et al. 2003; Shawcross 1998). Within the Cumberland Plain, Aboriginal occupation dates back into the Pleistocene period (c. 2.58 million years ago to 11,700 years before present [BP]) as well. This evidence comes from radiocarbon dating of charcoal retrieved from excavated sites at Cranebrook Terrace, Penrith (41,700 years BP [ANU-4016]), Shaw's Creek K2 (14,700 BP [Beta 12423]) and RTA-G1, Parramatta (30,735 BP [Wk-17435]).

The climate gradually became warmer and wetter while sea levels rose at the end of the Last Glacial Maximum (LGM) and Last Glacial Period (LGP) around 15,000 BP (Severinghaus and Brook 1999) which marks the transition from the Pleistocene to Holocene epoch. From this period onwards, there is a more continuous archaeological record for the Sydney region (Attenbrow 2010, 153). A number of early occupation sites dating to the late Pleistocene/early Holocene have been found in deep stratified rock shelter deposits and within alluvial deposits, particularly on the margins of large rivers such as the Hawkesbury-Nepean and Parramatta Rivers (McDonald 2008, 39-40).

8.3.2 Intensification during the Holocene (c. 12,000 BP–Present)

The archaeological record indicates that significant and widespread changes occurred among Aboriginal cultures during the Holocene (Hiscock 2008). During this period, there appears to have been a decline in the use of silicified tuff as the preferred raw material and a greater use of other local materials. There also appears to have been a substantial growth, then decline, in the production and use of backed artefacts, as well as the introduction of ground-edged implements (with the peak period being approximately 4,000-1,000 BP). In addition, there appears to have been a considerable increase in archaeological evidence of human occupation as well (e.g., McDonald 2008, 36).

It is also likely that the technological changes and possible population increase were accompanied by broad

social changes. Hiscock and Attenbrow (2005) have suggested that changing climate conditions after c. 3,000 BP stimulated a change in foraging practice that may have incorporated a shift towards higher mobility. On the other hand, McDonald (2008, 40) suggests that by about 4,000 BP, people occupied smaller territories and used residential bases on a more permanent basis, as well as defined foraging ranges using annual and extended cycles.

8.4 AHIMS search results

The AHIMS database is presently managed by Heritage NSW – DPC and includes spatial and compositional information of Aboriginal sites (i.e., objects, places and declared Aboriginal Places) previously recorded through academic and compliance-based cultural resource management projects associated with modern various developments.

To cover the full extent of the study area, two extensive searches of the AHIMS database were undertaken on 16 June 2020. Land surrounding the study area was included within the search parameters to gain information on the regional archaeological context and inform predictive statements regarding the archaeological potential of the study area. AHIMS search area 1 included an area of land at datum GDA, zone 56, eastings 284800 – 298050, northings 6243390 – 6246890 with a buffer of 0 metres. AHIMS search area 2 included an area of land at datum GDA, zone 56, eastings 284800 – 298050, northings 6241150 – 6243400 with a buffer of 0 metres.

The AHIMS search results identified 191 registered sites. There are 20 standard AHIMS site features and a site can include more than one feature. The frequency of AHIMS site features is included in **Table 13** below.

Table 13 - Summary of AHIMS features

Site Feature	Number	Percentage
Artefact	158	82.72%
Grinding Groove	1	0.52%
Art (Pigment or Engraved)	3	1.57%
Potential Archaeological Deposit (PAD)	11	5.76%
Artefact, Potential Archaeological Deposit (PAD)	12	6.28%
Modified Tree (Carved or Scarred)	6	3.14%
Total	191	100.00%

A large number of sites were identified across the landscape and concentrated within areas where relatively low amount of land disturbances has occurred (**Figure 8**). The wide distribution of artefact sites across various terrains in the landscape is indicative of their nature as part of the wider 'background scatter' of artefacts across the landscape within the Aboriginal archaeological record.

Culturally modified trees have been identified within areas where remnant vegetation remains extant (e.g., along creek lines and away from urban areas). Grinding groove sites have been identified close to creek lines due to the need for water in the grinding process.

There a total of eight AHIMS registered sites located within the study area (**Figure 9**).

- B17 (AHIMS ID 45-5-2779)
- B 18 (AHIMS ID 45-5-2620)
- B 19 (AHIMS ID 45-5-2621)
- B 20 (AHIMS ID 45-5-2622)
- B 21 (AHIMS ID 45-5-2639)
- B 22 (AHIMS ID 45-5-2640)
- B 23 (AHIMS ID 45-5-2641)
- B 38 (AHIMS ID 45-5-2628)

B 17 (AHIMS ID 45-5-2779)

The site was recorded in 1996 as an open artefact scatter, measuring 50 metres x 15 metres. The site was located across a spur line, extending down to the upper slope. The was comprised of two complete flakes of silcrete and two flaked pieces of quartz and silcrete. B 17 was identified within an exposure associated with a vehicle track and animal digging. As a result, the site was assessed as being in poor condition.

B 18 (AHIMS ID 45-5-2620)

The site was recorded in 1996 as an isolated artefact. Limited information was included on the site and associated record. As a result, the landform context, extent and nature of the site is unknown.

B 19 (AHIMS ID 45-5-2621)

The site was recorded in 1996 as an open camp site. Limited information was included on the site and associated record. As a result, the landform context, extent and nature of the site is unknown.

B 20 (AHIMS ID 45-5-2622)

The site was recorded in 1996 as an open camp site. Limited information was included on the site and associated record. As a result, the landform context, extent and nature of the site is unknown.

B 21 (AHIMS ID 45-5-2639)

The site was recorded in 1996 as an open artefact scatter, measuring 50 metres x 15 metres. The site was located on a valley floor, associated with a vehicle track and animal digging. The assemblage was predominantly comprised of silcrete (n=7) with lesser numbers of quartzite (n=2), quartz (n=1), and mudstone (n=1). Artefact types were predominantly complete flakes (n=9) with lesser numbers of flaked pieces (n=2). One of the complete flakes was found to be a product of bi-polar flaking. It was assessed by Navin Officer (1996) that the site was likely to contain additional sub-surface resources. Any additional artefacts in the area were captured as part of the Thompsons Creek site (AHIMS ID 45-5-5491).

B 22 (AHIMS ID 45-5-2640)

The site was recorded in 1996 as an open artefact scatter. The site is comprised of three complete flakes, two of silcrete and one of mudstone. B 22 was located on a vehicle track on a mid-slope.

B 23 (AHIMS ID 45-5-2641)

The site was recorded in 1996 as an open artefact scatter, located on a valley side slope. The site assemblage was comprised of two complete flakes of silcrete, one bi-polar flake of silcrete and one flaked piece of quartz.

B 38 (AHIMS ID 45-5-2628)

The site was recorded in 1996 as an artefact site. Limited information was included on the site and associated record. As a result, the landform context, extent, and nature of the site is unknown.

Figure 8 Results of extensive AHIMS search

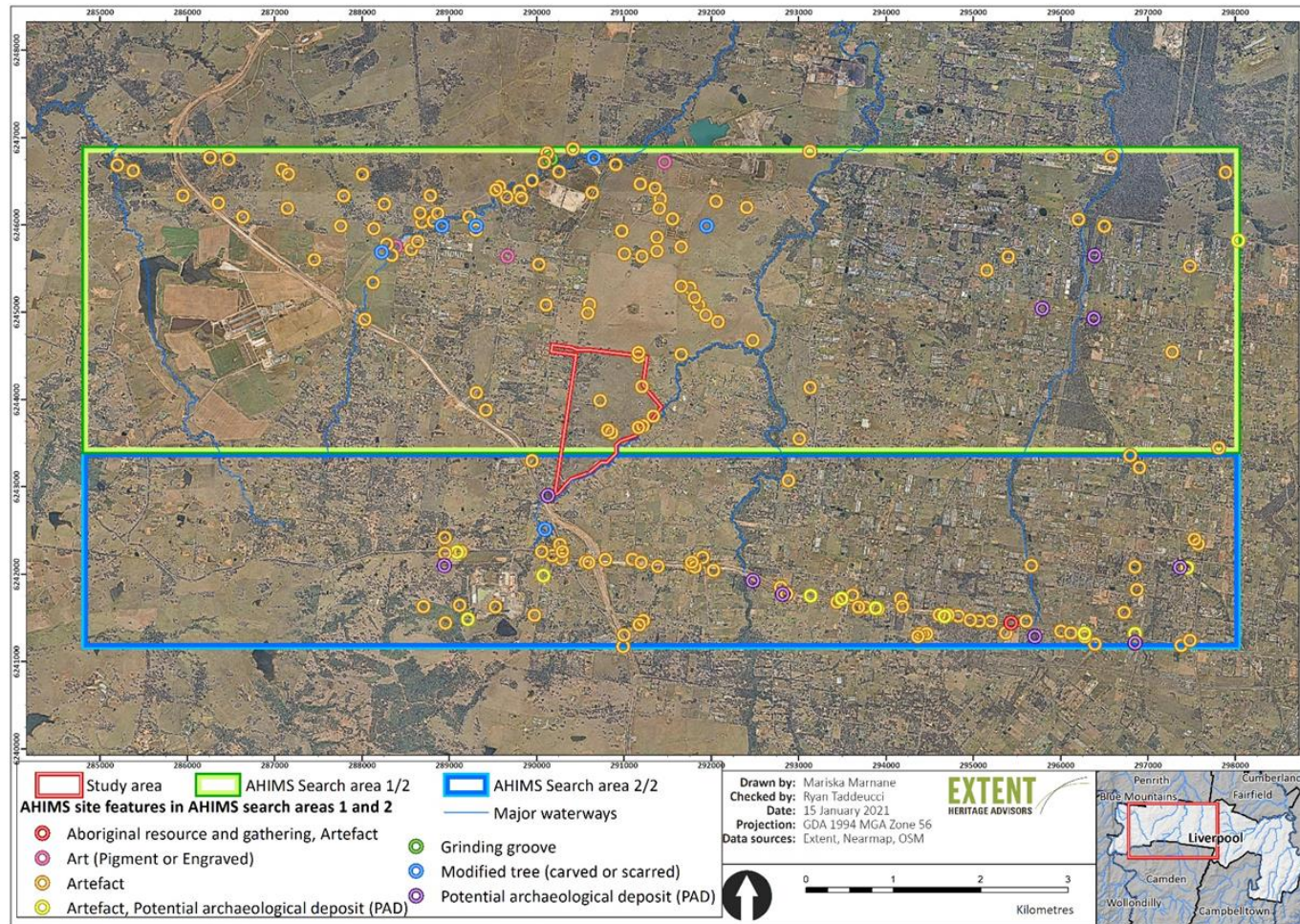
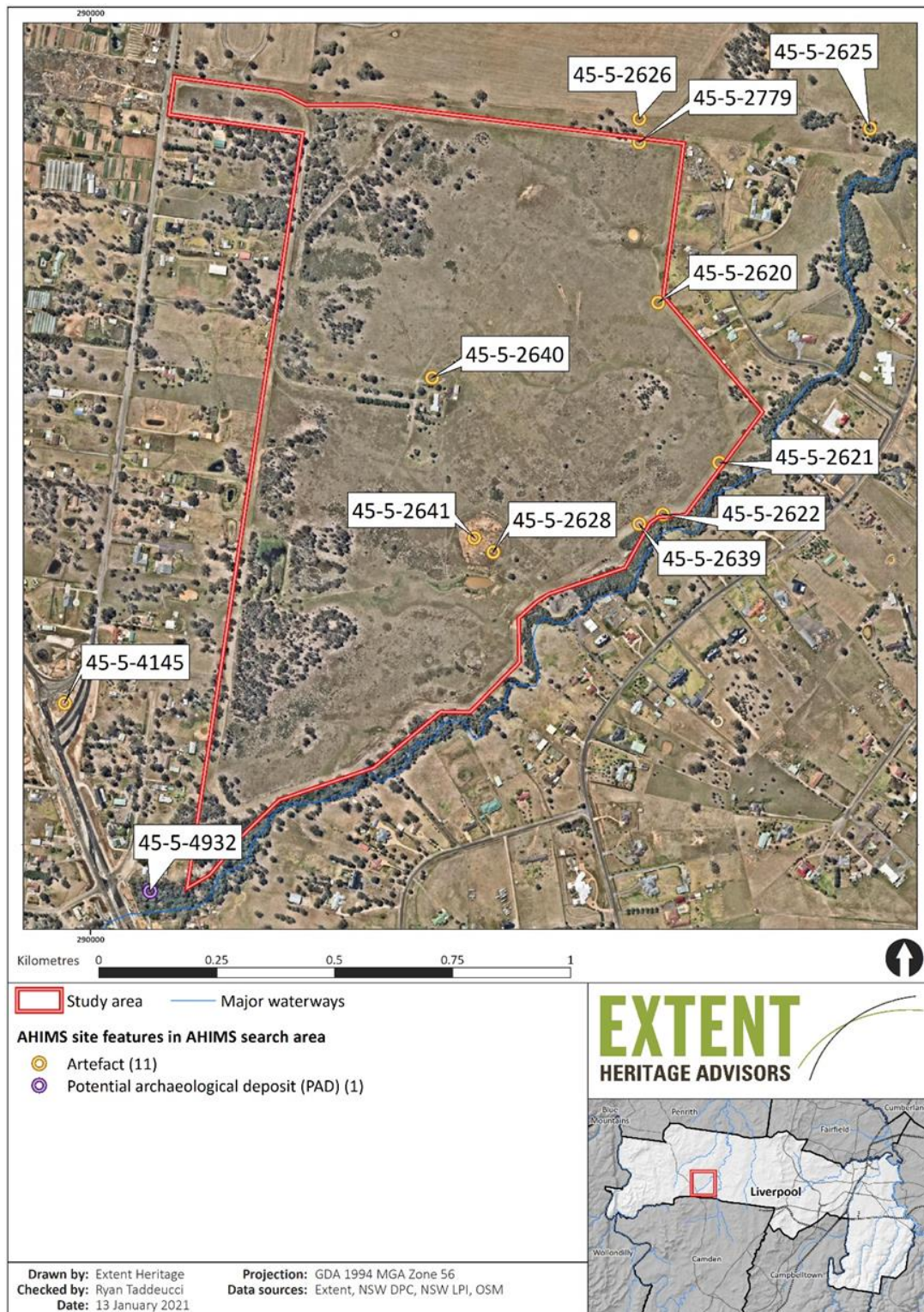


Figure 9 Location of AHIMS sites already registered within the study area



9 Review of previous studies

The previously completed assessments (outlined below), comprising both publicly available reports and unpublished reports, have identified the presence of 'open camp' or 'shelter' and art sites, areas of rich natural resources for subsistence and raw material sources for stone tool manufacture. In general, the raw material utilized in the manufacture of stone tools appear to be predominantly silcrete, with lesser utilisation of chert, quartz, quartzite, sandstone, petrified wood and mudstone/tuff. Edge-ground artefacts and grinding grooves were found along South Creek as it passes near Badgerys Creek (Haglund 1978), while another edge-ground axe was recently recovered with other stone flakes during another survey at Mamre Road near Kemps Creek (Artefact 2019). A fragment of a possible 'microblade' was also identified during a survey of a locality at Badgerys Creek by Kohen (1991, 14). Two 'backed implements' were also identified during another survey on a spur above South Creek near Ramsay Road (Brayshaw McDonald 1992, 9), whereas an indurated mudstone scraper was recovered during test excavations at the Twin Creeks Estate near South Creek (Dominic Steele 2007).

9.1 Liverpool Rural Lands Study. Aboriginal Archaeology: Prediction and Management (Brayshaw McDonald 1994)

As part of a wider rural lands study conducted by Liverpool Council, Brayshaw McDonald (1994) was commissioned by Don Fox Planning Pty Limited to determine and predict the state of the Aboriginal archaeological resource in the rural lands west of Liverpool. In doing so, Brayshaw McDonald (1994) determined that 'an extensive distribution of archaeological traces of their [Aboriginal] occupation still exists there' despite the significant attrition of these traces from historical land clearance and agricultural activities.

Brayshaw McDonald predicted that 'there will be some potential for the deeper portions of these [archaeological deposits] to have escaped disturbance, especially in alluvial areas where archaeological deposits may be relatively deep.' Conversely, archaeological deposits on hillslopes and ridges are likely to be relatively 'more shallow' and hence, the impact to deposits at these locations are 'likely to be severe since the artefact-bearing layer there is more likely to be wholly within the plough zone' (Brayshaw McDonald 1994). They concluded that alluvial terraces in rural Liverpool (i.e., the southern portion of the present study area) are likely to have the best potential for containing intact open sites.

9.2 Archaeological Investigations at Twin Creeks Estate (Dominic Steele 1999; 2001; 2004; 2007)

Dominic Steele (1999) undertook a series of archaeological investigations of an approximately 350 ha parcel of land situated between Luddenham and Mamre Roads at South Creek, Luddenham (i.e., the north-eastern portion of the present study area) in preparation of proposed plans for the Twin Creeks Estate recreational and residential development in the area.

Based on the distribution of these sites in this locality, Dominic Steele observed that sites along Cosgroves Creek and its surrounding flats appears to be ‘well dispersed along the watercourse and generally possess low artefact densities,’ and that it is ‘unlikely that archaeological deposits either substantial in extent, significant in composition or undisturbed in context will be encountered’ along this creek. Hence, Dominic Steele concluded that the confluence of various creek lines at the South Creek locality ‘represented an important focus of repeated Aboriginal use and occupation’ due to ‘the concentrations of archaeological material in this area.

Subsequent test excavations conducted in this locality did not recover any significant undisturbed archaeological remains as only low-density distributions of artefacts were recovered (Dominic Steele 2001; 2004). These results were interpreted to reflect ‘casual Aboriginal use of the local landscape and associated loss or discard of flaked stone items, whilst occasional knapping may also have been undertaken in the past’ (Dominic Steele 2001; 2004). This interpretation was confirmed by further test excavations conducted at a PAD (LEC 10/ TCE PAD 1) located within the estate (Zones F and G) in 2004 (Dominic Steele 2007).

Dominic Steele (2004) concluded that ‘the principal focus of past Aboriginal visitation and use of the landscape’ is ‘sited at the confluence of South, Badgerys and Kemps Creeks’ and the associated slopes that extend away from these watercourses (i.e., the north-eastern portion of the present study area). According to Dominic Steele (2004), this locality bears extensive evidence for Aboriginal silcrete extraction, utilisation (e.g., de-cortication and heat treatment), and flaked stone tool manufacture and maintenance.

9.3 South West Growth Centre. Preliminary Aboriginal and Historical Heritage – Gap Analysis (AHMS 2015a)

In 2015, AHMS (presently Extent Heritage) was commissioned to undertake an Aboriginal and Historic Heritage Gap Analysis of the South West Growth Centre (SWGC) as part of an update to the SWGC structure plan. In doing so, AHMS (2015, 39) concluded that the archaeological record of the SWGC (incorporating the western portions of the present study area) is dominated by surface and sub-surface artefactual material generally found within 200 metres of the larger river systems in the region. In particular, the distribution of these sites is more variable in areas where creek lines are in their upper reaches and the geomorphology is more undulating. Furthermore, elevated areas up to 500m from major creek banks have been shown to bear archaeological materials as well.

In addition, the predictive modelling developed by AHMS concluded that there is high potential for Aboriginal objects/sites to occur along the banks of South, Kemps, Badgerys, Lowes, Thompsons and Rileys Creeks. In particular, the areas to the north of South and Kemps creeks, along the northern stretches of Thompsons Creek and at the confluence of South, Rileys and Lowes creeks are all considered by the model to have the highest potential for significant cultural material. This is because these areas have a higher frequency of elevations (e.g., hills, ridgelines, terraces, etc) and there has been ‘a general absence of development’ (AHMS 2015, 39).

9.4 Mamre Road Precinct Aboriginal Heritage Study (EMM 2020)

EMM Consulting (2020) was engaged to undertake an Aboriginal Heritage Study of the Mamre Road Precinct (i.e., the north-eastern portion of the present study area adjacent to Twins Creek Estate) as part of a broader masterplan to guide the industrial development in this locality.

Desktop and field survey investigation of this precinct by EMM demonstrated that the area is comparable with the wider cultural landscape of the Cumberland Plain. Significantly, all the sites identified within the Mamre Road Precinct are observed to be mainly located on the edges of main creek systems and/or on a ridge line to its north. All of the sites are also characterised by isolated objects and/or low-density artefact scatters (usually consisting of <10 artefacts), and excavations at some of these sites indicate that they are primarily found in shallow duplex and/or fabric contrast soil profiles (c. <30 cm deep), with rare examples extending to depths of 60-80cm.

EMM (2020) identified areas of archaeological potential in buffer zones along the banks of Kemps Creek (100sbuffer), South Creek (100 metre buffer), and Ropes Creek (200 metre buffer). Elevated areas within the buffer zones along these creeks (e.g., levees, terraces, and ridgelines) were considered in the study to have a greater potential for significant cultural material to be present.

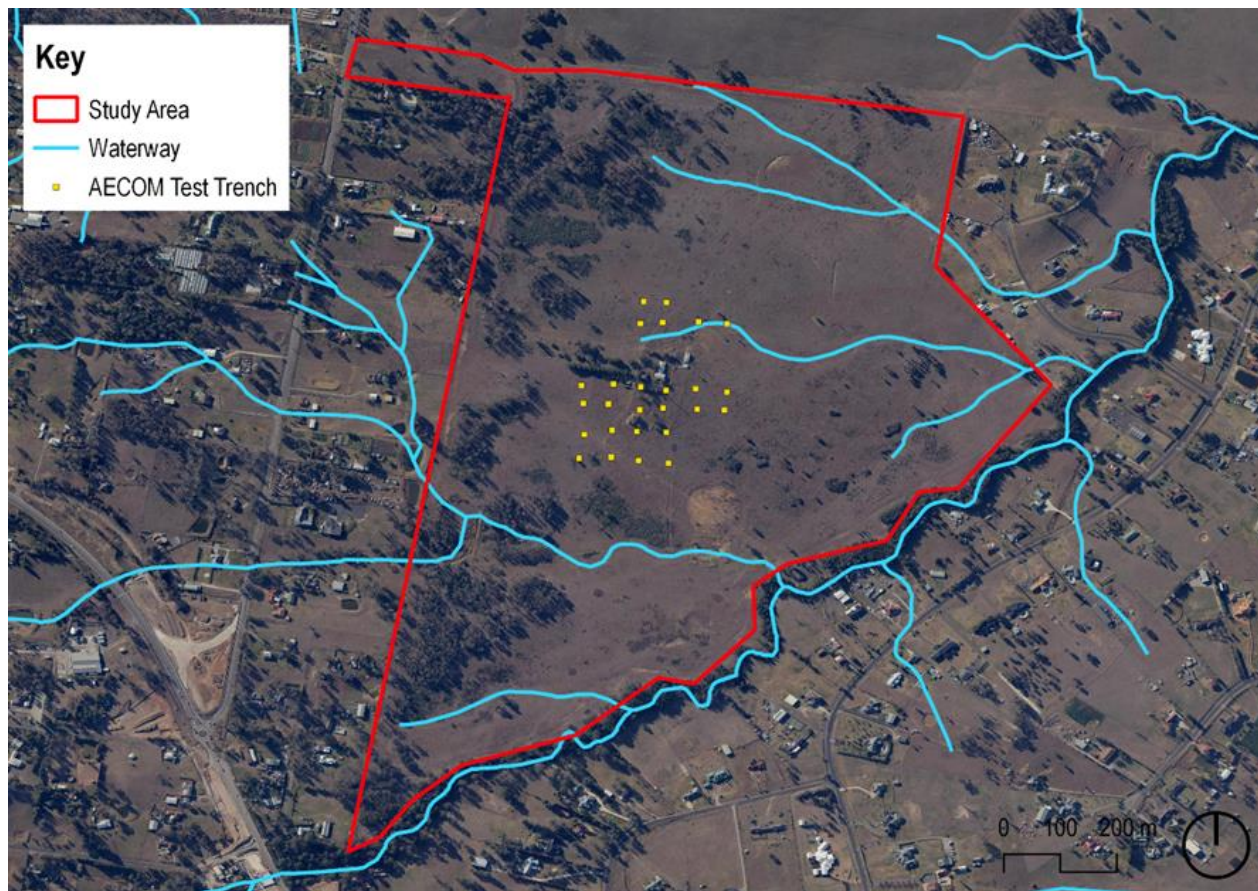
9.5 Sydney Metro – Western Sydney Airport (AECOM 2021)

AECOM (2021) completed an archaeological report for the Western Sydney Airport, which extended into the current study area. As part of the assessment, an archaeological survey of a portion of the current study area was completed in February 2020. An objective of the survey was to re-identify an artefact scatter, AHIMS ID 45-5-2640 (B 22), previously identified within the study area. During the survey, however, no artefacts were detected. AECOM noted that the artefacts were likely obscured by dense vegetation and that the site was still likely to be valid. No additional surface artefacts were identified during the survey, but the land surrounding AHIMS ID 45-5-2640 was assessed as demonstrating potential to contain subsurface artefacts.

A total of 26 test pits (measuring 500 mm x 500 mm) were excavated by AECOM in the centre of the study area, surrounding the main station building complex (**Figure 10**). No Aboriginal objects were recovered from the test excavation program. As result, the land surrounding AHIMS ID 45-5-2640 was assessed by AECOM as demonstrating low archaeological potential.

Figure 10 Location of study area

Note: Where test excavations were undertaken by AECOM as part of the Sydney Metro – Western Sydney Airport project
Source: AECOM 2021, Figure 4-1d



9.6 Historical land use and disturbance

Early land grants covering the study area were given to Thomas Laycock Junior, who was given a 600-acre lot known as Cottage Vale in 1818. The study area was utilised for agricultural activities undertaken by Laycock Junior and subsequent landowners including John Thomas Campbell and Alfred Kennerley. These activities most likely revolved around cattle breeding. For example, Campbell was a successful farmer and pastoralist who bred cattle and horses. The property was also leased by the Australian Agricultural Company from 1825, Australia's oldest agricultural and pastoral development company, established in 1824.

Across the twentieth century, the site remained in private hands and with limited developments. It continued to be utilised for agricultural pursuits, including heavy ploughing (**Figure 11**). Between 1952 and 1955, the Royal Australian Air Force (RAAF) Radio Receiving Station was constructed within the study area (**Figure 12-Figure 13**). The site, also known as RAAF Bringelly, remained in use until the late 1990s (**Figure 13**).

The RAAF station comprised several structures. A main receiving tower and receiving station buildings were constructed in the centre of the site. Staff houses were built along the entryway into the complex (**Figure 14**). Additional structures built included lampposts, water tank and water tower, an incinerator, rain garage, vehicle garages, and two large aerials with buried radial lines located within octagonal paddocks.

In addition, an array of concrete pads that anchored light aerals were set up across the entirety of the site (**Figure 15**). Each anchor possessed at least three underground guy-wires. Several of the pads have been mapped but not all (**Figure 16**).

Large amounts of earthworks have also been undertaken across the site. These were identified in the form of dams, drainage channels, grading for RAAF infrastructure, and general landscaping (**Figure 16**). Finally, several roads and tracks through the study area, seen in the 1965, 1986 and present aerals (**Figure 11- Figure 13**).

Figure 11 1947 aerial of the study area

Source: Nearmaps with Extent Heritage additions 2021



Figure 12 1965 aerial of the study area

Source: Nearmaps with Extent Heritage additions 2021



Figure 13 1986 aerial of the study area

Source: Nearmaps with Extent Heritage additions 2021

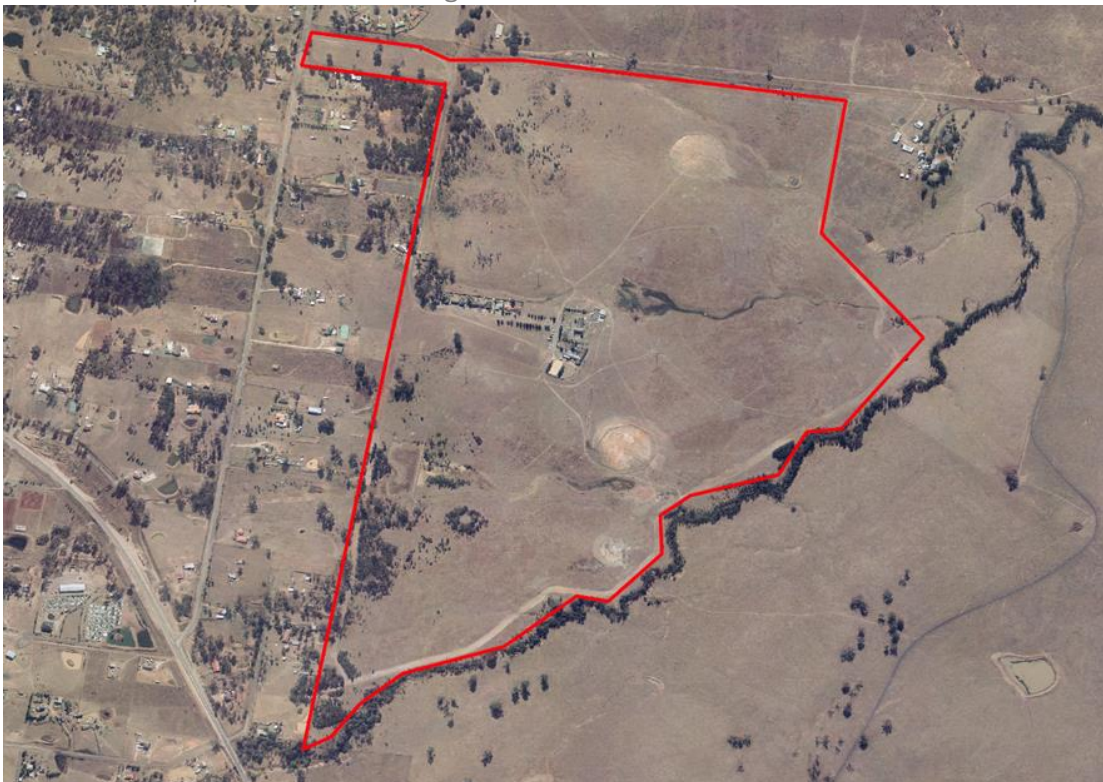


Figure 14 Layout of some structures built as part of the RAAF Bringelly site

Source: ERM 2010, Figure 3.5

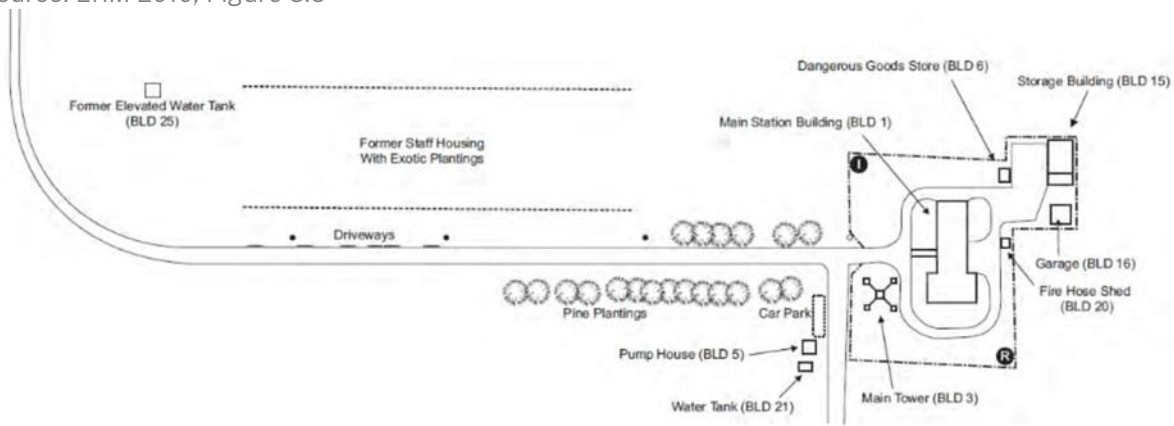


Figure 3.5 RAAF Bringelly Site Layout (ERM 2010)

Figure 15 Example of some concrete pads as seen on the 1986 aerial, located to the east of the southern antenna

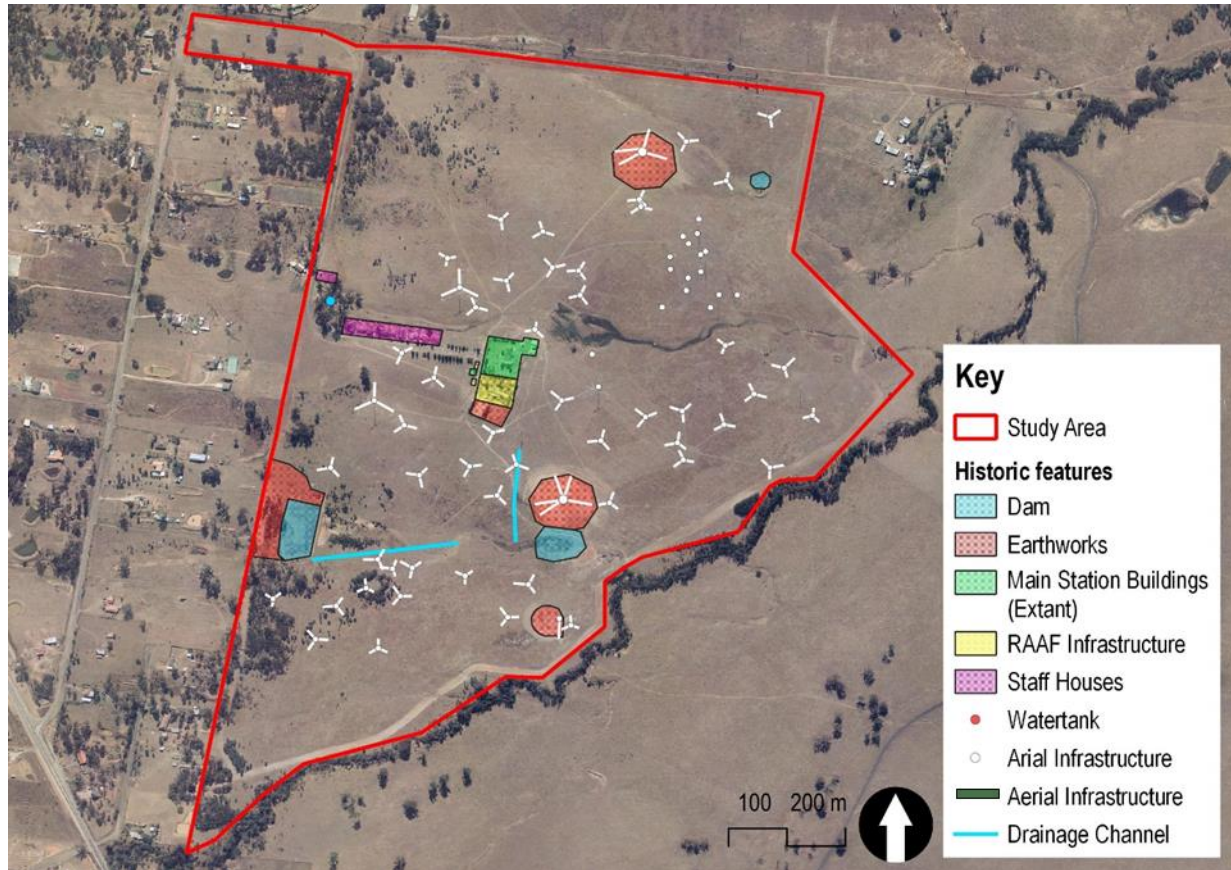
Source: Nearmaps with Extent Heritage additions 2021)



Figure 16 Location of some structures built across the study area during its use as Bringelly RAAF base

Note: Not all the concrete pads have been identified and marked on this map

Source: Extent Heritage 2021



10 Predictive model

Archaeological predictive models are used to identify and map areas where archaeological resources are likely to survive. The models are used in development and land use planning contexts to strategically identify Aboriginal cultural heritage risks. Each predictive model consists of a series of statements about the nature and distribution of evidence of Aboriginal land use that is expected in the subject site. These statements are based on the information gathered regarding:

- landscape context and landform units;
- ethnohistorical evidence of Aboriginal land use;
- historical disturbance and landscape modification;
- results of previous archaeological work in the vicinity of the subject site;
- historical accounts of Aboriginal occupation, and landscape character; and
- predictive modelling proposed in previous archaeological investigations.

A number of predictive models for patterns of Aboriginal occupation and site locations across the Cumberland Plain have been developed over the years (e.g., Dallas 1989; Haglund 1980; Kohen 1986; Smith 1989). These models have since been refined by subsequent studies (e.g., JMcDCHM 1997, 1999, 2001; McDonald 1999), the most comprehensive of which is the study formulated by White and McDonald (2010), which identifies a key set of patterns found throughout the Cumberland Plain.

10.1 Cumberland Plains Predictive Model

The Cumberland Plain Predictive Model was developed by Jo McDonald Cultural Heritage Management (White and McDonald 2010) from evidence collected in several Aboriginal archaeological excavations undertaken across the Cumberland Plain, and in particular the Rouse Hill Development Area. The Cumberland Plain Predictive Model posits that the nature of Aboriginal sites across the Plain varies according to both landform and landscape. Stream order is also a significant factor, as the model makes assumptions that Aboriginal people preferred to occupy areas with more permanent and predictable water supplies. Finally, the model also considered access to additional resources such as raw lithic material, though this factor does not appear to have influenced artefact distribution. Further development of this aspect of the model is required. The following summary outlines factors that may determine the density of Aboriginal sites within an area of the Cumberland Plains:

General

- In any landscape location within the Cumberland Plain there exists the possibility that a background scatter of Aboriginal artefacts will exist. This refers to objects deposited as part of one-off manufacturing and/or use and does not correlate with a landform or more permanent activity area. These areas are unlikely to contain associated subsurface archaeological deposits.

Landform

- Fewest artefacts are found on upper slopes (the upper third of a slope) and ridge tops (the top of a slope, forming watersheds). Artefacts on upper slopes and ridge tops tend to be presented as sparse, discontinuous scatters.
- Artefact densities increase toward lower positions in valleys — the mid slope and lower slope (the middle and bottom third of a slope). Lower slopes associated with higher order streams produce the highest artefact densities. The density of artefacts found on mid-slopes did not significantly vary with stream order.
- Elevated terraces, especially those overlooking higher order watercourses, tend to contain high artefact densities that indicate evidence of more permanent or repeated occupation in these areas.
- Creek flats tend to show low artefact densities. As creeks flats flood, artefacts may have been lost by erosion or not a preferred location for occupation.

Stream order

- Small and/or ephemeral water supplies (namely first order creeks) may have been able to support only small numbers of people and/or transient occupation. Large and/or permanent water supplies may have supported large numbers of people and/or long periods of occupation indicated by continuous scatters.
- First order streams have low average artefact density and sparse artefact distribution. Archaeological evidence will present as sparse background scatters with densities of approximately one artefact per metre squared (m^2) expected.
- Second order streams have a more continuous artefact distribution. Archaeological evidence will present as sparse but focused activities, including one-off camp locations or single event knapping, with artefact densities of approximately 6.5 per m^2 expected.
- Third order streams also present a more continuous artefact distribution as a result of more frequent and repeated occupation by small groups. Archaeological evidence of knapping floors that may be reused, and more concentrated activities will be present. Artefact densities of approximately eight per m^2 are expected.
- Fourth order streams have the highest density of artefacts. Sites will be complex and may be stratified. Artefacts associated with these sites may show less use of rationing strategies as people may have remained in the same location for several days, or even weeks. Evidence of the caching or raw materials may also be present. Artefact densities of approximately fourteen per m^2 will be expected.
- Creek junctions may be a focal location for activities, with the confluence of higher order streams likely generating more dense sites.

Distance from water

- The highest artefact densities associated with fourth order landscapes were identified 51 to 100 metres from the watercourse.
- The highest artefact densities associated with second order landscapes were identified within 50 metres of the watercourse.
- First order watercourses show no significance in artefact distribution with distance from water.

Aspect

- On lower slopes associated with fourth order streams, artefact densities are higher on slopes facing north and north-east, than on slopes facing west.
- On upper slopes, aspect does not appear to significantly affect artefact distribution.

10.2 Summary

Using the above Cumberland Plain Predictive Model (McDonald and White 2010; McDonald 1997), archaeological evidence of transient movement across the landscape is likely to be present across the site in the form of low-density background scatters and isolated artefacts. Isolated artefacts and scatters identified during surface surveys across the site are likely more easily identified in areas with high visibility and limited vegetation overgrowth. These areas include roads/tracks and cleared areas. In areas of disturbance such as these, the presence of artefacts is not necessarily indicative of further subsurface archaeological sites.

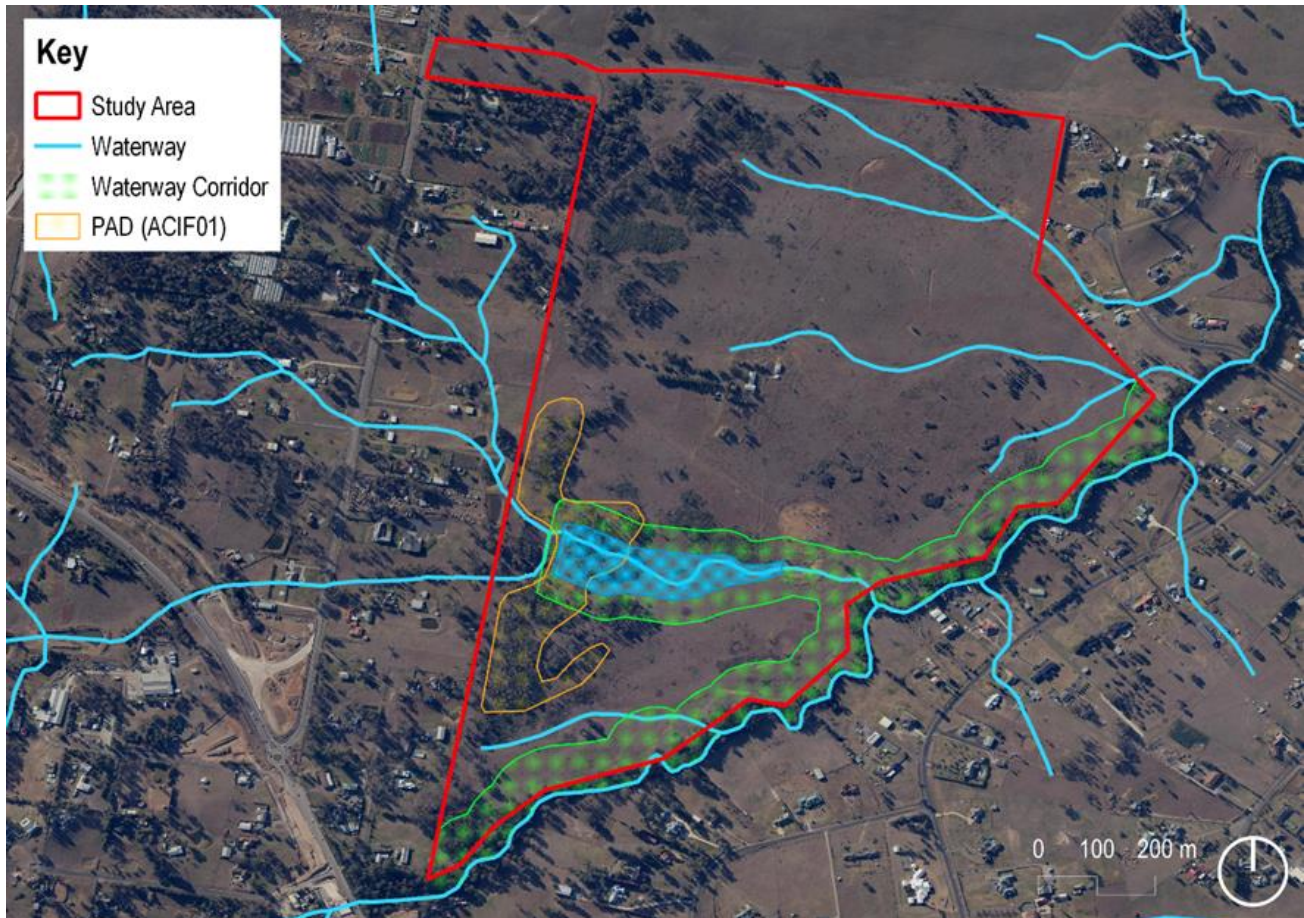
Several waterways run through the study area. The waterways in the northern half of the site comprise non-perennial first and first order creeks. These waterways do not represent permanent supplies of fresh water. Indeed, several of the channels are subtle and shallow. As a result, they are not likely to have supported permanent or repeat-occupation sites.

Two more significant waterways are associated with the study area. Moore Gully, running east to west across the southern portion of the study area, is a more significant third order waterway. However, modern development across the site, associated with agriculture, damming, and the RAAF site, may have significantly altered the natural watercourse. Secondly, Thompsons Creek, is a fourth order waterway that bounds the eastern edge of the study area although it is outside the project boundary.

Based on the stream order model within the Cumberland Plain Predictive Model, a focus on test excavations revolved around Moore Gully and Thompsons Creek. Notably, the model suggested that lower slopes associated with higher order streams produce the highest artefact densities. The buffer around Moore Gully was increased to capture the periphery of the waterlogged area. The alluvial nature of the south creek soil landscape provided further opportunity for recovering deep stratified deposits.

Moreover, the model suggested that the highest potential for artefacts associated with fourth order landscapes occur within 51 to 100 metres from the watercourse. These flat terraces overlook the waterway and are not likely affected by flooding making them ideal site locations. As most of the eastern boundary of the study area is located at 50 metres or less from the watercourse, the predictive model put this high-density area within the project boundary. In addition, the confluence between Moore Gully and Thompsons Creek also falls just outside the study area and may present evidence of an occupation site (McDonald 1997, 56-57).

Figure 17 Areas of potential identified along Moore Gully and Thompsons Creek



11 Survey Methodology

11.1 Aims

The aims of the archaeological survey were to:

- Record a representative sample of all material traces and evidence of Aboriginal land use visible on the ground surface or visible as features.
- Identify those areas where it can be inferred that material traces or evidence of Aboriginal land use have a likelihood of being present under the ground surface (PADs).

11.2 Survey personnel

The archaeological survey was completed on 7 December 2020. The survey was directed and supervised by Ryan Taddeucci (Senior Heritage Advisor, Extent Heritage) with assistance from Cameron Neal (Research Assistant, Extent Heritage). See **Table 14** for a full list of survey participants.

Table 14 - Participants in archaeological survey

Name	Organisation	Role
Ryan Taddeucci	Extent Heritage	Survey supervisor
Cameron Neal	Extent Heritage	Survey assistant
Darren Duncan	Gandangara Local Aboriginal Land Council	Site officer
Tylah Blunden	Darug Custodian Aboriginal Corporation	Site officer
Rodney Gunther	Waawaar Awaa Aboriginal Corporation	Site officer
Mollie Saunders	Wurrumay Pty Ltd	Site officer

11.3 Survey sampling strategy

Pedestrian survey of the study area was completed by a survey team of six, in accordance with the Code of Practice. The study area was divided into six Survey Units (SUs), based on landform and access, these units were numbered SU1 – SU6 (**Figure 18**). The overall strategy was to complete a full coverage survey, where

possible. A handheld Global Positioning System (GPS) was used to track the path of the survey team and record the coordinates of survey transects, as well as the location of key features (disturbances, areas of archaeological sensitivity/potential). The coordinate system projection used for all site recording was GDA94 MGA 56.

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. Full details of each SU are provided in **Section 13.1**

All ground exposures were examined for Aboriginal objects (stone artefacts, imported shell, or other traces of Aboriginal occupation). An attempt was made to identify and examine stone outcrops.

11.4 Survey procedure

Survey unit 1

An attempt was made to complete a full coverage survey of SU1 by a team of six people, utilising 24 parallel transects spaced 30 metres apart. However, a full coverage survey of SU1 could not be completed due to dense, impenetrable vegetation located in the northwest portion of SU1 and a large soak located in the southern portion of SU1.

Survey unit 2

A full coverage survey of SU2 was attempted by a team of four people, utilising four parallel transects spaced 30 metres apart. However, dense impenetrable vegetation was present across the northeast portion of SU2 which restricted access.

Survey unit 3

A full coverage survey of SU3 was completed by a team of two people, utilising four parallel transects spaced 30 metres apart.

Survey unit 4

A full coverage survey of SU4 was completed by a team of six people, utilising six parallel transects spaced 30 metres apart.

Survey unit 5

A full coverage survey of SU5 was completed by a team of six people, utilising six parallel transects spaced 30 metres apart. Due to the small size of SU5, one of the transects completed as part of the SU4 survey was repeated.

Survey unit 6

A full coverage survey of SU6 was completed by a team of six people, six transects spaced 30 metres apart. Due to the irregular shape of SU6, the transects were not parallel, and converged at the southernmost part of SU6.

11.5 Site definitions 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.

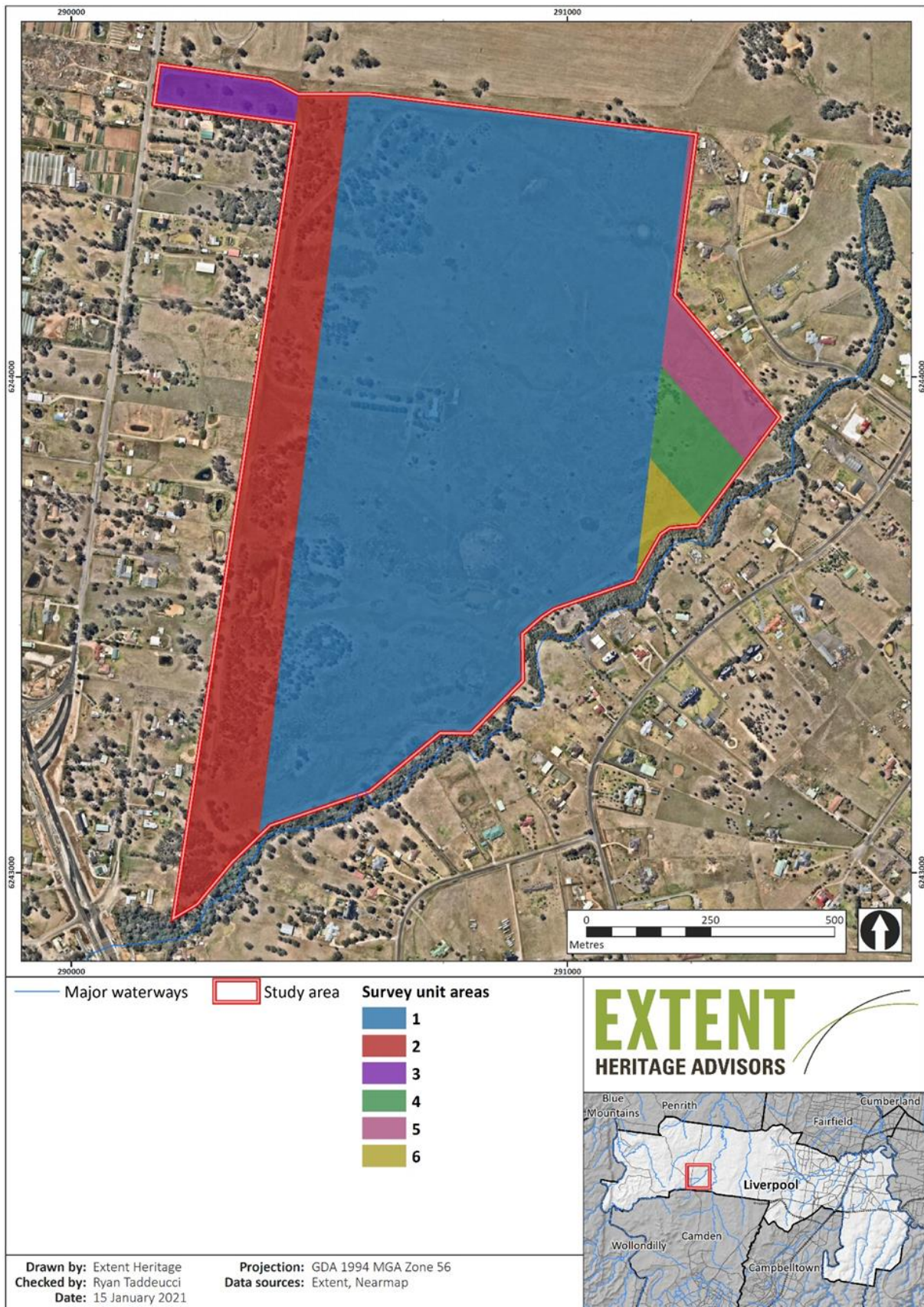
The Heritage NSW – DPC guidelines state that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- 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.

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

Figure 18 Location of survey units



12 Survey Results

12.1 Description of survey units

Survey unit 1

SU1 covers the majority of the study area and is comprised of 85.89 hectares (ha) of land. SU1 is dominated by dense grassland, with occasional exposures associated with utilities and vehicle tracks. The land slopes gently upwards towards a spur line in the north and downwards towards Thompsons Creek in the south.

The survey unit has been subject to historic land clearance which has removed native vegetation. At the time the survey was completed, the majority of SU1 was covered in dense seasonal grasses (**Figure 19**). The grasses along the eastern portion of SU1 had been cut to establish a vehicle access track. The northwest portion of the survey unit was covered in dense, impenetrable shrubbery. Dense vegetation restricted surface visibility. The vehicle tracks showed some erosion.

Concrete footings were identified and interpreted as a remnants of RAAF light aerial infrastructure (**Figure 20**). A large dam was identified in the southern portion of the study area, immediately east of an ephemeral drainage line (Figure 21). Recent inundation of the study area had resulted in the creation of a large swamp area, along the drainage line, to the west of the dam. A structure and transmission tower had been established in the centre of SU1, 200 metres north of the dam and soak (**Figure 22**).

One previously unregistered Aboriginal site, ACAS01 (AHIMS ID 45-5-5481), was identified in the southern portion of SU1, associated with an area of erosion from a vehicle track. Five registered AHIMS sites are located within SU1. Nine previously unrecorded Aboriginal objects were identified at the location of B 23 (AHIMS ID 45-5-2641). The remaining four AHIMS registered sites could not be relocated (see **Section 12.3.3**).



Figure 19 View west from the northeast corner of SU1



Figure 20 View of concrete block on western portion of SU1

Note: Interpreted as a component of underground storage facility



Figure 21 View south of dam and associated soak



Figure 22 View west of overseas telecommunications radio station complex located in the centre of SU1

Survey unit 2

SU2 was located along the western edge of the study area and was predominantly comprised of dense shrubbery and a north-south oriented track along the western edge (Figure 23). The dense vegetation restricted surface visible to the vehicle track, where one isolated artefact was identified (ACAS02 / AHIMS ID 54-4-5480). The underlaying soil in places was found to be a plastic clay, and is unlikely to contain additional, subsurface archaeological material (Figure 24). Across most of the survey unit, however, the soil was a thick clay loam typical of the Blacktown soil landscape. The northern portion of SU2 included a sealed road constructed to facilitate access to the overseas telecommunications radio station complex. It is likely that the identified artefacts were washed into SU2 from the east, and this area is considered to be an area of PAD (ACIF01 / AHIMS ID 45-5-5480).



Figure 23 View north of SU2 from the south



Figure 24 View east of exposure in the centre of SU2

Survey unit 3

SU3 was located in the northwest portion of the study area and covered in manicured grass which reduced surface visible. Concrete footings were identified in SU3 and was interpreted as remains of RAAF light aerial infrastructure (Figure 25). SU3 has been utilised as the primary entry and exit for the study area, and

as a result has been disturbed by vehicle usage and the establishment of a sealed road (Figure 26). No Aboriginal objects were identified within SU3.



Figure 25 View of concrete block on western portion of SU3. Interpreted as part of RAAF aerial infrastructure



Figure 26 View wets of sealed road which runs along the northern portion of the study area, facilitating access to the study area

Survey unit 4

SU4 was located in the eastern portion of the study area, between SU5 (north) and SU6 (south). SU4 was covered in manicured grass (**Figure 27** and **Figure 28**) and featured a vehicle track along the eastern border, associated with Thompsons Creek. One AHIMS registered site is located within SU4 but could not be located during the survey due to thick grass coverage. No Aboriginal objects were identified within SU4.



Figure 27 View north of SU4 from the south



Figure 28 View south towards Thompsons Creek

Survey unit 5

SU5 was located in the eastern portion of the study, north of SU4. SU5 was covered in manicured grass and featured a vehicle track along the eastern border (**Figure 29**), associated with Thompsons Creek. Occasional trees were identified along the southeast border of SU5 associated with Thompsons Creek (Figure 30). No Aboriginal objects were identified within SU5.



Figure 29 View southeast of SU5 from the south



Figure 30 View southwest from easternmost portion of SU5

Survey unit 6

SU6 was located in the eastern portion of the study, south of SU4. SU6 was covered in manicured grass and featured a vehicle track along the southern border, associated with Thompsons Creek. No Aboriginal objects were identified within SU6.



Figure 31 View southwest of SU6 from the easternmost portion



Figure 32 View north from easternmost portion of SU6

12.2 Survey coverage

A summary of survey coverage, in accordance with the Code of Practice, is outlined in **Table 15** and **Table 16** below.

Table 15 - Survey coverage summary

Survey unit	Landform	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage Area (sq m)	Effective coverage (%)
1	Slope	858,873.33	1	90	77298.6	0.9
2	Slope	200,887.92	1	90	1807.99	0.9
3	Spur line	23,078.02	1	90	207.70	0.9
4	Slope	30,930.07	10	90	2783.71	9
5	Slope	31,097.49	1	90	279.88	0.9
6	Saddle	11,710.40	1	90	105.39	0.9

Table 16 - Landform coverage

Landform	Landform area (sq m)	Area effectively surveyed (sq m)	% of landform effectively surveyed	Number of sites
Slope	1,121,788.81	82170.18	7.32	8
Spur line	23,078.02	207.70	0.9	0
Saddle	11,710.40	105.39	0.9	2

12.3 Aboriginal sites

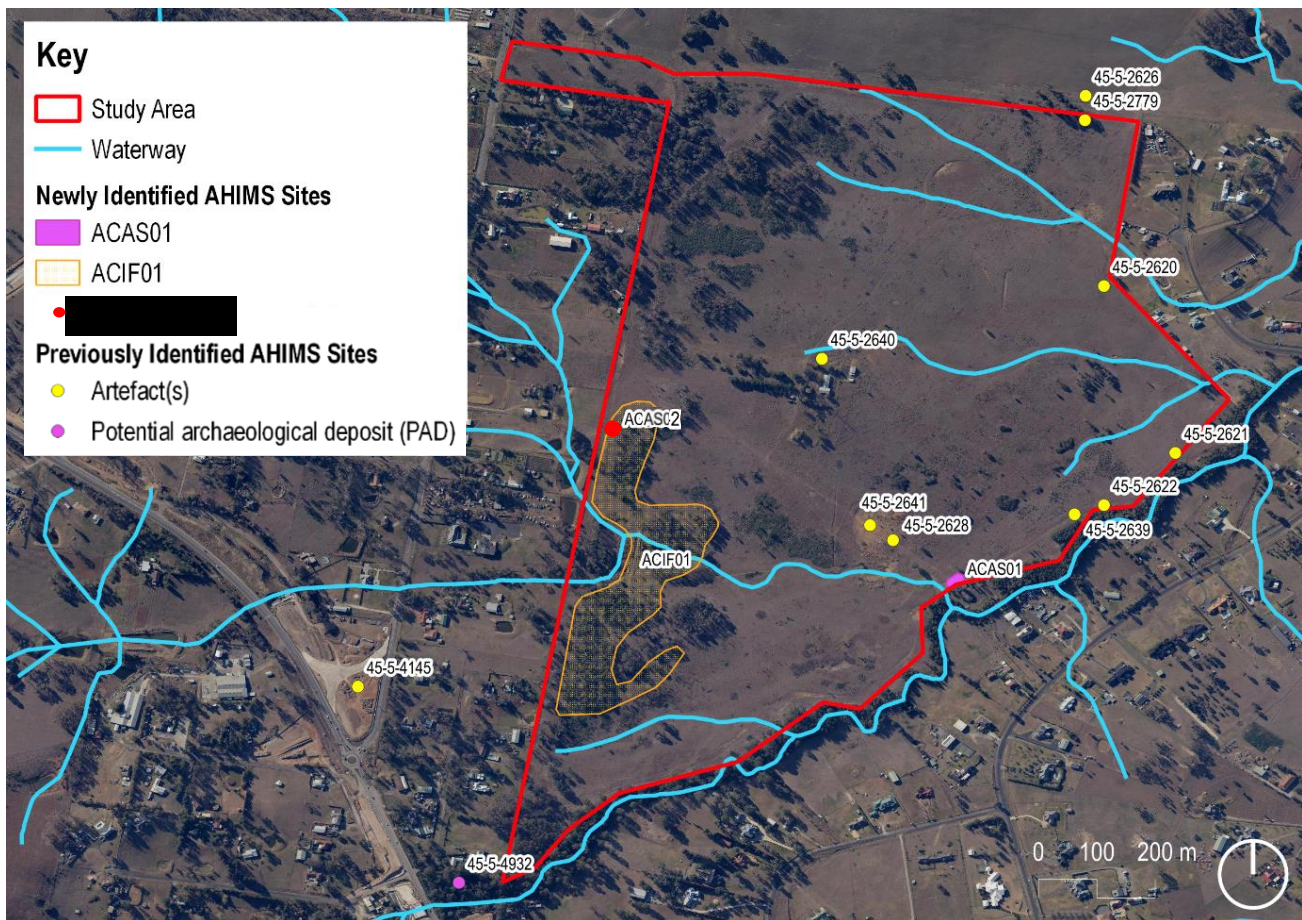
A total of 11 Aboriginal sites were identified within the study area during the surface survey (**Figure 33**). Eight of the sites had been previously registered on the AHIMS database and three sites were newly identified during the completion of the survey. See **Table 17** for a summary of results.

Table 17 - Results summary

Site number	Feature(s)	Survey unit	Landform
B17 (AHIMS ID 45-5-2779)	Artefact	1	Slope
B 18 (AHIMS ID 45-5-2620)	Artefact	1	Slope
B 19 (AHIMS ID 45-5-2621)	Artefact	4	Slope
B 20 (AHIMS ID 45-5-2622)	Artefact	6	Saddle
B 21 (AHIMS ID 45-5-2639)	Artefact	6	Saddle

Site number	Feature(s)	Survey unit	Landform
B 22 (AHIMS ID 45-5-2640)	Artefact	1	Slope
B 23 (AHIMS ID 45-5-2641)	Artefact	1	Slope
B 38 (AHIMS ID 45-5-2628)	Artefact	1	Slope
ACAS01 (AHIMS ID 54-4-5481)	Artefact	1	Slope
ACAS02 (AHIMS ID 54-4-5480)	Artefact	2	Slope
ACIF01 (AHIMS ID 54-5-5480)	PAD	1 and 2	Slope

Figure 33 - Results of the archaeological survey



12.3.1 Registered Aboriginal sites

B 22 (45-5-2640)

Site type: Isolated find

Centroid: MGA94 Zone 56 290725 mE 6243990 mN

Site dimensions: 3 m x 3 m

The survey team completed expanding radial transects from the AHIMS registered GPS location of the site to relocate the previously recorded artefacts. The location of B 22 (45-5-2640) was found to be covered in dense vegetation, which limited surface visible. As a result, no Aboriginal objects were identified at the AHIMS registered location of B 22 (45-5-2640).



Figure 34 View north across B 22 (AHIMS ID 45-5-2640)



Figure 35 View west across B 22 (AHIMS ID 45-5-2640)

B17 (AHIMS ID 45-5-2779)**Site type:** Artefact Scatter**Centroid:** MGA94 Zone 56 Zone 56 291165 mE 6244490 mN**Site dimensions:** 50 m x 15 m

The survey team completed expanding radial transects from the AHIMS registered GPS location of the site to relocate the previously recorded artefacts. An exposure was identified at the recorded location of the site, but no Aboriginal objects were identified. The site was found to be located on a vehicle track, and it is likely that disturbance from vehicle usage has impacted the artefacts that were previously recorded at the site.



Figure 36 View north across B17 (AHIMS ID 45-5-2779)



Figure 37 View west across B17 (AHIMS ID 45-5-2779)

B 18 (AHIMS ID 45-5-2620)**Site type:** Isolated find**Centroid:** MGA94 Zone 56 Zone 56 291205 mE 6244150 mN**Site dimensions:** 3 m x 3 m

The survey team completed expanding radial transects from the AHIMS registered GPS location of the site to relocate the previously recorded artefacts. An exposure was identified at the recorded location of the site, but no Aboriginal objects were identified. The site was found to be located on a vehicle track, and it is likely that disturbance from vehicle usage has impacted the artefacts that were previously recorded at the site.



Figure 38 View north across B 18
(AHIMS ID 45-5-2620)



Figure 39 View west across B17
(AHIMS ID 45-5-2779)

B 19 (AHIMS ID 45-5-2621)

Site type: Open Camp Site

Centroid: MGA94 Zone 56 Zone 56 291335 mE 6243810 mN

Site dimensions: 3 m x 3 m

The survey team completed expanding radial transects from the AHIMS registered GPS location of the site to relocate the previously recorded artefacts. The location of B 19 (AHIMS ID 45-5-2621) was found to be covered in manicure grass, which limited surface visible. As a result, no Aboriginal objects were identified at the AHIMS registered location of B 19 (AHIMS ID 45-5-2621).



Figure 40 View north across B 19 (AHIMS ID 45-5-2621)



Figure 41 View west across B 19 (AHIMS ID 45-5-2621)

B 20 (AHIMS ID 45-5-2622)

Site type: Open Camp Site

Centroid: MGA94 Zone 56 Zone 56 291215 mE 6243700 mN

Site dimensions: 3 m x 3 m

The survey team completed expanding radial transects from the AHIMS registered GPS location of the site to relocate the previously recorded artefacts. The location of B 20 was found to be covered in manicure grass, which limited surface visible. As a result, no Aboriginal objects were identified at the AHIMS

registered location of B 20 (AHIMS ID 45-5-2622).



Figure 42 View north across B 20 (AHIMS ID 45-5-2622)



Figure 43 View west across B 20 (AHIMS ID 45-5-2622)

B 21 (AHIMS ID 45-5-2639)

Site type: Artefact Scatter

Centroid: MGA94 Zone 56 Zone 56 291165 mE 6243680 mN

Site dimensions: 50 m x 15 m

The survey team completed expanding radial transects from the AHIMS registered GPS location of the site to relocate the previously recorded artefacts. The location of B 21 (AHIMS ID 45-5-2639) was found to be covered in manicure grass, which limited surface visible. As a result, no Aboriginal objects were identified at the AHIMS registered location of B 21 (AHIMS ID 45-5-2639). No surface artefacts were identified during the present survey, the area may have been subject to disturbances which have reduced archaeological potential since the initial recording of the site in 1996.



Figure 44 View north across B 21 (AHIMS ID 45-5-2639)



Figure 45 View west across B 21 (AHIMS ID 45-5-2639)

12.3.2 Newly recorded sites

ACIF01 (AHIMS ID 45-5-5480)

Site type: PAD

Centroid: MGA94 Zone 56 Zone 56 290355 mE 6243801 mN

Site dimensions: 3 m x 3 m

ACIF01 (AHIMS ID 45-5-5480) is PAD. The landform sloped gently upwards to the north. The vegetation included both thinly wooded forest and open grassland (**Figure 46-Figure 47**). Based on the historic aerials, this area appeared to have undergone less ground disturbance and construction of RAAF infrastructure than the rest of the study area. ACIF01 also overlapped Moore Gully which, according to the predictive modelling, would have potential for Aboriginal archaeological remains.



Figure 46 General vegetation and landform in ACIF01 (AHIMS ID 45-5-5480)



Figure 47 General vegetation and landform in ACIF01 (AHIMS ID 45-5-5480)

ACAS01 (AHIMS ID 45-5-5480)

Site type: Artefact Scatter

Centroid: MGA94 Zone 56 Zone 56 290949 mE 6243534 mN

Site dimensions: 18 m x 18 m

ACAS01 (AHIMS ID 45-4-5480) is a low-density artefact scatter comprised of four surface artefacts. The site was located within an area of exposure associated with a vehicle track, approximately 20 metres north of Thompsons Creek.

Table 18 - Summary of artefact assemblage

Artefact ID	Lithology	Artefact type	Dimensions
ACAS01-01	Silcrete	Core fragment	19 mm x 15 mm x 9 mm
ACAS01-02	Silcrete	Complete flake	20 mm x 13 mm x 6 mm
ACAS01-03	Silcrete	Complete flake	12 mm x 13 mm x 3 mm

Artefact ID	Lithology	Artefact type	Dimensions
ACAS01-04	Silcrete	Proximal flake	13 mm x 17 mm x 5 mm



Figure 48 In-situ photograph of ACAS01-01



Figure 49 In-situ photograph of ACAS01-03 (left) and ACAS01-04 (right)

ACAS02 (AHIMS ID 54-4-5480)

Site type: Isolated find

Centroid: MGA94 Zone 56 Zone 56 290355 mE 6243801 mN

Site dimensions: 3 m x 3 m

ACAS02 (AHIMS ID 54-4-5480) is an isolated find. The surface assemblage is comprised of a single medial fragment of mudstone (**Figure 50, Figure 46**). The identified artefact measures 28 mm x 18 mm x 16 mm. The site was identified along the western edge of the study area within an area of erosion associated with a vehicle track (**Figure 51**).



Figure 50 In-situ photograph of medial mudstone fragment, identified at ACIF01 (AHIMS ID 54-4-5480)



Figure 51 View east across ACIF01 (AHIMS ID 54-4-5480), showing vegetation to the east and slope of landform

12.3.3 Sites not relocated

A study completed by Schoville (2019) identified that a wide range of post-depositional processes can be responsible for the mobility of artefacts within soils and across the ground surface. Schoville's study investigated the movement of stone tools within pastoral areas and focused on the impact of animal trampling on the artefacts over a five-month period. The study found that artefacts could be displaced by up to 3 metres within a five-month period. The study also found that only 65% of the artefacts could be relocated within high intensity areas.

Ground surface visibility across the study area is variable depending on seasonal conditions and it is likely that regrowth of the surrounding vegetation impeded visibility of surface artefacts during the archaeological survey. Seasonal inundation of the sites is likely to have resulted in the movement of the artefact assemblage down towards the saddle landform. In addition, aeolian and colluvial processes are likely to have deposited sediment over the surface artefacts, further reducing visibility.

12.3.4 Additional isolated surface artefacts

Three isolated artefacts (BCC Isolated Artefact 1–3) were identified on the ground surface during the test excavations program (Figure 59). The artefacts were not collected but remained on site for future community collection. As a result, an analysis of these artefacts has not been included in the test excavation results.

BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)

Site type: Isolated find

Centroid: MGA94 Zone 56 Zone 56 290896 mE 6243466 mN

Site dimensions: 1 m x 1 m

BCC Isolated Artefact 1 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491) (Figure 59). It was identified 3.8 metres west of BCC Isolated Artefact 2. The artefact comprised a red silcrete flake without clear evidence of retouching (Figure 52-Figure 53).



Figure 52 Silcrete flake, BCC Isolated Artefact 1

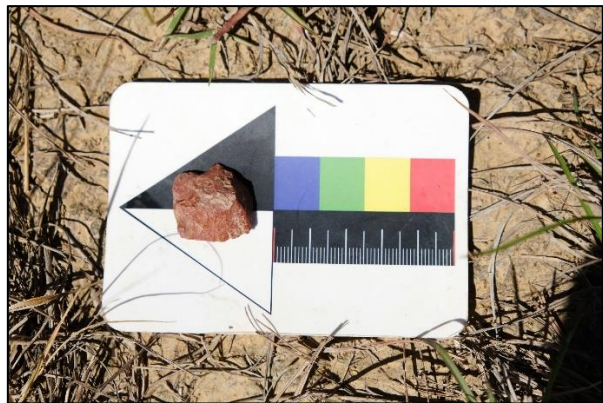


Figure 53 Silcrete flake, BCC Isolated Artefact 1

BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)

Site type: Isolated find

Centroid: MGA94 Zone 56 Zone 56 290899 mE 6243465 mN

Site dimensions: 1 m x 1 m

BCC Isolated Artefact 2 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491) (**Figure 59**). It was identified 3.8 metres east of BCC Isolated Artefact 1. The artefact comprised an IMT flake (**Figure 54-Figure 55**).



Figure 54 IMST flake, BCC Isolated Artefact 2

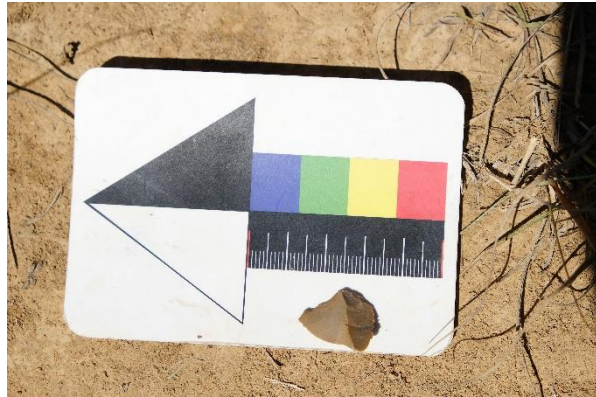


Figure 55 IMST flake, BCC Isolated Artefact 2

BCC Isolated Artefact 3 (AHIMS ID 45-5-5590)

Site type: Isolated find

Centroid: MGA94 Zone 56 Zone 56 290781 mE 6243634 mN

Site dimensions: 1 m x 1 m

BCC Isolated Artefact 3 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491) (**Figure 59**). It was identified 31.5 metres south-west of the extent of B 23 (AHIMS ID 45-5-2641), within the basing created by the historical aerial associated with the RAAF base. The artefact comprised a red silcrete flake. No photos recorded the object.

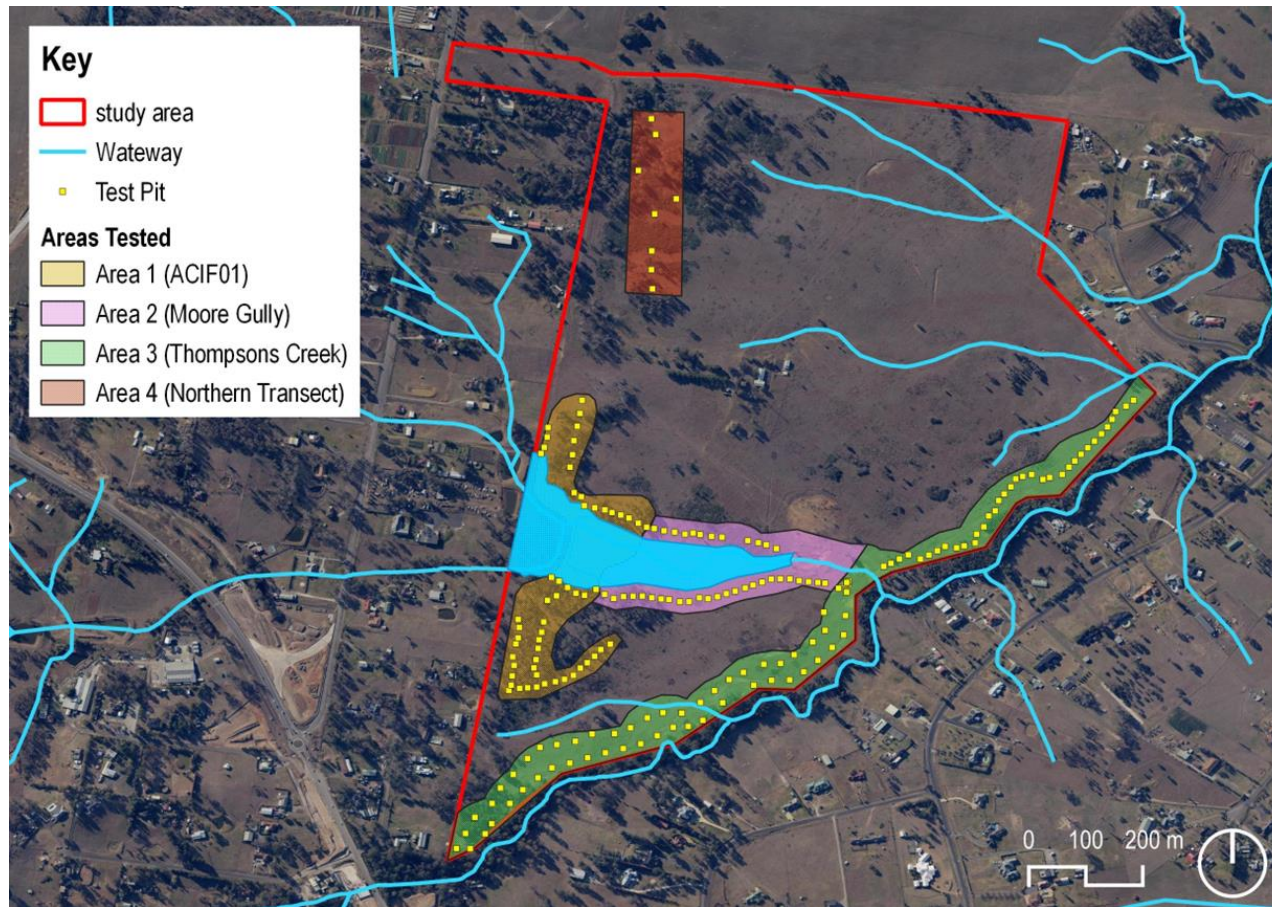
12.3.5 Test Excavation Program

Due to the moderate potential for Aboriginal archaeological remains across the study area, an archaeological test excavation program was proposed. Test excavations program was undertaken from 5 October to 12 November. In addition to Extent Heritage representatives, representatives from Arangung, Cubbitch Barta Native Title, Didge Ngunawal Clay, Gandangara Local Aboriginal Land Council, and Walbunja were invited to participate. The full Archaeological Test Excavation Report can be found in Appendix 7.



Figure 56 Images of the worksite including the excavation and sieving process, featuring (clockwise) Ana Klasen, Darren Duncan, Nestor Nicola, Kiahni Chalker, and Jasper Chick

Figure 57 Test pit locations across the study area



Note: Test pits are not to scale

12.4 Sampling strategy

Based on background research, the survey results, and stakeholder feedback, the archaeological test excavation program was focused along three PADs: ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491). Background research suggested these areas had a moderate potential for background scatter and occupation deposits. An additional area in the north-western corner of the study area, the Northern Transect, was also investigated. Background research predicted this zone to have low archaeological potential for general background scatter.

A total of 202 test trenches were proposed in the test excavation methodology. Due to swampy conditions and dense vegetation, twelve test trenches were unable to be excavated. With the support of the Aboriginal representatives on site, seven of these trenches were relocated to other areas of potential. **Figure 57** shows the location of the 204 test trenches excavated (**Figure 57**). Each trench was 50 cm by 50 cm in size.

12.5 Artefact analysis

A total of 135 Aboriginal objects (a low density of 2.7 artefacts/m²) and one piece of possible ochre were recovered from 59 of the 204 test pits (29.4 per cent) (**Table 19**). Artefacts were only recovered in ACIF01, Thompsons Creek, and Moore Gully (**Figure 58**). The assemblage was dominated by silcrete (n=92). Indurated mudstone/chert (IMT) was the second most dominant material (n=22), followed by milky quartz (n=11), with smaller frequencies of silicified wood (n=4), volcanic material (n=2), chalcedony (n=1), chert (n=1), and fine-grained siliceous stone (n=1). These raw material types are reflective of those seen across the Cumberland Plain. During the Pleistocene and early Holocene, IMT was the preferred raw material type, and its presence may reflect the mixing/conflation of older assemblages with mid-to-late Holocene artefacts. However, the size of the assemblage is small which limits the ability to draw strong conclusions.

A majority of the assemblage comprised flakes and flake fragments (n=108), with a moderate rate of tools (n=10), including several standardised backed artefacts. The tool types present reflected occupation of the site during the mid-to-late Holocene, when backed artefact use increased. While the tool rates were low, it appeared that some manufacture of backed artefacts occurred on site, particularly in the Thompsons Creek PAD (AHIMS ID 45-5-5491). At the same time, few cores were recovered within this assemblage, reflecting low on-site reduction rates, the removal of cores to other sites and/or the removal of cores post-deposition.

A majority of the raw material found during the test excavation did not display any cortex. The low levels of cortex may indicate that the raw material was transported quite a distance from the material sources, with decortification occurring at or close to the source. Silcrete artefacts from the assemblage may have been procured from several different sources as it displayed primary and secondary source cortex types. Outcrops at St Clair and St Mary's approximately 13km north of the site may be the area from which raw material was collected. Rickabys Creek paleochannel gravels have been observed in the banks of South Creek approximately 26km to the north of the site. This secondary source of gravels are known to contain a range of materials from IMT to quartz to volcanics. There is likely to be closer sources of these gravels to the site, though further research is required. In general, both primary and secondary sources were used to source the materials, with

silcrete obtained from primary sources such as outcrop while milky quartz and IMT were obtained from secondary sources such as riverbeds.

A vast majority of the test pits recovered low densities of artefacts (<10). Only two test pits recovered moderate (greater than or equal to 10 artefacts) artefact densities (TP 15 and TP 114). Most of the artefacts were recovered from Spits 1–2 (0–20 cm, n=117), with few recovered from spits 3–5 (30–50 cm, n=16). Therefore, cultural material, when present, was mostly found between 0 and 20 cm. Spatially, the artefact counts was low, reflective of background scatter and some discrete areas of moderate activity (TP 15 and TP 114).

A small piece of possible ochre was recovered from Spit 2 of TP 54 in Area 3. The piece was cream, and 11.53 mm in size. Further analysis would be required to confirm whether this object is ochre.

A full artefact analysis can be found in the ATER (Appendix 7).

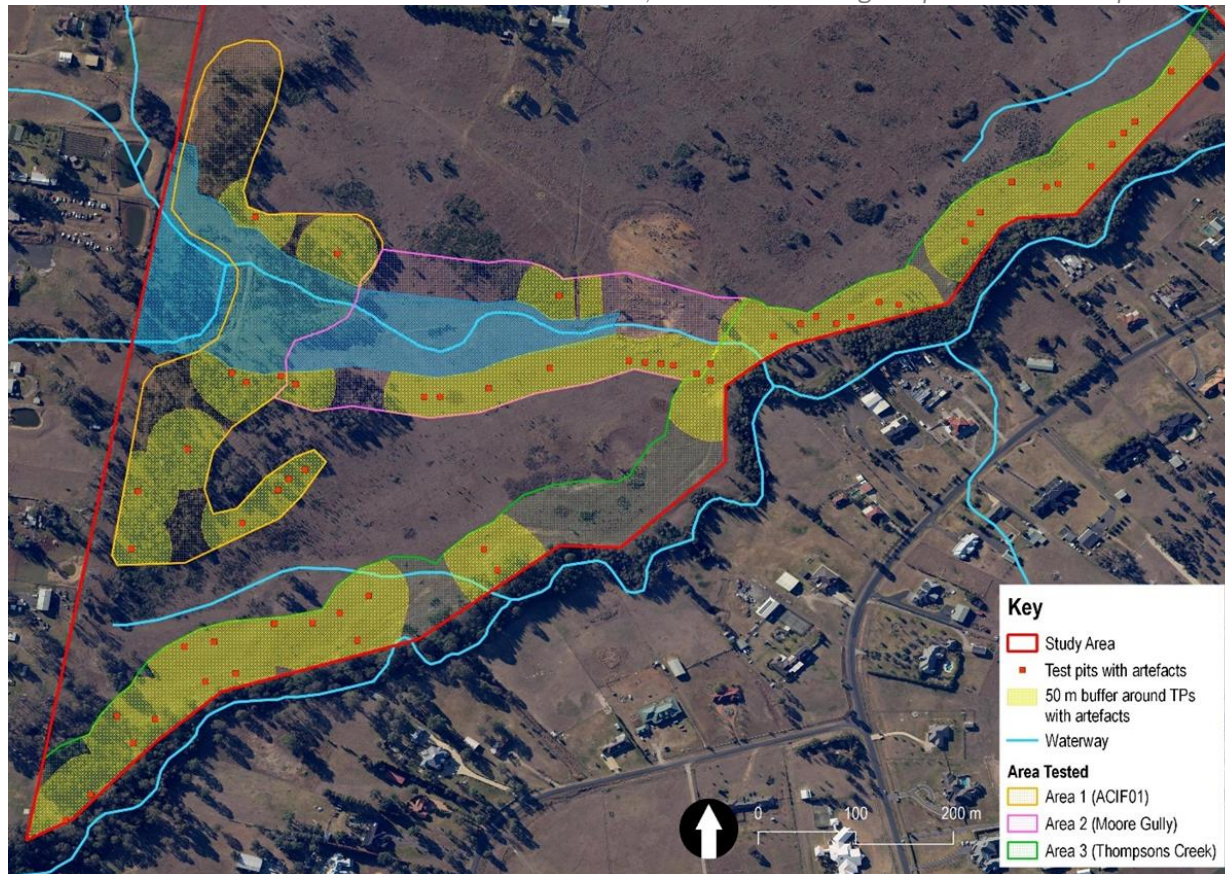
Table 19 - Test pit artefact densities

Test pit	Artefact count	Test pit	Artefact count	Test pit	Artefact count
11	1	60	3	121	1
15	10	64	2	122	2
16	1	65	2	129	1
17	2	67	1	134	1
19	1	68	2	135	1
21	1	70	1	137	2
22	5	71	1	138	3
24	9	81	1	141	1
27	5	85	2	144	1
29	2	86	1	148	2
35	2	87	1	158	1
36	3	90	3	162	1
38	1	91	2	169	1
39	3	94	2	172	2
40	2	100	2	173	1
41	1	112	2	174	1
43	6	113	1	182	1

Test pit	Artefact count	Test pit	Artefact count	Test pit	Artefact count
44	1	114	11	200	1
45	3	115	4	205	1
55	2	116	4	Total	134

Figure 58 Buffer around TPs containing artefacts

Note: The buffer is restricted to the extent of the PAD, as low archaeological potential was expected outside this area



13 Analysis and Discussion

13.1 B 23 (AHIMS ID 45-5-2641)

Density

The majority of the identified artefacts (n=9) were located within B 23 (AHIMS ID 45-5-2641), which covers an area of 1,122 m² area for an average artefact density of 0.008 artefacts/m².

Artefact types

The artefact assemblage was predominantly comprised of transverse flake fragments (n = 4, 44.44%) with fewer numbers of complete flakes (n = 3, 33.33%), single scraper fragment (11.11%) and a single piece of debris (11.11%). The assemblage was dominated by flaked artefacts, with no cores or grounded artefacts present.

Debris is a biproduct of artefact reduction, but no other indicators of artefact reduction were identified in the assemblage, such as cores. It is possible that artefact manufacturing processes occurred at the location of B 23 (AHIMS ID 45-5-2641) and the core was retained in the systemic context.

Artefacts that are the product of the earlier stages of core reduction tend to have wide transverse margins and short longitudinal margins. However, artefacts that are the produce of later stage core reduction will have short transverse margins and long longitudinal margins. Artefacts will tend to break along the longest margin. Therefore, longitudinal flake fragments are likely to be the result of early-stage reduction while transverse flake fragments are the product of later stage reduction. The majority of the assemblage is comprised of transverse flake fragments and is indicative of later stage artefact manufacturing.

Fragmented artefacts are usually associated with repeated site occupation where artefacts have been broken by site trampling. However, as the lithological diversity and artefact density is relatively low, it is likely that the assemblage has been damaged by modern site disturbances.

The types of artefacts identified as part of this assemblage are common in the Cumberland Plain and would be considered to hold low scientific and research value.

Raw materials

The majority of the artefacts identified within the B 23 (AHIMS ID 45-5-2641) assemblage were comprised of mudstone (n=6, 66.67%) with lower numbers of silcrete (n=3, 33.33%). The composition of the assemblage is inconsistent with identified distributions of raw materials within sites across the local context, where silcrete is the dominant raw material. However, the high frequency of fragmented artefacts and low archaeological integrity of the site is likely impacting the identified distribution of raw materials across the assemblage.

The low lithological diversity is indicative of temporary site occupation by a small, highly mobile group engaged in opportunistic resource acquisition. The assemblage is primarily comprised of lithologies common in the regional context (mudstone and silcrete), indicating that raw materials were utilised during travel. High lithological diversity and the presence of exotic materials is indicative of a long-term campsite and high logistical mobile mobility.

Summary

The area surrounding B 23 (AHIMS ID 45-5-2641) was initially considered to be an area of PAD due to the moderate number of surface artefacts. However, upon interrogation of historical aerials, it is clear that the area was heavily disturbed by one of the antenna features installed as part of the Bringelly RAAF station. There is not likely to be any intact subsurface archaeological remains associated with the artefact scatter. As a result, the AHIMS site card associated with the scatter has been updated to include the additional artefacts, but no further investigation of the area is required.

13.2 ACAS01 (AHIMS ID 45-5-5481)

ACAS01 is an artefact scatter comprised of four artefacts within a 3.4 m² area for an average artefact density of 1.18 artefacts/ m². All identified artefacts within the assemblage were found to be made of silcrete. The assemblage is predominately comprised of flaked artefacts (n=3, 75%), with a single core fragment (25%). As the site is located approximately 130 metres south of B 23 (AHIMS ID 45-5-2641), the two sites may be connected as part of a wide complex of sites. The presence of a core fragment in the ACAS01 assemblage may be associated with the piece of debris identified within B 23.

13.3 ACIF01 (AHIMS ID 45-5-5480)

ACIF01 (AHIMS ID 45-5-5480) was identified as an area of PAD. Test excavations of the identified area of PAD was required to further investigate the nature and extent of the site.

The archaeological excavation of ACIF01 identified 12 test trenches containing a total of 16 Aboriginal artefacts. The assemblage was reflective of background artefact scatter, common in the Cumberland Plain. The ACIF01 assemblage recovered five complete flakes with an average length of 18.2mm. The two silcrete complete flakes are elongated in form, with one having a faceted platform. These characteristics are often associated with backed artefact manufacture. No cores were recovered.

The assemblage reflected a preference for silcrete (n=7, 43.8%) followed closely by IMT (n=5, 31.3%), with small frequencies of chalcedony, chert, milky quartz and silicified wood. Overall, ACIF01 displayed the highest raw material diversity.

A majority of the raw material types did not display any cortex. Silcrete may have been procured from several different sources as it displays primary and secondary source cortex types. The low levels of cortex may indicate the artefacts travelled quite a distance from the material sources.

The extent of each of the ACIF01 PAD was updated to include only areas of known Aboriginal archaeological remains. **Figure 58** shows the location of test trenches that recovered artefacts. An arbitrary buffer of 50 metres was placed around each of these trenches to capture additional artefacts that may be associated with each area. The buffer was restricted to the boundary of the original PAD as predictive modelling indicated that areas outside the PAD were only expected to possess a low potential for general background scatter. All areas outside the buffers were removed from the site extent. **Figure 59** shows the revised locations of ACIF01 (AHIMS ID 45-5-5480).

13.4 Moore Gully (AHIMS ID 45-5-5492)

The Cumberland Plains Predictive Model indicated that the third order creek, Moore Gully, was likely to be associated with sites of frequent and repeated occupation by small groups of Aboriginal people. Archaeological evidence of these sites is likely to take the form of knapping floors that may be reused, and more concentrated activities.

The model suggested that the highest potential for artefacts associated with the waterway would be within a zone of 50m from the watercourse. As Moore Gully is heavily swampy, the 50m buffer was based on the periphery of the waterlogged area. During the test excavation, several trenches became waterlogged or were unable to be excavated due to the conditions. The alluvial nature of the South Creek soil landscape along part of the creek line provides further opportunity for recovering stratified deposits.

The archaeological excavation of Moore Gully identified 11 test trenches containing a total of 35 Aboriginal artefacts. Two tools were identified within the assemblage, one backed artefact and one utilised flake medial flake. All tools were manufactured/selected on silcrete. Two cores were also recovered.

The assemblage was dominated by silcrete (n=31, 88.6%) with low frequencies of milky quartz and volcanic material (two artefacts of each material). As with ACIF01, a majority of the assemblage did not display any cortex, with only some rough cortex on the silcrete, indicating higher rates of procurement from a secondary source. There is less raw material diversity than in ACIF01.

All test trenches, bar one, had low artefact densities (<10) reflective of background scatter common on the Cumberland Plain. Only one test trench contained a moderate density of artefacts (10 or more). TP 114 contained eleven Aboriginal stone objects, consisting of four complete flakes, three distal flakes, three proximal flakes, and an angular fragment. All artefacts were manufactured from silcrete. Only one artefact was smaller than 10 mm. Eight of the artefacts were found within Spit 1 (0–10 cm, 72.7 per cent of the test pit assemblage), while the remaining three artefacts were found within Spit 2 (10–20 cm, 27.2 per cent of the test pit assemblage). A conjoin was identified within Spit 1, however it was difficult to discern if this break occurred during the excavation process.

The extent of each of the Moore Gully PAD was updated to include only areas of known Aboriginal archaeological remains. **Figure 58** shows the location of test trenches that recovered artefacts. An arbitrary buffer of 50 metre was placed around each of these trenches to capture additional artefacts that may be associated with each area. The buffer was restricted to the boundary of the original PAD as predictive modelling indicated that areas outside the PAD were only expected to possess a low potential for general background scatter. All areas outside the buffers were removed from the site extent. **Figure 59** shows the revised locations of Moore Gully (AHIMS ID 45-5-5492).

13.5 Thompsons Creek (AHIMS ID 45-5-5491)

The Cumberland Plains Predictive Model indicated that the fourth order waterway, Thompsons Creek, was likely to be associated with complex and stratified sites containing high artefact densities. Artefacts associated with these sites may show less use of rationing strategies as people may have remained in the same location for several days, or even weeks. Evidence of the caching or raw materials may also be present.

The model suggests that the highest potential for artefacts associated with fourth order landscapes occur within 51 to 100 metres from the watercourse. These flat terraces overlook the waterway and are not likely affected by flooding making them ideal site locations. As most of the eastern boundary of the study area is located at 50 metres or less from the watercourse, the predictive model puts this high-density area within the

project boundary. The alluvial nature of the South Creek soil landscape along part of the creek line provides further opportunity for recovering stratified deposits. In addition, the confluence between Moore Gully and Thompsons Creek also falls just outside the study area and may present evidence of an occupation site (McDonald 1997, 56-57).

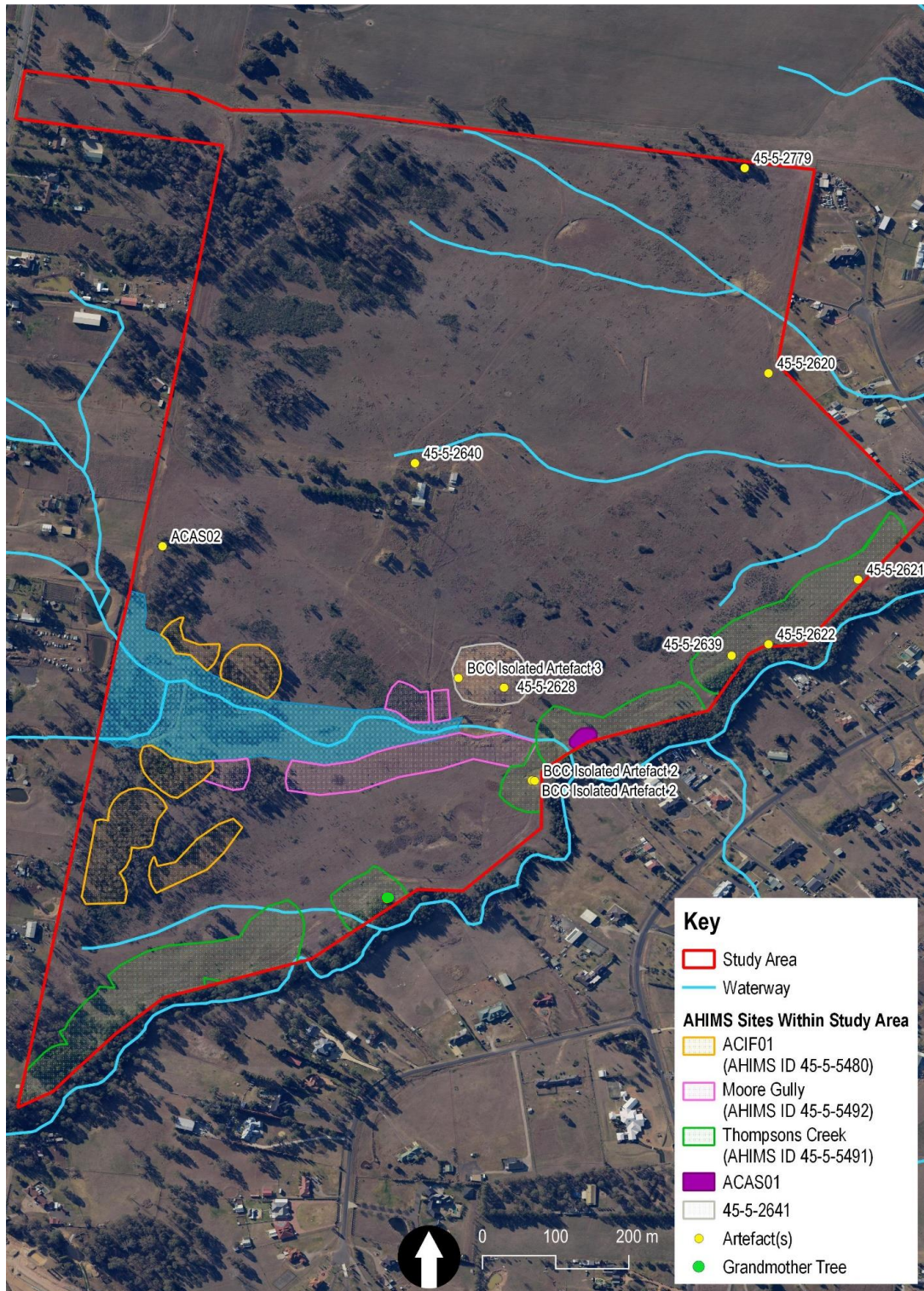
The archaeological excavation of Thompsons Creek identified 36 test trenches containing a total of 83 Aboriginal artefacts. The area recovered the highest number of complete flakes, majority manufactured on silcrete with a small average length of 13.1mm. There were a range of termination types, platform types and flake forms. In particular there are bipolar flakes, platform rejuvenation flakes and backing flakes, indicating different core reduction techniques and the on-site manufacture of backed artefacts. Two cores were also identified.

The assemblage was also dominated by silcrete (n=54, 65.1%) followed by IMT (n=17, 20.5%), with smaller frequencies of milky quartz, (n=8, 9.6%), silicified wood (n=3, 3.6%), and fine-grained siliceous (FGS, n=1, 1.2). Similar to the other areas, majority of artefacts do not retain any cortex, likely indicating distance to the source.

All test trenches, bar one, had low artefact densities (<10) reflective of background scatter common on the Cumberland Plain. Only one test trench contained a moderate density of artefacts (10 or more). TP 15 contained ten Aboriginal stone objects, consisting of four complete flakes, two distal flakes, two broken splits, one proximal flake, and one angular fragment. Five of the artefacts (50 per cent) were smaller than 10 mm. A majority (n=8, 80 per cent of the test pit assemblage) of the artefacts were manufactured on silcrete, with two artefacts on indurated mudstone/tuff (20 per cent of the test pit assemblage). All artefacts were found within Spit 2 (10–20 cm).

The extent of each of the Thompsons Creek PAD was updated to include only areas of known Aboriginal archaeological remains. **Figure 58** shows the location of test trenches that recovered artefacts. An arbitrary buffer of 50 metres was placed around each of these trenches to capture additional artefacts that may be associated with each area. The buffer was restricted to the boundary of the original PAD as predictive modelling indicated that areas outside the PAD were only expected to possess a low potential for general background scatter. All areas outside the buffers were removed from the site extent. **Figure 59** shows the revised locations of Thompsons Creek (AHIMS ID 45-5-5491).

Figure 59 Updated extent of all identified Aboriginal sites registered with AHIMS located in the study area



14 Aboriginal Cultural Heritage Assessment

As part of ongoing research to inform the planning of Western Sydney Aerotropolis, Extent Heritage has undertaken multiple phases of cultural values assessment, as distinct projects. These phases of engagement and their findings are detailed in the following section.

The aims of all phases of cultural values assessment were to identify:

- traditional values and places;
- historical values and places;
- contemporary values and places; and
- views of the Elders, knowledge holders and representatives regarding future management and interpretation of those values.

14.1 Types of values

Aboriginal traditional owner claimants and knowledge holders have considerable knowledge about use of traditional lands before and after British colonisation. The landscape continues to hold cultural values that are important to the Aboriginal community. The Aboriginal community collectively holds values and knowledge that relate to:

- Traditional values: these are passed down by family and community as part of ancient tradition.
- Historical values: these are passed down by family and community and relate to the eras since colonisation; these may include information gained from historical source documents.
- Contemporary values: these are values of modern importance and relevance for Aboriginal stakeholder groups.

There is often no clear demarcation between these values. They collectively co-exist and are of equal importance in forming the value that Aboriginal people place on landscape, cultural heritage, intangible values, and particular landforms or parts of the landscape.

14.2 Wider Western Sydney Aerotropolis Cultural Values Workshop

As part of the preparation of the *Western Sydney Aerotropolis Initial Precincts: Aboriginal and Non-Aboriginal Cultural Heritage Assessment* (2020) report for the Western Sydney Planning Partnership, Extent Heritage undertook a preliminary assessment of cultural values. This scope related to all precincts in the Aerotropolis.

This previous phase of works consisted of a preliminary cultural values mapping workshop undertaken with the Local Aboriginal Land Councils within the study area and identified knowledge holders. The goal of this workshop was to start the process of learning about, identifying and understanding the Aboriginal cultural values of the Aerotropolis. The intention was that understanding these values at an early stage could help inform strategic precinct planning design and identifying necessary future stages of Aboriginal community engagement required at the master planning stages.

The preliminary cultural values mapping workshop was held on 23 June 2020 at Liverpool City Council chambers in this earlier scope of works. The attendees are recorded in **Table 20** below.

Table 20 - Record of Registered Aboriginal Parties

Organisation	Contact name
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Glenda Chalker
Darug Custodians Aboriginal Corporation	Tylah Blunden
Deerubbin Local Aboriginal Land Council	Steve Randall
Gandangara Local Aboriginal Land Council	Darren Duncan and Dr Ruth Sheridan

The workshop began with a presentation by James Wheeler (Extent Heritage, Executive Director) of historical research undertaken and project background information.

A discussion of the presented material followed the presentation, and this led to a semi-structured group discussion of cultural values, places and stories that relate to the Western Sydney Aerotropolis region.

The workshop concluded with a cultural values tree and mapping exercise designed to understand and prioritise values, places, issues, aspirations, and concerns through these visualisation exercises.

The outcomes of the cultural values discussion are summarised below.

14.2.1 Ancestral connections

The Elders and knowledge holders emphasised the violence towards and displacement of Aboriginal people that occurred within and around the study area.

Cubbitch Barta Elder Glenda Chalker spoke about specific conflicts within the study area and how there have been attempts to write the conflicts out of history:

- John Macarthur influenced Governor Macquarie before the Appin massacre of 1816.
- Governor Macquarie was the first to take Aboriginal children and institutionalise them. Ms Chalker said that her grandmother had been institutionalised as a child.
- Macquarie refers to these children and Aboriginal people as prisoners of war, acknowledging that there was war, even though it has been attempted to be written out of history.
- This history has not been taught in schools and it should be.
- The ancestor of Ms Chalker's husband worked on Blaxland and Lawson's land at the confluence of Badgery Creek and Wianamatta-South Creek, located within the Wianamatta-South Creek Aerotropolis Study Precinct. He came to Australia from Oxford and was given a land grant on Cooks River, then South Creek, and later at Mittagong.
- Ms Chalker also brought attention to the length of South Creek and noted that stories from one part of the creek are sometimes mistakenly told about another part of the creek, and said that this is why the locations in some stories can be confused with others.
- Ms Chalker said that she has specific stories for Glenfield and Liverpool, in relation to her ancestor's receiving blankets in 1842 and 1843. Ms Chalker's grandmother is listed on the NSW blanket return.

The workshop participants emphasised that the Cumberland Plain is imbued with stories of dispossession and disconnection of Aboriginal people from their traditional lands and their families after European occupation. Representatives from the Gandangara Local Aboriginal Land Council stated that cultural genocide should not be forgotten, both stories and physical remains of structures and other contact artefacts or objects should be preserved where possible. This should be led by Aboriginal people.

The stakeholders said that they would like more time to talk to their community members and families, and that they would be able to provide further stories and values at a later date. The importance of walking Country and visiting the precincts was also noted. All agreed further detailed on Country investigation by the traditional owners and Land Councils was essential to fully understanding the cultural values and places within the Aerotropolis, and the stakeholders emphasised the need for detailed archaeological investigation – particularly given the relative lack of prior investigation work across large portions of the Aerotropolis study area.

14.2.2 Inter-generational equity: Conservation of Landscape

A significant issue of cultural concern for each of the Aboriginal stakeholder groups was the cumulative impact of future urban development proposed as part of the Aerotropolis project. All the groups emphasised that the Cumberland Plain is very important to local Aboriginal people and that this project should involve conservation of a representative range of remnant terrain and environment, not simply (in the words of one participant) 'trees planted in rows'. This value includes an understanding of the importance of retaining areas of native bushlands and grasslands and the essential habitat it provides to native animals being able to live on the Cumberland Plain.

Stakeholders highlighted the importance of preserving all creek corridors within the study area and keeping them as open space. These creek corridors are culturally significant as resource, mythological and transit places and the stakeholders stated that there is archaeological potential along the creek corridors even in areas where if no sites have been previously recorded. The example of Duck Creek, running from Clyde to Guildford, was given as what the stakeholders did not want to happen within the study area. Duck Creek has been channelised and no traces of the natural creek line remain. The stakeholders emphasised that unusual and well-preserved landforms such as exposed sandstone outcrops, areas of remnant old growth vegetation

and well-preserved creek corridors should be protected where possible as should priority conservation areas identified early in strategic planning work.

14.2.3 Preservation of rare and culturally significant archaeological sites

Every stakeholder emphasised the paramount importance of ensuring development works will not impact grinding grooves, modified trees and art sites. Cubbitch Barta Elder Glenda Chalker enquired about the legitimacy of the 'Art Sites' shown on the map of registered Aboriginal sites within the Aerotropolis. Ms Chalker pointed out that they did not appear to be located near sandstone outcrops and that they were therefore unlikely to be correctly recorded. Stakeholders also felt that archaeological sites in the region should be ground-truthed for their current condition, and that site records should be brought up to date so that these sites can be preserved into the future.

A concern reiterated throughout the workshop was that these sites, cultural connections, and conflict histories were going to be lost, and that one possible counter to this loss could take place through the conservation of a large portion of the study area.

14.2.4 Stakeholder involvement

The stakeholders discussed the importance of being on Country to talk about and see the archaeological sites and landscapes being discussed, and that this is an important aspect of the consultation process. The Stakeholders strongly emphasised that it was important that any other Aboriginal parties who are involved in the project should be comprised of people from the local area represented by the Land Councils and traditional owners of the region who are Darug and Dharawal descendants. The stakeholders stated that care for culture is paramount to the cultural values surviving into the future.

Darren Duncan and Dr Ruth Sheridan of Gandangara Local Aboriginal Land Council stated the importance of consulting with the Local Aboriginal Land Councils on all projects within their boundaries and that no earth should be moved without consultation with registered Aboriginal parties (RAPs). Glenda Chalker agreed and stated that the consultation process should be adhered to during construction projects within the Aerotropolis and that there should be deadlines for registration of interest, in order to avoid an overwhelming number of groups joining a project over its lifetime.

The Stakeholders stated the importance of the LALCs and traditional owners of the area being consulted before any works are undertaken on any Aerotropolis project, and through the entirety of the project's lifetime.

14.2.5 Further research

The workshop attendees identified key areas for which additional research would be desirable:

- an investigation of the three registered 'art sites' within the Aerotropolis;
- discussions between the Stakeholders and other LALC members and Elders, to gather stories and values from a larger group of traditional owners;
- research into the history of Glenda Chalker's grandmother in the 'blanket return', referring to blankets given to Aboriginal people by authorities;
- continuing investigations into the ethnohistory of the study area;

- on-Country cultural values mapping with the key Elders and knowledge holders; and
- detailed archaeological investigation and ground truthing.

14.2.6 Cultural values tree

At the conclusion of the cultural values workshop the stakeholders were engaged in a cultural value ‘tree mapping’ visualisation exercise. In this exercise, stakeholders were invited to write down key values, their most important values and places or stories associated with the Aerotropolis region on small cards, each of which represented the leaf of a tree.

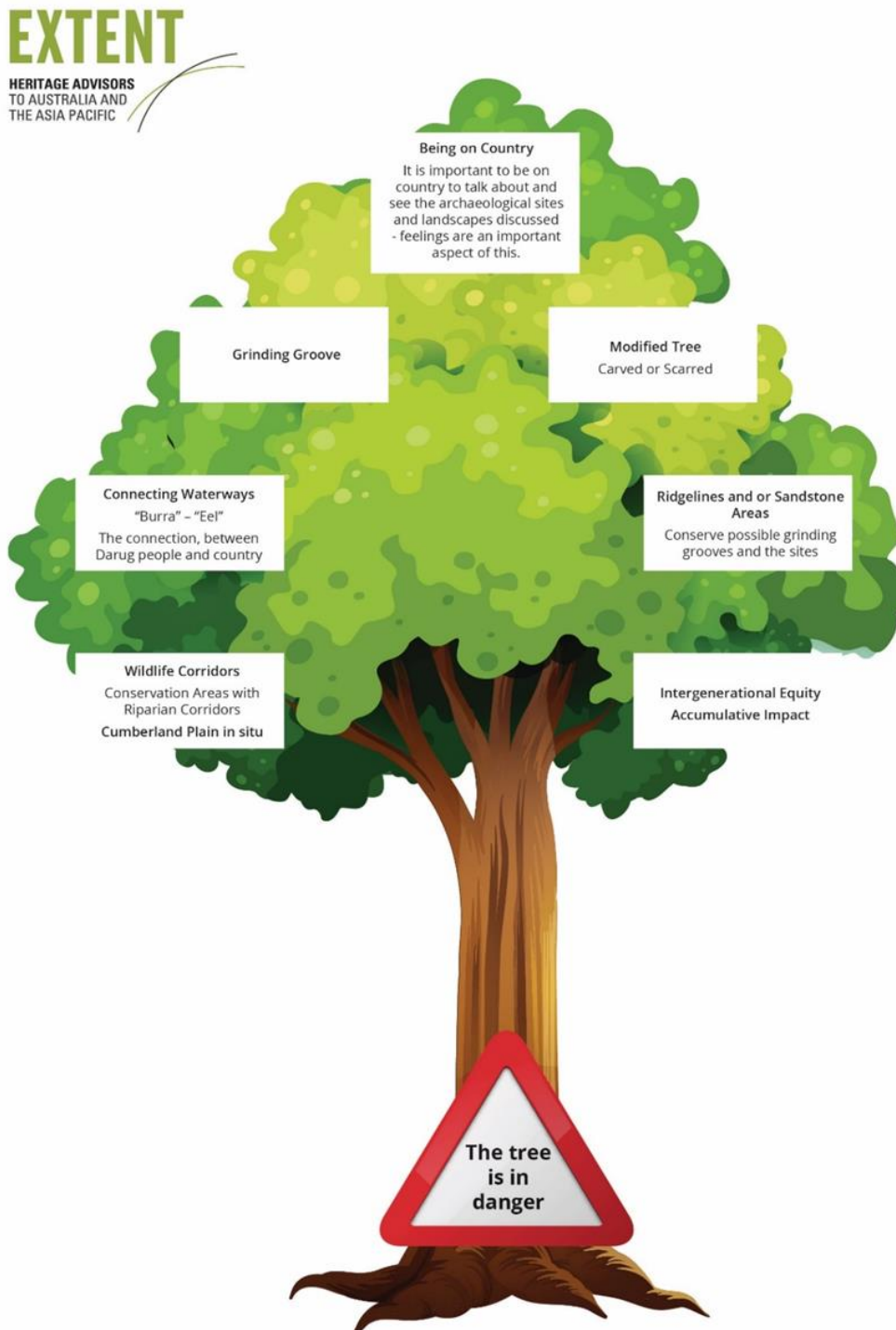
The workshop participants were asked to pin the ‘leaves’ to a cultural values tree diagram depicting the branches of a tree to visually represent the importance of values, stories and any other culturally significant ideas. The stakeholders were asked to place their ‘leaves’ at points on the branches of the tree depending on how vulnerable they felt the value to be. The robust and enduring values at the strong base of the tree trunk and the more vulnerable values on the outer branches and limbs.

The cultural values tree exercise is designed to tease out and order the key values associated with a place and to ensure the views of participants who prefer to contribute in writing, rather than through discussion, are properly heard and documented. It also acts as a good device for generating and focusing group discussion.

The stakeholders were initially reserved about placing their notes on the tree diagram. All of the stakeholders reiterated that the whole tree is in danger — a consensus conclusion that ties back into the theme of cumulative impact across the Cumberland Plain and how the progressive development of Western Sydney has removed all but a small portion of the original environment of the Cumberland Plain. While the stakeholders included some high-level values on the cultural values tree, the general consensus was that they needed to go out from the meeting and talk to elders and members of the communities before providing any more cultural values input. And all the stakeholders emphasised the need to get on Country to take the cultural values mapping to the next stage of detail needed for master planning.

The cultural values tree prepared by the stakeholders is shown below in **Figure 60**.

Figure 60 Representation of the tree created by the stakeholders during the cultural values mapping workshop



14.2.7 Additional cultural values enquiries

Following the workshop, a packet of information was posted or emailed to all RAPs to solicit any additional information about the Aboriginal cultural values of the Aerotropolis that they might be willing to share.

Comments with cultural values information were received from five RAPs. The written and oral responses are summarised below.

- A single location should be established within the Aerotropolis where all artefacts recovered during archaeological investigations could be repatriated or held. This would allow all artefacts to be reburied or kept on Country near where they were recovered and would also provide a central location for Aboriginal community members to visit.
- This artefact repatriation location or 'keeping place' could even be established as a memorial park where Aboriginal community members could go for the foreseeable future to feel connections with past and present Aboriginal people and with Aboriginal culture.
- Additional workshops should be established to allow inputs from a wider range of Aboriginal stakeholders. It was felt that this would be a better approach for soliciting cultural values information than via written responses.
- Aboriginal naming should be undertaken for locations and streets within the Aerotropolis. Because the airport will be the first point of contact with Aboriginal culture for many visitors, as they arrive, it is essential that Aboriginal naming should also be undertaken for the airport and even specific locations within the airport (e.g., arrival halls, concourses).
- All modified and scarred trees must be conserved in situ.
- There is an unregistered resource gathering sites (i.e., ochre source) in the Aerotropolis that should be investigated and conserved as much as possible.
- As many other known Aboriginal heritage sites should be preserved as possible.
- There should be specific education locations to educate residents and visitors about Australia's past, the history of Aboriginal people in the area and the current lives of Aboriginal people in the Aerotropolis.
- A range of Aboriginal artwork should be installed in the Aerotropolis. This artwork should depict both tangible and intangible aspects of traditional Aboriginal culture and should be undertaken in a diverse range of traditional and modern media.
- Any interpretive signs or historical information regarding Aboriginal cultural values should not shy away from the truth about the effects of colonisation on Aboriginal people. This subject can be quite disturbing and must be approached respectfully and with great sensitivity.
- As much as possible, natural areas should be conserved as they are.
- While working with Aboriginal people in the Aerotropolis, cultural intellectual property should be respected.
- Aboriginal art should be located in more places than just highway sound barriers (as is seen elsewhere in Sydney). The Aerotropolis should deeply incorporate of Aboriginal stories and art into all manner of infrastructure, from the very large (the airport) to the very small (e.g., bus shelters). If the Aerotropolis is to have Aboriginal Cultural Values at its core, these values and their representation in art should infuse as many aspects of the Aerotropolis as possible.
- Given that the focus of the Aerotropolis region is the central airport, there should be an effort made to create large-scale Aboriginal artwork that is primarily visible from the air. This art would capitalise on the unique aerial viewpoints that people will have of this region of Sydney; it could also serve as a clear marker of the unique nature of the Western Sydney Airport. When people fly into Kingsford-Smith Airport, they

expect to see the Sydney Opera House and the Harbour Bridge; these are both large-scale European features. In contrast, when people fly into Nancy-Bird Airport, they should see expressions of Aboriginal culture across the landscape. This would provide a clear distinction between the two airports and be representative of the importance of Aboriginal Cultural Values in the Aerotropolis planning process.

- It is essential that additional cultural values inputs take place via face-to-face conversations held on Country.

14.2.8 Wider Western Sydney Aerotropolis Conclusions

This initial workshop revealed some cultural values of the Aerotropolis region held by the Aboriginal stakeholders, as well as several concerns the stakeholders have regarding the project and the current level of historical and archaeological information in the area.

Key conclusions that can be drawn from the cultural values workshop include:

- The stakeholders stated that it is too early to comment with certainty on cultural values because there has not been an opportunity to walk Country and there have been no archaeological field investigations, and large parts of the landscape have not been extensively investigated during prior studies.
- The cumulative impact of the project is a key issue of cultural concern. When the stakeholders were asked what they would most like to see if they were to return to the study area in 50 years, the consensus answer was the retention of a significant portion of the Cumberland Plain particularly where original terrain, landscape and environment elements are best preserved. The consensus was also that this conservation area would not just include conserved creek corridors, but also contain a representative range of remnant terrain, emphasising the importance of retaining the Cumberland Plain Woodland rather than simply replacing with rows of trees for example.
- Unusual and well-preserved landforms such as exposed sandstone outcrops, areas of remnant old growth vegetation, well preserved creek corridors, should be protected where possible.
- There is a need to investigate the results of archaeological assessments undertaken across the Badgerys Creek airport site as they may shed important light on site and colonisation patterns in the region.
- The stakeholders present said that it is critical that the traditional owners and LALCs play a key role in future consultation and are given the opportunity to participate in further studies. The stakeholders stated that it is offensive when Aboriginal groups with no connection to country are engaged to do archaeological work.
- Any interpretation and storytelling needs to be undertaken in consultation with the traditional owners and LALCs to ensure it is culturally appropriate.
- There are some family connections to this country and nearby, and those should be recognised through acknowledgment in the studies done of the area as well as further interpretation through consultation with the traditional owners and LALCs.

14.3 Bradfield City Centre Cultural Values Engagement

Following the work completed for the Western Sydney Planning Partnership, Extent Heritage were subsequently engaged by the Western Parkland City Authority to undertake cultural values assessment relating specifically to the Bradfield City Centre. The details of the work have been included here as the findings are an important body of evidence to help assess the cultural and intangible values of the study area.

14.3.1 Methodology

GHD/Zion Engagement and Planning were commissioned by the proponent to provide advice on the selection stakeholders for this more targeted engagement work. Extent Heritage were advised by GHD/Zion that the following groups should be invited to participate:

Table 21 – Workshop attendees

Organisation	Attendance
Dharug Strategic Management Group	Invited, but did not attend
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Participated through an interview
Gandangara Local Aboriginal Land Council	Participated through a discussion on site
Dharug Ngurra Aboriginal Corporation	Invited, but did not attend
Darug Custodian Aboriginal Corporation	Provided input via phone and written correspondence following the field survey
Darug Aboriginal Cultural Heritage Assessments	Invited, but did not attend
Darug Land Observations	Invited, but did not attend
Burbaga Aboriginal Corporation	Invited, but did not attend

Extent Heritage planned to undertake cultural values mapping on Country as part of this work, but stakeholder availability and accessibility/mobility issues meant that this was not possible for all groups. To enable as much participation as possible, Extent Heritage offered to undertake interviews or accept written advice and remote consultation as preferred by individual groups.

The intention of these cultural values interviews was to help identify and understand key social, cultural and intangible values associated with the Bradfield City Centre and to identify how these values should be conserved, remembered and managed throughout this project and into the future. The section below summarises the key findings of the cultural values research in Stage 2.

14.3.2 Cubbitch Barta Native Title Claimants Aboriginal Corporation

On 17 November 2020 Chloe Sullivan (GHD) and Madeline Shanahan (Extent Heritage) undertook an interview with Glenda Chalker of Cubbitch Barta Native Title Claimants Aboriginal Corporation in order to help identify and understand key social, cultural and intangible values associated with the Bradfield City Centre study area. The interview also aimed and to identify how these values should be conserved, remembered and managed throughout this project and into the future.

Glenda Chalker provided the following advice:

- Culturally modified trees in the broader region have previously been damaged and removed.
- The coverage of the study area previously seems to have been poor and large areas, particularly in the middle require more detailed investigation.
- It is important to walk the creek lines properly to identify tree types.

- Inter-generational equity is important. Some Country needs to be left for future generations to be able to learn and share culture.
- The Cumberland Plain landscape needs to be protected so that there is still an opportunity to learn. How can culture be continued if there is nothing left?
- If culturally modified trees are identified, these need to be connected to other trees and flora in the area.
- The connections between trees need to be maintained so that they are not left in isolation.
- People do not know the history of this Country and the endurance of its people – we still exist here and practise culture despite everything.
- Interpretation will be important, but it should be used for education, not as a mitigation for destruction.

14.3.3 Gandangara Local Aboriginal Land Council (GLALC)

Darren Duncan of GLALC participated in a cultural values walk over the study area on 1 December 2020. Madeline Shanahan and Francesca McMaster of Extent Heritage were in attendance, accompanied by Elle Davidson (Zion Engagement and Planning), Chloe Sullivan (GHD) and Lilly Dolenec (Western Parklands City Authority).

Darren Duncan provided the following advice:

- Based on his previous experience excavating and undertaking survey at the site, it appears to be highly disturbed.
- The waterways, such as Thompsons Creek, are very important.
- Development should stay away from the waterways and focus should be given to improving water quality and flow.
- When the creek was healthy it would have had plenty of wildlife – would have had fishes, turtles, lots of water, lots of other mammals coming down to drink and feed. These animals are important.
- The large eucalyptus tree on the creek line was noted as being of high importance.

14.4 Darug Custodian Aboriginal Corporation

Darug Custodian Aboriginal Corporation were unable to attend the planned site visit but were provided with access to the site during the field survey and an opportunity to comment via phone and in writing. Extent Heritage received detailed feedback via a letter written by Justine Coplin on 15 December 2020.

The following advice, including direct excerpts from the letter, was received:

- “Aboriginal peoples are the oldest continued culture...the land may have been taken from us for many tens [sic] of years and disturbed. However, they still have cultural values, as a culture we have had to adapt to a forever changing landscape, allowance for culture, way of practicing these cultures and even our language is forever changing and adapting.”
- “Asking me to choose what would be more important to us, this question is problematic to me. Rather than looking at them as separate areas you need to look at them combined. Trees, animals, scrubs, waterways are all people to us, not an item or possession. Through archaeology it is shown that you will find stone tools and sites closer to the river, but without the plains the rivers will not and cannot thrive and be a healthy entity.”


- “The greatest thing for me to feel when going to a site is how the Country is still fighting to this day. The land was stripped of us and, we were stripped from the land. Sometimes I think that the term ‘care for country’ can be misinterpreted. When speaking about Country it is not something we own, rather than the Country and you work hand in hand. In a symbiotic relationship. As a Darug person the land is my mother, when I speak to Country, I speak to it as if it is a person. A person that I have a duty of care for that also cares for me. The land is the direct link between all aspect of our existence; our spirituality; culture, language, family, lore and foremost creates our identity. This connection flows from us to the Country and Country back to us. When I looked around, I could see the Country fighting back after being abused, manipulated and quite frankly used.”
- “There were fields of kangaroo grass...the seed heads when they would dry and ripen would be processed then ground to a powder to make damper.”
- 
- “I saw many animals when I was on the survey which makes me feel special. I saw burus (kangaroos), Banggaray (swamp wallaby), Djarrawunnang (magpie), many other Binyang (birds), my family totem the Kutukulung (long neck turtle), Bulada (black snake), Mugadun (monitor), and many more. Seeing these animals shows the importance of these lands, the push to save these lands to allow home for all our people.”
- Key priorities of the development are to use sustainable materials, plant native plants that are from the area, using correct terminology, do not use the past tense and ensure that it is clear throughout the development that this is, always has been and always will be Aboriginal land.
- “To make this a great project, Extent needs to make sure that the Aboriginal involvement is not just to tick a box and not to treat Aboriginal peoples in a tokenistic way.”

Figure 61 Image courtesy of Tyla Blunden, DCAC



14.4.1 Stage 2- Conclusions

After reviewing the findings of the cultural values research undertaken in Stage 2, identifiable patterns emerge. The following summary conclusions can be made regarding the cultural values identified for the Aerotropolis Core precinct:

- The Cumberland Plain landscape needs to be protected and conserved.
- Intergenerational equity is critical, and younger generations will not be able to learn if there is nothing left of the Cumberland Plain.
- Culturally modified trees are highly important. Many have been destroyed throughout the region and those left need to be protected.
- The connections between trees need to be maintained. If they are left in isolation they will not be protected.

- [REDACTED]
- Kangaroo grass is culturally important and was used to make damper.
- The waterways are very important. Development should stay away from the waterways and focus should be given to improving water quality and flow.
- The wildlife and animals here are important and require healthy waterways and Country for their protection.
- The connections across all of Country and between all things need to be understood. The land, trees, water and animals cannot, be seen in isolation. It needs to be understood and protected as a whole.
- Country is the direct link to spirituality, culture, language, family, lore, and identity. Darug people are connected to Country and Country is connected to them.
- Key priorities of the development are to use sustainable materials, plant native plants that are from the area, using correct terminology, do not use the past tense and ensure that it is clear throughout the development that this is, always has been and always will be Aboriginal land.

14.4.2 Cultural values and Master Planning

The proposed Masterplan directly and effectively addresses several of the cultural values identified as part of the Wider Western Sydney Aerotropolis Cultural Values Workshop. In particular:

- [REDACTED]
- Connections between trees will be maintained by the Green Loop and throughfare of the Thompsons Creek Parkland.
- The waterways, namely Moore Gully and Thompsons Creek, will be retained and reinvigorated. In particular, desires for improvements to the water flow and quality will be addressed through the further formalisation of Moore Gully.
- The development and inclusion of three parklands, including Thompsons Creek Parkland, will retain crucial open spaces within the Bradfield City Centre site.
- Improvements to these open spaces as part of the design will reinvigorate natural vegetation and provide habitats for native animals. A focus will also be placed on including traditional resources such as kangaroo grass.
- Connection to Country will also be enabled through the pedestrianised Green Loop which allow the public to traverse the urban place while connecting to the natural environment.
- Further incorporation of the cultural values into the Master Plan design are outlined in **Section 14**.

15 Significance Assessment

15.1 Assessment criteria

While all Aboriginal objects in NSW are protected under NSW legislation, the *National Parks and Wildlife Act 1974* recognises that the destruction of sites may be necessary to allow other activities or developments to proceed. In order for Heritage NSW – DPC to make informed decisions on such matters, a consideration of the significance of cultural heritage places and objects is an important element of the assessment process.

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide (OEH 2011: 10) provides guidelines, in accordance with the Burra Charter (Australia ICOMOS 2013) for significance assessment with assessments being required to consider the following criteria:

- Social values – does the area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
- Historic values – is the area important to the cultural or natural history of the local area and/or region and/or state.
- Aesthetic values – is the area important in demonstrating aesthetic characteristics in the local area and/or region and/or state.
- Scientific values – does the area have the potential to yield information that will contribute to an understanding of the cultural and natural history of the local area and/or region and/or state.

An assessment of the scientific significance of an item or place is required in order to form the basis of its management. The Code of Practice required that the assessment must reflect best practice assessment processes as set out in the Burra Charter (Australia ICOMOS 2013):

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in 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 subject area contain teaching sites or sites that might have teaching potential?
- It is important to note that heritage significance is a dynamic value and will be updated in consideration of the results of future investigations.

15.2 Significance assessment

15.2.1 Scientific value

The following Part assesses the significance of the PADs investigated through test excavations, and surface artefacts identified during the test excavation program and survey. The assessment is necessary to most effectively provide recommendations and mitigation measures for managing all the sites identified across the study area. **Table 22** summarises the archaeological significance of each site.

B17 (AHIMS ID 45-5-2779)

The site was recorded in 1996 as an open artefact scatter comprised of two Aboriginal objects. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 18 (AHIMS ID 45-5-2620)

The site was recorded in 1996 as an isolated find. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 19 (AHIMS ID 45-5-2621)

The site was recorded in 1996 as an open camp site. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 20 (AHIMS ID 45-5-2622)

The site was recorded in 1996 as an open camp site. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 21 (AHIMS ID 45-5-2639)

The site was recorded in 1996 as an open artefact scatter, comprising eleven Aboriginal objects. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 22 (AHIMS ID 45-5-2640)

The site was recorded in 1996 as an open artefact scatter comprising three Aboriginal objects. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 23 (AHIMS ID 45-5-2641)

The site was recorded in 1996 as an artefact scatter comprising four artefacts. The results of the archaeological survey identified an additional nine Aboriginal objects at the recorded location of the site. None of the Aboriginal objects identified during the archaeological survey matched the artefacts recorded on the 1996 site card. It is likely that the site has been subject to taphonomic processes which have impacted the distribution of the site assemblage. In addition, background research showed that the artefacts were located on an area where a large aerial was constructed in the mid-twentieth century. Due to high levels of historical ground disturbance, the site is considered to have low integrity. The silcrete and mudstone artefacts obtained

from the site are also considered to be representative of the artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefacts, the site is not considered to be especially valuable for educational purposes. Overall, B23 (AHIMS ID 45-5-2641) is considered to be of low scientific value.

B 38 (AHIMS ID 45-5-2628)

The site was recorded in 1996 as an artefact site. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

ACAS01 (AHIMS ID 45-5-5481)

The site comprises four Aboriginal objects identified within an exposure associated with a vehicle track. The site is located within the extent of Thompsons Creek site (AHIMS ID 45-5-5491), which has been determined to hold moderate scientific significance. However, the four artefacts associated with ACAS01 should be considered as a separate deposit as they are likely to have been heavily affected by ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. As a result of these disturbances, the artefacts associated with ACAS01 have low research potential. The silcrete artefacts are also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefacts, the site is not considered to be especially valuable for educational purposes. Overall, ACAS01 (AHIMS ID 45-5-5481) is considered to be of low scientific value.

ACAS02 (AHIMS ID 54-4-5480)

The site consists of one Aboriginal object identified in the northern extent of the original ACIF01 PAD (AHIMS 45-5-5480). The site is considered to have low research potential, as it is likely to have been subject to the ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. The mudstone artefact obtained from the site is also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, ACAS02 (AHIMS ID 54-4-5480) is considered to be of low scientific value.

BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)

The site consists of one Aboriginal object identified within an exposure associated with a vehicle track. The site is considered to have low research potential, as it is likely to have been subject to the ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. The silcrete artefact obtained from the site is also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, BCC Isolated Artefact 1 (AHIMS ID 45-5-5588) is considered to be of low scientific value.

BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)

The site consists of four Aboriginal objects identified within an exposure associated with a vehicle track. The site is considered to have low research potential, as it is likely to have been subject to the ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. The IMT artefact obtained from the site is also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, BCC Isolated Artefact 2 (AHIMS ID 45-5-5589) is considered to be of low scientific value.

BCC Isolated Artefact 3 (AHIMS ID 45-5-5590)

The site consists of one Aboriginal object identified within an exposure associated with a large aerial constructed for the RAAF base. As the area has been subject to high levels of historical ground disturbance impacting the archaeological integrity of surface artefacts, the site is considered to have low research potential. The silcrete artefact obtained from the site is considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, BCC Isolated Artefact 3 (AHIMS ID 45-5-5590) is considered to be of low scientific value.

ACIF01 (AHIMS ID 45-5-5480)

The investigation of ACIF01 through a test excavation program identified sixteen Aboriginal stone artefacts in subsurface archaeological deposits. The assemblage included backed artefacts and scrapers showing a preference for silcrete and IMT raw material types. The artefact collection is reflective of Pleistocene to early Holocene assemblages found across the regional Cumberland Plain context.

Due to the low density of artefacts in this area (1.1 artefacts/m²), there is low research potential. The assemblage likely reflects background scatter and limited on-site manufacturing. The assemblage may hold some education potential, however its small size is limiting.

Overall, ACIF01 is reflective of assemblages found across the Cumberland Plain. It has limited research and education potential, and therefore holds low scientific value.

Thompsons Creek (AHIMS ID 45-5-5491)

The investigation of Thompsons Creek through a test excavation program identified eighty-three Aboriginal stone artefacts in subsurface archaeological deposits. The assemblage included backed artefacts and scrapers showing a preference for silcrete raw material. The artefact collection is reflective of Pleistocene to early Holocene assemblages found across the regional Cumberland Plain context.

Due to the low density of artefacts in this area (3.5 artefacts/m²), the overall assemblage likely reflects background scatter and limited on-site manufacturing. In contrast to other assemblages within the site, the levels of reduction were higher. This was revealed through the identification of backing flakes, platform rejuvenation flakes, and small artefacts. The nature of the assemblage lends itself to having moderate education potential, as it reflects different manufacturing types seen across the Cumberland Plain. In addition, due to its size, the assemblage provides a moderate research potential to better understand activities that occurred along Thompsons Creek.

One test pit within the Thompsons Creek site recovered a moderate density of artefacts. TP 15 recovered ten Aboriginal objects from the 50 x 50 cm test pit, contrasting to the low density of artefacts recovered from the other test pits excavated within the site. The site appears to reflect a location of on-site manufacturing. As a result, the artefacts from TP 15 hold moderate scientific and education potential. Moreover, the artefacts recovered from TP 15 may be associated with a larger assemblage. Additional archaeological investigation of TP 15 may be required to further understand the extent and significance of the assemblage in this area. The results of additional investigations may increase the scientific value of the assemblage.

Overall, the scientific value of the Thompsons Creek site (AHIMS ID 45-5-5491) should be considered moderate.

Moore Gully (AHIMS ID 45-5-5492)

The investigation of Moore Gully through a test excavation program identified thirty-five Aboriginal stone artefacts in subsurface archaeological deposits. The assemblage included backed artefacts showing a preference for silcrete raw material. The artefact collection is reflective of Pleistocene to early Holocene

assemblages found across the regional Cumberland Plain context.

Due to the low density of artefacts in this area (3.7 artefacts/m²), the overall assemblage likely reflects background scatter and limited on-site manufacturing. The presence of complete and proximal splits further indicated that on site manufacture of stone tools was undertaken in the area along Moore Gully. Due to its small size, limited variability in flake forms, manufacturing techniques, and raw material preferences, the site has low research potential, education potential, and rarity.

One test pit within the Moore Gully site recovered a moderate density of artefacts. TP 114 recovered eleven Aboriginal objects from the 50 x 50 cm test pit, contrasting the low density of artefacts recovered from the other test pits within the site (more than ten artefacts per test pit). The site appears to reflect a location of on-site manufacturing. As a result, the artefacts from TP 114 hold moderate scientific and education potential. Moreover, the artefacts recovered from TP 114 may be associated with a larger assemblage. Additional archaeological investigations around TP 114 may be required to further understand the extent and significance of the assemblage in this area. The results of additional investigations may increase the scientific value of the assemblage.

Overall, the scientific value of the Moore Gully site (AHIMS ID 45-5-5492) should be considered low. However, the artefacts associated with TP 114, including those recovered from the test pit and additional unexcavated artefacts in the direct vicinity of the test pit, should be considered to hold moderate scientific value.

Table 22 - Summary of archaeological significance

Site name (AHIMS ID)	Excavated	Research potential	Representativeness	Rarity	Education potential	Overall significance assessment
B17 (AHIMS ID 45-5-2779)	No	Low	Low	Low	Low	Low
B 18 (AHIMS ID 45-5-2620)	No	Low	Low	Low	Low	Low
B 19 (AHIMS ID 45-5-2621)	No	Low	Low	Low	Low	Low
B 20 (AHIMS ID 45-5-2622)	No	Low	Low	Low	Low	Low
B 21 (AHIMS ID 45-5-2639)	No	Low	Low	Low	Low	Low
B 22 (AHIMS ID 45-5-2640)	No	Low	Low	Low	Low	Low
B 23 (AHIMS ID 45-5-2641)	No	Low	Low	Low	Low	Low
B 38 (AHIMS ID 45-5-2628)	No	Low	Low	Low	Low	Low
ACAS01 (AHIMS ID 45-5-5481)	No	Low	Low	Low	Low	Low
ACAS02 (AHIMS ID 54-4-5480)	No	Low	Low	Low	Low	Low
BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)	No	Low	Low	Low	Low	Low
BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)	No	Low	Low	Low	Low	Low
BCC Isolated Artefact 3	No	Low	Low	Low	Low	Low

Site name (AHIMS ID)	Excavated	Research potential	Representativeness	Rarity	Education potential	Overall significance assessment
(AHIMS ID 45-5-5590)						
ACIF01 (AHIMS ID 45-5-5480)	Yes	Low	Low	Low	Low	Low
Thompsons Creek (AHIMS ID 45-5-5491)	Yes	Moderate	Moderate	Moderate	Moderate	Moderate
TP 15 – Thompsons Creek (AHIMS ID 45-5-5491)	Yes	Moderate	Moderate	Moderate	Moderate	Moderate
Moore Gully (AHIMS ID 45-5-5492)	Yes	Low	Low	Low	Low	Low
TP 114 – Moore Gully (AHIMS ID 45-5-5492)	Yes	Moderate	Moderate	Moderate	Moderate	Moderate

15.3 Historic significance

The guidelines to the *Burra Charter* include the following discussion of historic significance:

A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment. (Australia ICOMOS 2013b)

In relation to Aboriginal cultural heritage, many post-contact places and sites would have historic value. Pre-contact places and items may also be significant according to this criterion, although the association with historic figures, events, phases or activities may be more difficult to establish. Places of historic significance may include sacred or ceremonial sites, sites of resistance battles and massacres, places associated with Aboriginal communities after colonisation and the more recent past, and archaeological sites with evidence of technological developments.

Based on current research, the study area is not known to be associated with any specific people, events, or activities of historical importance to the Aboriginal community.

15.3.1 Aesthetic value

This criterion refers to aspects of sensory perception and the ability of the site to elicit emotional responses referred to as sensory or sensori-emotional values. The guidelines to the *Burra Charter* note that assessments may include consideration of the form, scale, colour, texture and material of the item or place, as well as sounds and smells. With regard to pre-contact Aboriginal cultural heritage sites, the placement within the landscape would be considered under this criterion as would memoryscapes and the ability of the site to transmit such memories. It is important to consider that sensori-emotional values are not always equated with ‘beauty’; for example, massacre sites or sites of incarceration may have value under this criterion. Individual artefacts, sites and site features may also have aesthetic significance.

A representative from Kamilaroi Yankuntjatjara Working Group spoke extensively about the importance of appreciating the landscape as a whole. Kadibulla Khan spoke about the sky and the earth. The sky has always allowed people to navigate across the landscape. It also acted as a reflection of the earth, forming one continuous landscape across both realms. Ms Khan told a dreaming story about how the people once lived in the sky. One day, they looked down upon the earth and saw *Baiame* (the ‘creator’) fixing the earth and the people wanted to help. *Baiame* brought down the people from the sky in the form totems. These totems include the rainbow serpent who formed the land, rivers and valleys, the kangaroo who created the hills, and the wedged tailed eagle who created the plants and trees, amongst others. Because of this connection, the landscape as a whole had significant spiritual value.

Waterways are an especially important part of the landscape. Dreaming stories of the rainbow serpent creating the rivers are associated with major waterways such as Thompsons Creek. Ms Khan noted that the waterways are a necessary part of life. Through spiritual connection to the landscape,

water can always be found – from either rivers or underground. Waterways are associated with ceremony and other cultural practices. Representatives from Kamilaroi Yankyuntjatjara Working Group made clear that Aboriginal people have a strong connection with waterways and also noted that ‘Aboriginal people would have and still do utilise these water ways, many daily activities would have taken place as the whole of the area, is of significance to us. Once flora and fauna was thriving in this area, resource rich for the Aboriginal peoples.’

The majority of the study area has been subject to the clearance of native vegetation, which has compromised the aesthetic value and some areas. However, based on proximity to features such as waterways, trees and remnant, intact landforms in the margins, the study area is considered to be of moderate aesthetic value. [REDACTED]

[REDACTED] In addition, native kangaroo grass which covers the study area was traditionally used to make damper. The continued presence of this resource links the site to traditional practices.

15.3.2 Social value

In Aboriginal heritage this criterion concerns the relationship and importance of sites to the contemporary Aboriginal community. Aspects of social and spiritual significance include people’s traditional and contemporary links with a place or object as well as an overall concern by Aboriginal people for sites and their continued protection. Aboriginal cultural values may partially reflect or follow on from archaeological values, historic values, aesthetic values or be tied to values associated with the natural environment. This criterion requires the active participation of Aboriginal people in the assessment process as it is their knowledge and values that must be articulated.

Cultural values research, as summarised in Section 9, has clearly indicated that the study area holds social, cultural, and spiritual significance. The importance of maintaining the Cumberland Plain and protecting Country so that future generations can learn culture has been highlighted by stakeholders. The importance of the cultural landscape as a whole, where land, waters, vegetation and animals are all connected, and in turn, are connected to Aboriginal people has also been highlighted. The connections between Country, culture and community demonstrates the social and cultural values of the study area.

15.3.2.1 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

15.3.2.2 Fire knowledge

An understanding of fire knowledge is also important to fully appreciating the ways Aboriginal people managed and maintained the land. Several representatives noted the significance of including this part of their culture in the story of the landscape and the history of Aboriginal peoples as a whole. Representatives noted that any evidence of ash layers identified during the excavation would be highly significant, however no evidence of ash layers were identified. In addition, the sustainable nature of the way Aboriginal people management of the land was considered important. Representatives noted that Aboriginal people did not produce rubbish that polluted the landscape but instead looked after it.

15.3.2.3 [REDACTED]

[REDACTED]

15.4 Statement of significance

The study area is considered to have social and cultural significance for Aboriginal stakeholders. The connection between the cultural landscape, community and culture has been highlighted repeatedly and underpins the cultural and social Aboriginal values of the place. The importance of retaining this landscape to ensure intergenerational equity and access to culture is also critical. The study area also holds moderate aesthetic significance due to the presence of landscape features including waterways and kangaroo grass. [REDACTED]

Moore Gully (AHIMS ID 45-5-5492) was determined to have low significance overall. One test trench, TP 114, however was considered to have moderate significance. Thompsons Creek (AHIMS ID 45-5-5491) was determined to have moderate significance. In addition, one test trench, TP 15, was also singled out as comprising a more unique assemblage within the overall site. The artefacts from TP 15 and TP 114, and any additional associated artefacts identified in the direct vicinity of the test trenches, have been considered a more unique assemblage.

The scientific significance of the remaining archaeological sites within the study area has been determined as low. As several of the previously identified AHIMS sites could not be relocated, their research potential was low. Moreover, the isolated artefacts and low-density background scatters are common in the regional Cumberland Plain context.

16 Impact Assessment

16.1 Proposed works

A Designing for Country approach has been implemented in the creation of Bradfield City Centre. Bangawarra (2022) has been engaged by WPCA to produce a report outlining ways in which the proposed Master Plan can incorporate Aboriginal knowledge and understanding, as well as best practices, into the designs. ‘Designing with Country is a non-linear process where decision making, and design become more nuanced and responsive to the whole system’s needs’ (Bangawarra 2022, 43).

The designing with country diagram ([Figure 62](#)) shows western planning and architectural priorities on the left, compared to the non-hierarchical perspective adopted in traditional Aboriginal practices, which considers all of the entities of the land, soil, rocks, sky, water, plants, animals, stories, and people as independent and held in relation to one another, on the right (Bangawarra 2022, 43). WPCA has been highly receptive to incorporating these features into the design of Bradfield City Centre.

The proposed mixed-use development at Bradfield City Centre consists of large areas of residential and commercial development. These hubs will cover a majority of the study area. Two parks, Ridge Park, and Larger Central Park ([Figure 63](#)), are proposed to be constructed in the centre and north-western corner of the study area. To appreciate its high vantage point, the design of Ridge Park will incorporate views across the study area and wider landscape.

The zone along Thompsons Creek and Moore Gully will also comprise parkland, presently referred to as Thompsons Creek Parkland. The existing waterways and its associated landscape will be maintained and utilised. Two key public spaces will be constructed to enable the community to further engage with the waterfronts. Construction within Thompsons Creek Parkland is expected to include revegetation efforts, with a focus on utilising local and native flora. This revitalisation of the local ecosystem is also expected to create and protect natural habitats for native animals. Retention and revitalisation native and local vegetation was identified through community consultation and the Bangawarra (2022) Designing with Country report as being highly important. The existing waterway, Moore Gully, will be maintained and integrated with urban interfaces. Boardwalks and tracks are expected to be installed to enable the public to access across the landscape.

In addition to the open parkland, a pedestrianised green loop will also be incorporated into Bradfield City Centre. The green loop will link the city, ridges, and the creek ([Figure 63](#)). As a dedicated pedestrian and ecological boulevard (Bangawarra 2022, 46), the community will be able to travel through the landscape while maintaining connectivity to the natural environment. Further opportunities to engage with public art, created by local First Nations artists, will also create continuity of cultural and artistic practices by Traditional Owners.

Key design features across the Bradfield City Centre site, and the respective value or effect, are outlined in [Table 23](#) below.

Table 23 – Outline of design features and associated values/effects*Source: (Bangawarra 2022, 34)*

Design feature	Value/Effect
Reimagining and enhancing the waterways	Protecting water is protecting Country
A green spine linking ridge to creek and everything between	Creating space for connections to Country
A legible connected city by all modes	Caring for Country is to honour the connections between all things
A Pedestrianised Green Loop: an integrated experience	Connecting to Country brings all things together
A place of innovation and employment	Honouring Country through a balance of many diverse elements
A variety of distinct civic places	Prioritising Country in the design of prominent spaces
A unique world class urban playground	Celebrating the distinctly unique nature of Country in Western Sydney

Figure 62 Designing with Country methodology

Source: Bangawarra 2022, Figure 1

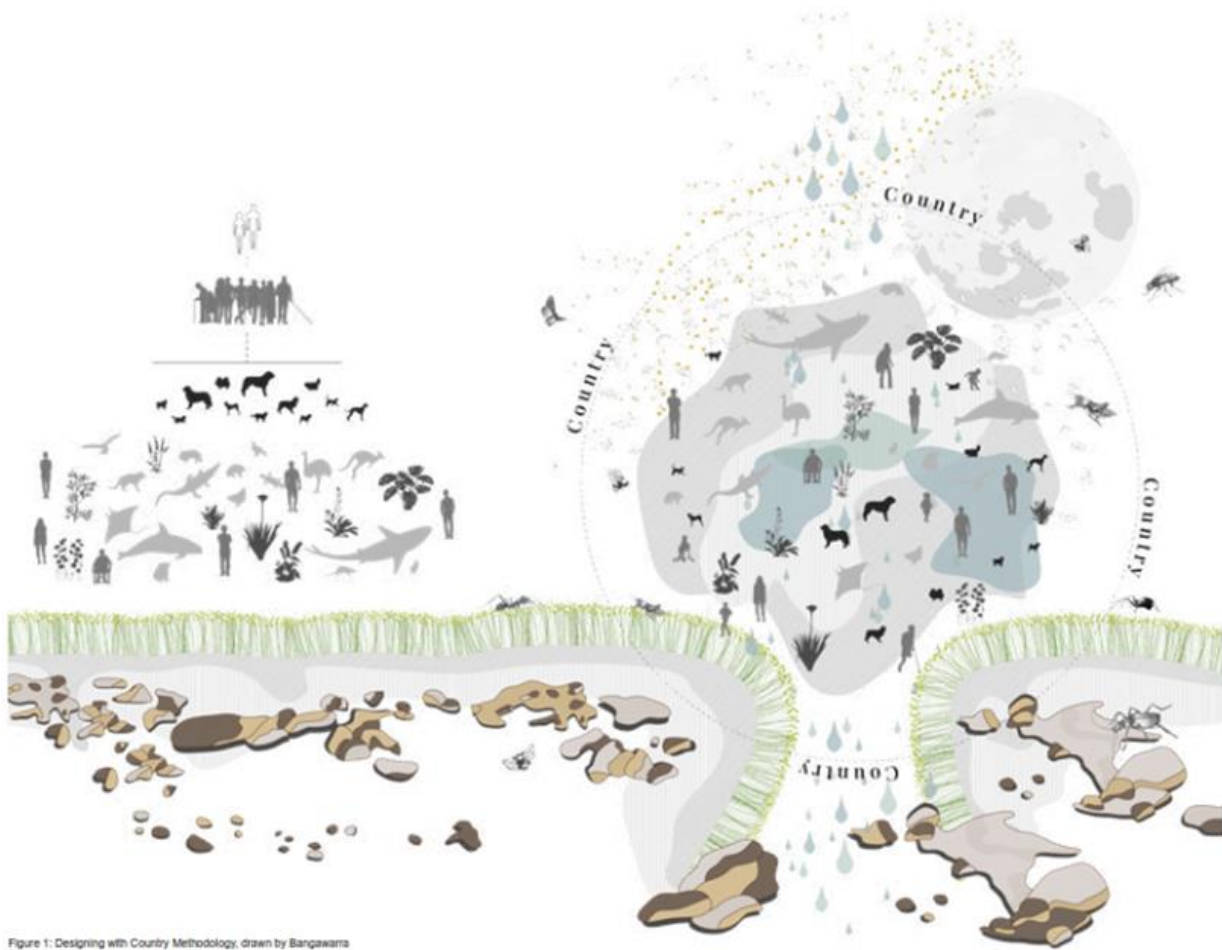


Figure 1: Designing with Country Methodology, drawn by Bangawarra

WESTERN DESIGN PARADIGM (LEFT)

On the left is the Western approach to design which is hierarchical, privileging people first (and certain times of young, healthy and able bodies are designed for as the priority) then animals (again, valuing some animals as useful and others as less so) and landscape is the surface upon which design is enacted

DESIGN WITH COUNTRY

On the right is Bangawarra's diagram of designing with Country, which reflects all of the priorities in this document. All things are interconnected. Water, stones, ants and people are equally considered part of both the ecologies we design for and the architecture, urban space and landscapes we create.

Figure 63 Dedicated pedestrian circulation and connections to the pedestrianised green loop

Source: Bangawarra, Figure 3



16.2 Potential impacts to Aboriginal heritage

The results of the archaeological survey, background research and Aboriginal stakeholder consultation have provided evidence for the presence of Aboriginal objects within the study area. It is assumed that the entire study area will be subject to ground disturbing works which will result in a direct impact and total loss of value to a number of identified Aboriginal sites (see **Table 24** for a summary of impacts). It is assumed that the proposed works will also pose an impact to all identified

social, cultural, and intangible values within the study area.

Residential and commercial zoning

The development at Bradfield City Centre will include the construction of residential and commercial buildings across the majority of the study area. The construction process is expected to involve large-scale earthworks, grading, and the building of above and below-ground structures. The works are likely to cause a high level of disturbance, impacting both surface and subsurface archaeological remains located within these areas. The need to impact these sites and opportunities for mitigation measures should be reassessed at the detailed design phase.

Known Aboriginal sites which are likely to be impacted by the mixed development (Figure 64) comprise B 17 (AHIMS ID 45-5-2779), B 18 (AHIMS ID 45-5-2620), B 22 (AHIMS ID 45-5-2640), B 23 (AHIMS ID 45-5-2641), B 38 (AHIMS ID 45-5-2628), ACAS02 (AHIMS ID 54-4-5480), BCC Isolated Artefact 3 (AHIMS ID 45-5-5590), and part of ACIF01 (AHIMS ID 45-5-5480). These sites have all been determined to hold low scientific significance.

Parkland

Two small parks, Ridge Park and Larger Central Park, have been proposed. The construction process required to establish the parks is unknown but will likely involve ground disturbance works and revegetation. No surface or subsurface archaeological remains were identified within the proposed locations of these parks.

Thompsons Creek Park will stretch along the bank of Thompsons Creek and Moore Gully. The area is expected to be restored to a wetland that incorporates the existing landscape features and waterways. The route of Moore Gully will be maintained. Most of the parklands will be impacted by either stormwater management and associated works (such as stormwater detention, water quality areas and creek corridor restoration) as well as works associated with recreational needs (the swimming pool area, major events space, playgrounds and passive recreational areas).

The developments within the Thompsons Creek Park are likely to impact both surface and subsurface archaeological remains (**Figure 64-Figure 65**). Detailed design as part of the next stages of the project are required to fully determine mitigation measures to protect archaeological resources in these areas. Known Aboriginal surface artefacts which are likely to be impacted comprise B19 (AHIMS ID 2621), B 21 (AHIMS ID 45-5-2639), ACAS01 (AHIMS ID 45-5-5481), BCC Isolated Artefact 1 (AHIMS ID 45-5-5588), and BCC Isolated Artefact 2 (AHIMS ID 45-5-5590). These sites have all been determined to hold low scientific significance.

The development of Thompsons Creek Park will also impact the revised extents of Thompsons Creek (AHIMS ID 45-5-5491), Moore Gully (AHIMS ID 45-5-5492), and part of ACIF01 (AHIMS ID 45-5-5480). ACIF01 has been determined to hold low scientific significance. Moore Gully has been determined to hold low scientific value, with the exception of TP 114 and its immediate surroundings which hold moderate scientific value. Thompsons Creek has been determined to hold moderate scientific value, with the addition of TP 15 and its immediate surroundings which also hold moderate scientific value.

Areas of protection

Within the parkland, two areas have been determined to be protected at this stage of master planning. A 50-metre buffer surrounding the location of TP 15 (291321.887 easting and 6243816.007 northing) has been proposed to capture the potential extent of additional archaeological remains

associated with the assemblages (Figure 66). As a result of this conservation approach, Thompsons Creek (AHIMS ID 45-5-5491) will only be partially impacted.

The areas of existing native vegetation (ENV) will be retained and associated archaeology protected. As such, approximately half of the area of ACIF01, a small portion of Moore Gully (AHIMS ID 45-5-5492) and Thompsons Creek (AHIMS ID 45-5-5491), and B 20 (AHIMS ID 45-5-2622) will be preserved.

The majority of the study area has been subject to the clearance of native vegetation, which has compromised the aesthetic value and some areas. However, based on proximity to features such as waterways, trees, and remnant, intact landforms in the margins, the study area is considered to be of moderate aesthetic value.

Salvage

TP 114 is part of the Moore Gully site (AHIMS ID 45-5-5492) which holds moderate archaeological significance. Due to its location within the Thompsons Creek Parkland, this area will be impacted by ground disturbance works required to maintain and enhance the creek line. Salvage works would be required to understand the full impact to the archaeology in this area.

Figure 64 Identified archaeological sites in relation to proposed development

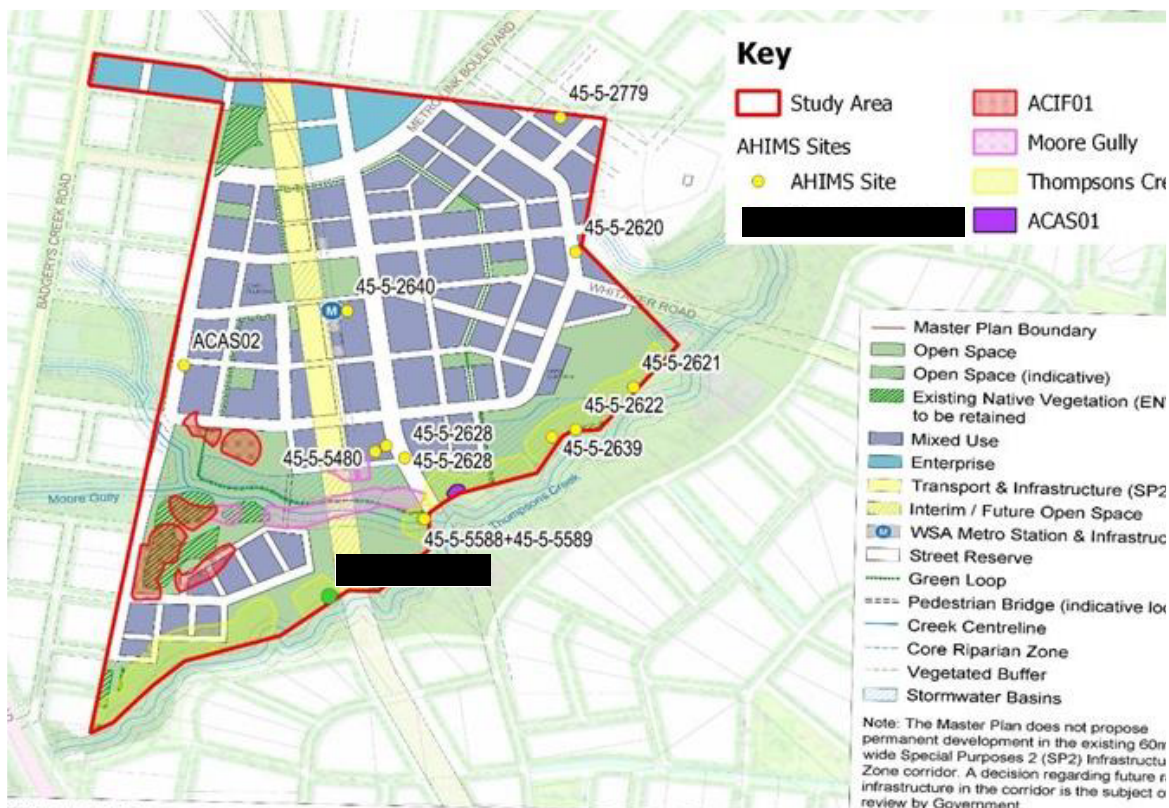


Figure 65 Detail of identified archaeological sites in the Thompsons Creek Parkland in relation to proposed development

Note: Green hashed line represents ENV which will be protected from harm

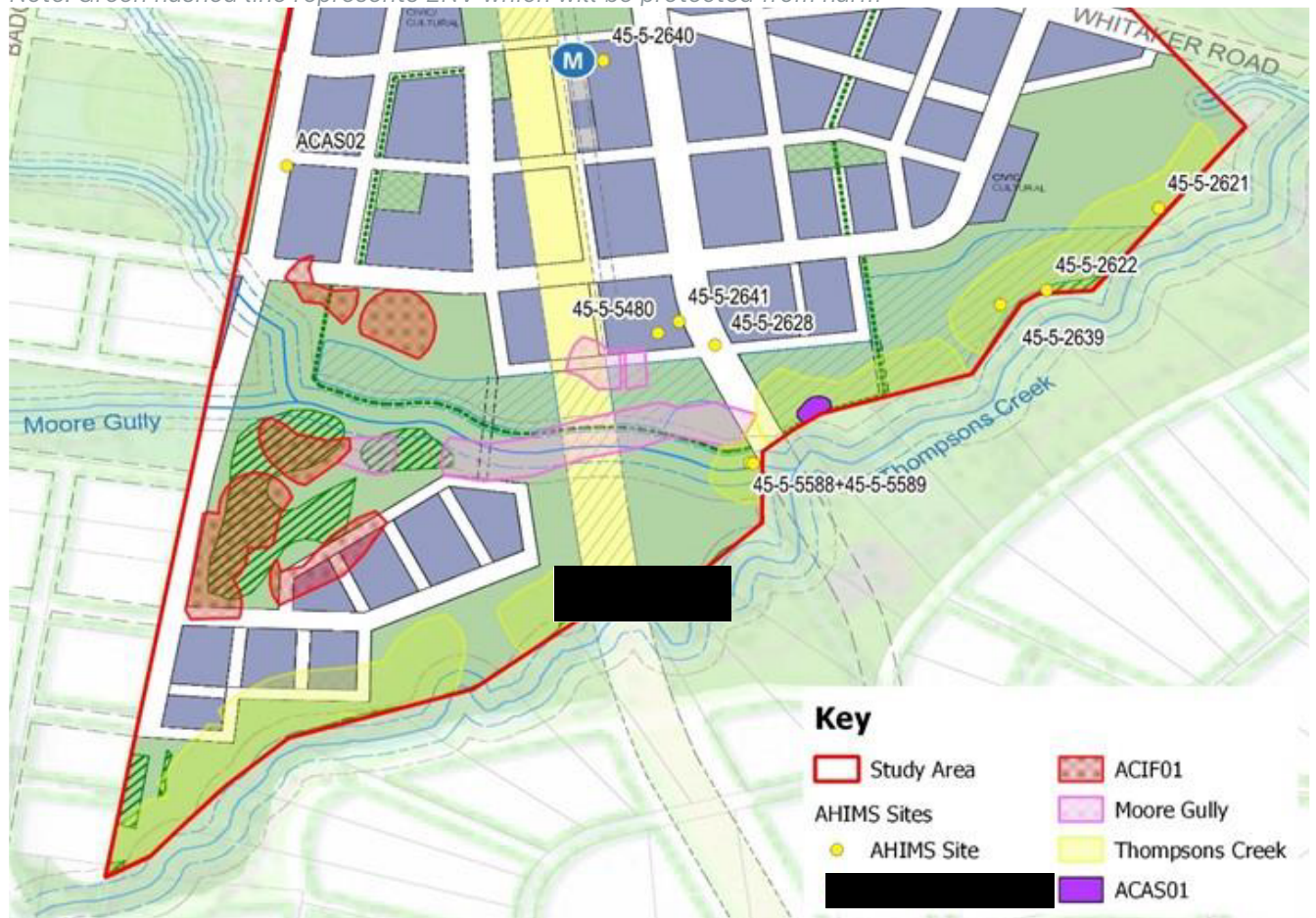
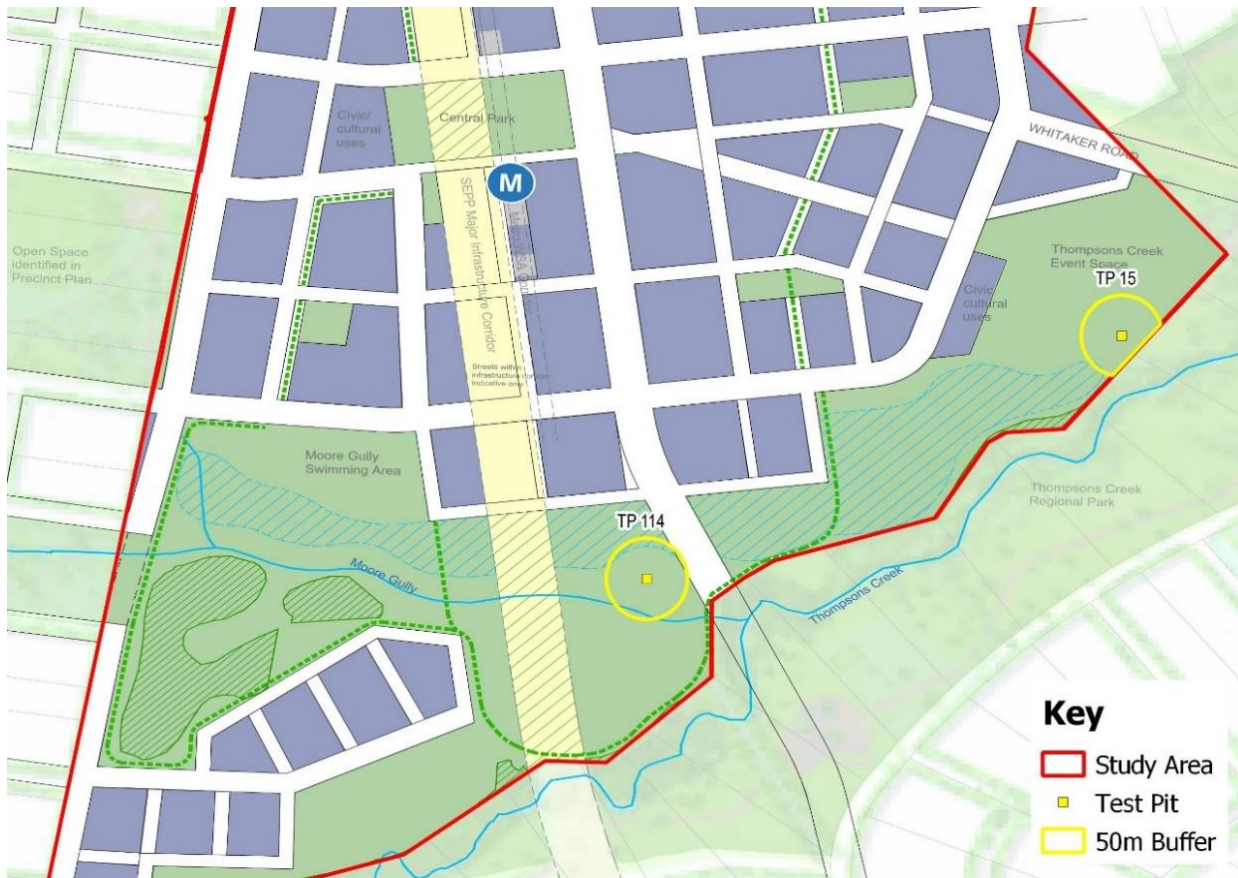


Figure 66 Archaeological protection zone comprising a 50 metre buffer surrounding TP 15



A summary of the assessed impact is provided in **Table 24** below.

Table 24 - Summary of likely impact to known Aboriginal archaeological remains

Note the detailed design phase should reassess any opportunities to reduce harm to AHIMS sites

Site name/number	Type of harm	Degree of harm	Consequence of harm
B17 (AHIMS ID 45-5-2779)	Direct	Total	Total loss of value
B 18 (AHIMS ID 45-5-2620)	Direct	Total	Total loss of value
B 19 (AHIMS ID 45-5-2621)	Direct	Total	Total loss of value
B 20 (AHIMS ID 45-5-2622)	Direct	Total	Total loss of value
B 21 (AHIMS ID 45-5-2639)	Direct	Total	Total loss of value
B 22 (AHIMS ID 45-5-2640)	Nil	Nil	No loss of value

Site name/number	Type of harm	Degree of harm	Consequence of harm
B 23 (AHIMS ID 45-5-2641)	Direct	Total	Total loss of value
B 38 (AHIMS ID 45-5-2628)	Direct	Total	Total loss of value
ACAS01 (AHIMS ID 54-4-5481)	Direct	Total	Total loss of value
ACAS02 (AHIMS ID 54-4-5480)	Direct	Total	Total loss of value
BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)	Direct	Total	Total loss of value
BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)	Direct	Total	Total loss of value
BCC Isolated Artefact 3 (AHIMS ID 45-5-5590)	Direct	Total	Total loss of value
ACIF01 (AHIMS ID 54-5-5480)	Direct	Partial	Partial loss of value
Moore Gully (AHIMS ID 45-5-5492)	Direct	Partial	Partial loss of value
Thompsons Creek (AHIMS ID 54-5-5491)	Direct	Partial	Partial loss of value

16.3 Ecological Sustainable Development principles

The Guide (OEH 2011) specifies that Ecological Sustainable Development (ESD) principles must be considered when assessing harm and recommending mitigation measures in relation to Aboriginal objects.

The following relevant ESD principles are outlined in Section 3A of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999:

- Decision-making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations (the 'integration principle')
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the 'precautionary principle')
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the 'principle of intergenerational equity').

16.3.1 The integration principle

The proposal would comply with the integration principle in regard to Aboriginal heritage. The Aboriginal heritage values of the study area have been considered as part of the planning process for the proposed works. The development and implementation of a heritage interpretation strategy for Aboriginal cultural heritage values of the study area will assist in complying with the integration principle.

1. The precautionary principle

Three areas of PAD were identified during the completion of this assessment, ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491). These PADs were tested to avoid destruction to areas with unknown archaeological value. As a result, the significance of these sites has been more fully understood. The area of TP 114 in Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek, including the around of TP 15, (AHIMS ID 45-5-5490) have been determined to hold moderate significance.

2. The principle of intergenerational equity

The proposed works should adhere, as close as possible, to the principle of intergenerational equity by collating scientific and cultural information on former Aboriginal occupation of the study area through the previous investigations and this ACHAR. The preservation of landscape features associated with social, cultural, and intangible Aboriginal heritage values should be incorporated in the final design. Preservation of these features would assist in complying with the principal of intergenerational equity by preserving these values for future generations.

16.3.2 Cumulative impacts

A cumulative impact is an impact on Aboriginal cultural heritage resulting from the incremental impact of the action/s of a development when added to other past, present, and reasonably foreseeable future actions.

The land surrounding the study area will be subject to several large development projects which will result in a substantial cumulative impact to the Aboriginal cultural heritage of the region.

The Western Sydney International Airport site at Badgerys Creek extends over approximately 1700 hectares, with adjacent lands progressively scheduled for resumption and development over the next 50 years. At least 70 Aboriginal sites have been identified across the airport site with additional heritage investigation identifying additional Aboriginal objects as part of project mitigation measures (Navin Officer 2016). While effort has been made to preserve sites through environmental conservation areas and movement of topsoil it is expected that a large portion of these sites will be impacted or relocated as part of construction.

Options assessment of the proposed M12 route resulted in the identification of a number of surface and subsurface sites through a combination of survey and test excavation. A total of 19 Aboriginal sites are located within the construction footprint and will be subject to impact as part of the program including several sites to the north of the current study area (Jacobs 2019).

The results of the archaeological survey program have confirmed the presence of surface artefact sites. The proposed works are likely to result in a total impact to the identified Aboriginal sites. While

resulting in a comparatively small cumulative impact when compared to the impacts of the above projects, the increase will never-the-less result in an increase to the cumulative destruction of Aboriginal cultural heritage in the region.

17 Management and Mitigation Strategy

17.1 Guiding principles

Where possible, cultural heritage should be conserved and protected *in situ*. However, where conservation is not practical, measures should be implemented to mitigate against the loss of archaeological value. These mitigation measures are based on the assessed significance of the site against the proposed impacts:

- Low significance – Conservation where possible. An AHIP would be required to impact the site before works can commence.
- Moderate significance – Conservation where possible. If conservation was not practicable further archaeological investigation would be required such as salvage excavations or surface collection under an AHIP.
- High significance – Conservation as a priority. An AHIP would be required only if other practical alternatives have been discounted. Conditions of this AHIP would depend on the nature of the site, but may include removal and preservation of scarred trees, or comprehensive salvage excavations.
- Unknown significance – Conservation where possible. Further investigation under the Code of practice will be required to assess the extent and significance of the PAD. Test excavation is not a mitigation measure.

Thompsons Creek (AHIMS ID 45-5-5492), Thompsons Creek TP 15 (AHIMS ID 45-5-5492), and Moore Gully TP 14 (AHIMS ID 45-5-5491) have been determined to hold moderate significance. The remaining identified Aboriginal archaeological sites have been determined to hold low significance, and as a result impacts may be considered negligible. However, consideration for protection should be given to reduce the cumulative impact to heritage.

17.2 Archaeological test excavations

Conservation of all identified sites with low and moderate potential is considered best practice. As the development is substantial and covers a large area, this should be considered wherever possible within the Master Plan design. As many of these sites are located within the Thompsons Creek Park, conservation may be possible through low-impact revegetation such as the planting of seeds, the building up of the area with imported fill, and the strategic placement of services and other features.

The areas including and directly surrounding TP 15 (AHIMS ID 45-5-5492) and TP 114 (AHIMS ID 45-5-5491) were identified as locations of on-site occupation by Aboriginal people in the Pleistocene to

large Holocene period. These areas hold moderate significance and, as a result, conservation is strongly recommended. This report recommends that areas surrounding TP 15 and TP 114, comprising a buffer of 50 m, should be protected from harm (**Figure 66**). Due to design flexibility, a 50-metre conservation buffer is possible around TP 15. Protections for archaeology associated with TP 114, however, are not anticipated. If these areas are not able to be protected, a salvage excavation program would be required to fully understand the extent and significance of the Aboriginal archaeological remains in the area.

Thompsons Creek (AHIMS ID 45-5-5491) was also determined to have moderate significance. This conclusion was based on the higher density artefact assemblage recovered. The assemblage has provided appropriate scientific data and can be utilised for interpretation and educational purposes. Based on the low density of artefacts across the majority of the site, with the exception of TP 15, no additional information is expected to be recovered from additional subsurface investigations.

Where surface artefacts have been identified, the Aboriginal community should have an opportunity to relocate and collect them for reburial or relocation to a safe keeping place.

17.3 Aboriginal Heritage Impact Permit

Where impacts to any of the identified Aboriginal sites cannot be avoided, an approved AHIP will be required to authorise impacts (Unless SEARS are issued by the Director General – see Section 19.3). An AHIP cannot authorise harm to any identified areas of PAD, as an AHIP can only authorise impacts to sites of known scientific value.

Several areas of Aboriginal archaeology, including both surface and subsurface isolated artefacts and artefact scatters, have been identified across the study area as a result of the surface survey and test excavation program. An AHIP would be required to authorise harm to known, registered AHIMS sites. These comprise:

- B 17 (AHIMS ID 45-5-2779);
- B 18 (AHIMS ID 45-5-2620);
- B 19 (AHIMS ID 45-5-2621);
- B 21 (AHIMS ID 45-5-2639);
- B 22 (AHIMS ID 45-5-2640);
- B 23 (AHIMS ID 45-5-2641);
- B 38 (AHIMS ID 45-5-2628);
- ACAS01 (AHIMS ID 54-4-5481);
- ACAS02 (AHIMS ID 54-4-5480);
- BCC Isolated Artefact 1 (AHIMS ID 45-5-5588);
- BCC Isolated Artefact 2 (AHIMS ID 45-5-5589);
- BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
- ACIF01 (AHIMS ID 54-5-5480);

- Thompsons Creek (AHIMS ID 45-5-5491); and
- Moore Gully (AHIMS ID 45-5-5492).

At this stage of the masterplan design, B 20 (AHIMS ID 45-5-2622) will be protected from harm and therefore no AHIP would be required to manage this site.

An AHIP would also be required to relocate the 135 Aboriginal cultural artefacts collected during the test excavations **Table 18. Section 17.3.2** outlines potential options for artefact relocation.

Finally, an AHIP would be required to authorise harm to any unidentified Aboriginal artefacts identified across the study area in the future. The test excavation program indicated it is highly likely that additional Aboriginal archaeology in the form of subsurface isolated artefacts and artefact scatters will be present across the entire study area.

17.3.1 Surface collection

To prevent the unnecessary destruction and loss of archaeological material located on the ground surface, the RAPs should be provided with the opportunity to conduct a surface collection of Aboriginal objects across the mapped extent of the study area.

17.3.2 Management of Aboriginal objects and heritage values

It is important to the Aboriginal community that artefacts recovered from the surface collection and test excavation programme be managed appropriately. The temporary repository of any retrieved artefacts is currently in a locked cupboard on the premises of Extent Heritage (3/73 Union Road, Pyrmont, Sydney, 2009).

Two options for long term management of the Aboriginal objects have been proposed. The first option is that the recovered artefacts are reburied within the study area in an area not subject to future works. The reburial location would be recorded with a differential GPS and a site card lodged to the AHIMS database.

The alternative option is that the artefacts are placed on permanent display within the precinct for the local communities to be able to view and interact with when required. This space would be within a cultural centre or space designed within Bradfield City Centre.

Based on the feedback from the RAPs it is recommended that buffer zones are placed around waterways, culturally modified trees and mature trees () in order to maintain connections and healthy ecosystems.

17.3.3 Salvage excavation

The results of the Test Excavation Report indicated that salvage excavations would be required to fully investigate TP 15 (within the Thompsons Creek PAD) and TP 114 (within the Moore Gully PAD) if conservation was not possible. These two TPs presented moderate densities of artefacts (n=10 and n=11, respectively), compared to the low artefact densities recorded across the rest of the test

trenches and study area as a whole. The artefact collections from TP 15 and TP 114 were determined to have moderate scientific potential. As a result, there is value in further exploring the nature of the subsurface archaeology in these two areas.

The existing Masterplan shows that the areas of TP 15 would be protected from harm. As a result, salvage excavations would not be required unless changes are made that would impact the area within 50 metres of TP 15. The area surrounding TP 114 would not be protected from harm by the proposed development. As a result, salvage would be required prior to any development in that area.

A salvage excavation methodology will be required to be developed and submitted to the RAPs for review. The salvage excavation methodology must also be incorporated into the ACHAR used to support an AHIP application (if required).

18 Heritage interpretation strategy

A heritage interpretation strategy should be developed in consultation with RAPs to address the cultural significance of the study area location within the Darug landscape. Methods of incorporating identified Aboriginal heritage values into the design process could include a cultural centre, interpretive displays, and artistic elements within the new premises, and external elements such as paving components and plantings, providing information on Aboriginal land-use and life-ways within the study area and surrounds.

Discussions with the RAP stakeholders have identified several features to consider in a future interpretation strategy. They include the following:

- Utilisation of natural landscaping and existing waterways;
- Use of native vegetation and native gardens;
- Education opportunities that may take the form of apps, information obtained through the use of QR codes, artworks, and/or signage. It was identified as important that these forms of information are updatable, as it will allow information to remain relevant and in line with changing cultural heritage and values;
- Opportunities for interactions between people and the landscape, including utilising the natural soundscape and tactile features;
- Installation of an edible garden.

19 Discovery of human remains

In the unlikely event that human remains are identified, such as those from a very shallow grave or from exhumation back-fill, the following steps will be taken (AMP 2015, 38: Protocol 10,):

1. All work will cease, and a qualified archaeologist will assess the feature.
2. The remains will be covered with geo-fabric for protection.
3. Non-Aboriginal human remains are protected under the Heritage Act 1977 (NSW).
4. Contact Heritage NSW, NSW Department of Health, and the Anglican Church to consult on the appropriate next steps.
5. The guidelines of the NSW Coroners Act 2009 No 41 would be followed. As all burials associated with Camperdown Cemetery are expected to be older than 100 years, the NSW Police and NSW Coroner's Office are not required to be contacted.
6. If mortal remains have come from a known grave, the preferred resolution is to reinter them within the same burial location.

Traditional Aboriginal burials (older than 100 years) are protected under the National Parks and Wildlife Act 1974 and should not be disturbed. Interpreting the age and nature of skeletal remains is a specialist field and an appropriately skilled archaeologist or physical anthropologist should therefore be contacted to inspect the find and recommend an appropriate course of action. Should the skeletal material prove to be archaeological Aboriginal remains, notification of Heritage NSW and the Local Aboriginal Land Council will be required. Notification should also be made to the Commonwealth Minister for the Environment, under the provisions of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984.

20 Unexpected finds

In the event that potential archaeological object(s) are encountered during construction, the following steps must be taken.

- STOP ALL WORK in the immediate vicinity of the archaeological object(s) and notify the Project Manager.
- Protect the archaeological object(s) using fencing to establish a 'no-go zone' around the object.
- Contact and engage a Heritage Professional (qualified archaeologist) who will carry out a preliminary assessment and recording of the potential archaeological object(s)
- If the Heritage Professional advises the object is not a potential Aboriginal object or significant historical relic, works will recommence in consultation with the Project Manager.
- If the Heritage Professional advises that the object is a significant historical archaeological relic, the affected area will remain protected from any further ground disturbance.
- If the artefacts are Aboriginal, the Gandangara Local Aboriginal Land Council must also be contacted.
- The Heritage Professional will notify Heritage NSW about the discovery under s146 of the Heritage Act. No further ground disturbance work would be allowed in the location of the discovery until a response from Heritage NSW has been received.

21 Ongoing consultation with Aboriginal stakeholder groups

Consultation with the registered Aboriginal stakeholders would continue throughout the life of the project, as necessary. Ongoing consultation with registered Aboriginal stakeholders will take place throughout all facets of the project, including reburial of retrieved artefacts and in the event of any unexpected Aboriginal objects being identified during works. To keep consultation current, the registered Aboriginal parties should be sent an update on the project every six months.

22 Summary of Findings

Through the completion of background research, database searches, field survey and test excavations, a total of sixteen Aboriginal sites were identified within the study area:

- B 17 (AHIMS ID 45-5-2779);
 - B 18 (AHIMS ID 45-5-2620);
 - B 19 (AHIMS ID 45-5-2621);
 - B 20 (AHIMS ID 45-5-2622);
 - B 21 (AHIMS ID 45-5-2639);
 - B 22 (AHIMS ID 45-5-2640);
 - B 23 (AHIMS ID 45-5-2641);
 - B 38 (AHIMS ID 45-5-2628);
 - ACAS01 (AHIMS ID 54-4-5481);
 - ACAS02 (AHIMS ID 54-4-5480);
 - BCC Isolated Artefact 1 (AHIMS ID 45-5-5588);
 - BCC Isolated Artefact 2 (AHIMS ID 45-5-5589);
 - BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
 - ACIF01 (AHIMS ID 54-5-5480);
 - Thompsons Creek (AHIMS ID 45-5-5491); and
 - Moore Gully (AHIMS ID 45-5-5492).
- The test excavation program investigated three PADs — ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491) — and one comparative area expected to have low potential for Aboriginal archaeology, Northern Transect.
 - No Aboriginal archaeological remains were identified in the Northern Transect during the test excavation program.
 - The investigation of ACIF01 (AHIMS ID 45-5-5480) revealed Aboriginal archaeological remains comprising low-density background scatter consistent with Pleistocene to late Holocene assemblages identified across the Cumberland Plain. The assemblage holds low scientific value.
 - The investigation of Thompsons Creek (AHIMS ID 45-5-5491) revealed Aboriginal archaeological remains comprising low-density background scatter and limited on-site manufacturing consistent with Pleistocene to late Holocene assemblages identified across the Cumberland Plain. The assemblage holds moderate scientific value due to the high levels of reduction.

One test pit within the Thompsons Creek site, TP 15, contained a moderate density of Aboriginal objects consistent with a location of on-site manufacturing and occupation. Additional subsurface archaeological remains may be located in the vicinity of the test pit. The artefact assemblage holds moderate scientific value, which may increase if additional archaeological investigations reveal additional associated objects and/or features.

The investigation of Moore Gully (AHIMS ID 45-5-5492) revealed Aboriginal archaeological remains comprising low density background scatter and limited on-site manufacturing consistent with Pleistocene to late Holocene assemblages identified across the Cumberland Plain. The assemblage holds low scientific value.

One test pit within the Moore Gully, TP 114, site contained a moderate density of Aboriginal objects consistent with a location of on-site occupation. Additional subsurface archaeological remains may be located in the vicinity of the test pit. The artefact assemblage holds moderate scientific value, which may increase if additional archaeological investigations reveal additional associated objects and/or features.

All surface artefacts identified within the study area during the surface survey and test excavation program have been determined to hold low scientific value.

TP 114, located within Moore Gully (AHIMS ID 45-5-5492), would be harmed by the proposed development. As a result, salvage excavations would be required to fully investigate the archaeology associated with this test pit.

TP 15, located within Thompsons Creek (AHIMS ID 45-5-5491), would be conserved based on the current Masterplan. If design changes result in any impact within a 50-metre buffer of TP 15 (located at 291321.887 easting and 6243816.007 northing), salvage excavations would be required.

Based on the current Masterplan, archaeology located within ENV will be protected from harm. These comprise all of B 20 (AHIMS ID 45-5-2622), part of ACIF01(AHIMS ID 45-5-5480), part of Moore Gully (AHIMS ID 45-5-5492), part of Thompsons Creek (AHIMS ID 45-5-5491), [REDACTED].

All remaining identified Aboriginal sites are likely to be impacted by the proposed development. However, the detailed design phase should provide an opportunity to explore the potential for further reducing harm to AHIMS sites.

23 Recommendations

Through the phases of cultural values assessment undertaken for this project, key social, cultural, and intangible values have been identified with the aim to understand how the RAPs would like these values to be conserved, remembered and managed throughout this project and into the future.

Based on the findings of this assessment and the understanding of the proposed impacts, it is recommended that:

Table 25 - Recommendations

Ref	Recommendation	Timeframe	Responsible
Aboriginal Cultural Heritage			
1	An AHIP is required to authorise harm to the Aboriginal sites identified and registered with AHIMS that are located within the study area. These sites cannot be impacted until an approved AHIP has been obtained, and all impacts must conform with the AHIP conditions.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Heritage NSW
2	The area surrounding TP 15 and TP 114, comprising a buffer of 50 m, should be protected from harm. If these areas are not able to be protected, a salvage excavation program would be required to fully understand the extent and significance of the Aboriginal archaeological remains in the area. An AHIP would be required to authorise the salvage excavations.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Heritage NSW
3	In accordance with the views of some stakeholders, the development should prioritise the use of sustainable materials and plant native plants that are from the area. Signage and information should also use correct terminology, should not use the past tense and should ensure that it is clear throughout the development that this is, always has been and always will be Aboriginal land.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage
4	The ACHAR Community Consultation process demonstrated that Aboriginal stakeholders and the Indigenous community had a strong interest and desire to present feedback in the Bradfield City Centre development.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage

Ref	Recommendation	Timeframe	Responsible
	Genuine engagement and collaboration with knowledge holders and the Gandangara Local Aboriginal Land Council should continue through the life of the project.		
5	The development of an ongoing community-driven research program to address specific issues raised by the Aboriginal community is recommended to ensure continued stakeholder engagement and ensure the best heritage outcomes to be addressed and incorporated into the project.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage
6	Consideration should be given to recommendations for collaboration between community and ecologists and others working on and surveying Cumberland Plain (CP) vegetation given the strong recommendation related to CP conservation for its cultural values. It is recommended that ecologists and conservation specialists engage with the Aboriginal community during survey and mapping work.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC
7	Support the focus 'Recognising Country'. It is important to have genuine engagement and collaboration with Aboriginal communities to understand their priority risks and opportunities. Co-designed plan with Aboriginal communities to incorporate cultural values and use of local and traditional Aboriginal knowledge in conjunction with scientific research.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage
8	In accordance with feedback from the RAPs, buffer zones should be placed around waterways [REDACTED] in order to maintain connections and healthy ecosystems.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage
9	Where possible, impacts to identified Aboriginal sites should be avoided. The masterplan should work to ensure the retention of identified Aboriginal sites within the riparian corridor and associated green corridors.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA
10	A heritage interpretation strategy should be prepared for the study area in consultation with the RAPs. This strategy would include methods	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage

Ref	Recommendation	Timeframe	Responsible
	of incorporating identified Aboriginal heritage values into the design process, such as use of native vegetation in replanting, use of local Aboriginal place names and interpretative signage providing information on Aboriginal land-use within the study area and surrounding area.		
11	Aboriginal representatives must be given an opportunity to collect the surface artefacts identified across the study area prior to the commencement of construction works.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Extent Heritage
12	An appropriate Keeping Place or reburial site must be determined to house the Aboriginal objects. The location of this Keeping Place must be chosen in consultation with the RAPs and Gandangara LALC.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage
13	Obtaining a site-wide AHIP is recommended prior to construction works being undertaken on site in order to manage any unexpected Aboriginal objects being uncovered during works.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Extent Heritage
14	If unexpected Aboriginal objects are uncovered during construction, work <u>must</u> cease and a qualified archaeologist, Heritage NSW-DPC, and the Gandangara LALC should be informed to determine whether further Aboriginal heritage assessment or permit approvals are required.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage
15	If suspected human remains are located during any stage of the proposed works, work <u>must</u> stop immediately, and the NSW police and Coroner's Office <u>must</u> be notified. Heritage NSW-DPC, Gandangara LALC, and the Commonwealth Minister for the Environment <u>must</u> be notified if the remains are found to be those of an Aboriginal person and greater than 100 years old.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Contractor
16	If changes are made to the proposed works which result in impact to locations outside of the current study area, further archaeological investigation and survey may be required.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPs, GLALC and Extent Heritage

Ref	Recommendation	Timeframe	Responsible
17	The Master Plan should be referred to Heritage NSW for comment in relation to the Aboriginal Cultural Heritage.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA

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Appendix 1 – Aboriginal archaeology

Appendix A.1 Site type information

Aboriginal sites

Aboriginal sites are classified in several ways. At the most basic level, sites are recorded as ‘closed sites’ or ‘open sites’. Closed sites are associated with rock shelters and include other evidence of Aboriginal occupation that may be present, such as accumulated cultural deposit within the shelter (‘potential archaeological deposit’ or PAD), faunal remains (animal bone or shell), and rock art on the shelter walls (paintings or engravings). Open sites are broadly defined and encompass all other types of Aboriginal sites identified where there is no rock shelter.

The most common types of open sites found in NSW include artefacts, which can occur almost anywhere in the landscape, grinding grooves, rock art across formations, culturally modified trees, and shell deposits (middens) (OEH 2012, 7-10). The presence or absence of stone artefacts is often a defining factor, although it is worth pointing out that almost any site is likely to have at least some associated artefacts, as discard or loss of this most ubiquitous and practically indestructible marker of Aboriginal archaeology is likely to have occurred anywhere that Aboriginal people stopped or gathered for any length of time.

Any one site (or group of linked sites described as a ‘site complex’) can contain several different site features. For example, a shelter may have art on the walls, artefacts on the floor surface or outside the shelter, and be predicted to contain faunal remains and further artefacts in the accumulated deposit inside.

A description of terms used to describe different Aboriginal site features in NSW is provided in **Table 26**. Other features or types of Aboriginal cultural sites that do not necessarily leave physical evidence may exist or have once existed in the landscape as well; however, such sites have not been recorded previously which reflects the archaeological focus of past studies and the loss of traditional knowledge of such places in this area. Similarly, there may be places of contemporary significance to Aboriginal people in the study area and this will require consultation with the Aboriginal community to identify such places.

Table 26 - Aboriginal site feature definitions

Site feature	Definition
Artefact	Objects such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell demonstrating evidence of use of the area by Aboriginal people.
Potential archaeological deposit (PAD)	An area where Aboriginal objects may occur below the ground surface. The term ‘potential archaeological deposit’ was first applied in Sydney regional archaeology in the 1980s, and referred to rock shelters that were large enough and with enough accumulated deposit to allow archaeologists to presume that subsurface cultural

Site feature	Definition
	material was highly likely to be present. Since then it has come to include open sites where the same prediction can be made.
Modified tree (carved or scarred)	Trees which show the marks of modification as a result of cutting of bark from the trunk for use in the production of shields, canoes, boomerangs, burials shrouds, for medicinal purposes, foot holds etc., or alternately intentional carving of the heartwood of the tree to form a permanent marker to indicate ceremonial use/significance of a nearby area, again these carvings may also act as territorial or burial markers.
Stone quarry	Usually a source of good quality stone which is quarried and used to produce stone tools
Burial	A traditional or contemporary (post-contact) burial of an Aboriginal person, which may occur outside designated cemeteries and may not be marked, e.g. in caves, marked by stone cairns, in sand areas, along creek banks etc.

Source: OEH (2012, 8-10)

Stone artefacts

Aboriginal stone artefacts are important sources of archaeological information because stone is preserved for long periods of time whereas organic materials such as bone, shell, wood and plant fibres often decay. Stone artefacts provide valuable information about technology, economy, cultural change through time and settlement patterning. Stone has also been used for 'relative' dating of sites where direct methods such as radiocarbon dating cannot be applied.

A technological sequence for stone artefacts for the region was first described in the late 1940s by Fred McCarthy and has since been refined over time by Hiscock and Attenbrow (2005) into the 'Eastern Regional Sequence':

- Capertian — Distinguished by large uniface pebble tools, core tools, horse-hoof cores, scrapers and hammerstones. Backed artefacts occasionally present. Generally, dates to before 5,000 years BP.
- Early Bondaian — Aspects of the Capertian assemblage continue but backed artefacts and ground-edged artefacts increase. Artefacts during this period were predominantly made from fine-grained siliceous stone such as silcrete and tuff. Generally dated from 5,000 BP to 2,800 BP.
- Middle Bondaian — Characterised by backed artefacts, particularly Bondi Points and ground-edged artefacts. Artefacts made from siliceous materials; however, quartz becomes more frequent. Generally dated from 2,800 BP to 1,600 BP.
- Late Bondaian — Characterised by bipolar technology, eloueras, ground-edged artefacts, and bone and shell artefacts. Bondi points are virtually absent, and artefacts are predominantly made from Quartz. Generally dated from 1,600 BP to European contact.

Preservation of the archaeological record

The following observations can be made about the nature and preservation of the archaeological record across the Cumberland subregion:

- Archaeological material is often found in areas of sub-surface exposure, such as those caused by erosion.

- Surface evidence (or the absence of surface evidence) does not necessarily indicate the potential, nature or density of sub-surface material. Extensive excavations have shown that areas with no surface evidence often contain sub-surface deposits buried beneath current ground surfaces (e.g. Kohen et al. 1984).
- Due to the limitations of surface surveys, test excavation is often required to establish the nature and density of archaeological material.
- Aboriginal cultural material is more likely to survive in areas that contain remnant portions of the pre-European soil profile, in contrast to landforms that have been impacted by historical or recent disturbances.
- The potential for survival of any archaeological sites will largely depend on the degree of past disturbance.
- Past disturbance to the soil profile can be due to European activity such as clearing, ploughing, grazing, and urban development and/or due to environmental factors such as flooding events, erosion and colluvial movement. These activities may disturb, erode or remove the natural soil profile completely.
- Aboriginal stone artefacts are more likely to survive because stone is preserved for long periods of time whereas organic materials such as bone, shell, wood and plant fibres decay.
- A major impact of more than 200 years of post-contact settlement on Aboriginal sites would have been the destruction of carved and scarred trees, which would have been removed as part of clearing for agricultural activities and the construction of infrastructure such as buildings and roads. However, there is some potential for culturally modified trees to survive in areas where there are stands of remnant native vegetation.

Appendix 2 – AHIMS search

A copy of the results from the search for Aboriginal sites on AHIMS in the study area is provided in the following pages.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2711	CDG1	AGD	56	293300	6252800	Open site	Valid	Artefact : -		1345,1539,473 7
	<u>Contact</u>									
45-5-3382	Oakdale Campsite 1	AGD	56	297377	6255038	Open site	Partially Destroyed	Artefact : 3		103482
	<u>Contact</u> Searle									
45-5-3383	Oakdale Campsite 2	AGD	56	297391	6254871	Open site	Valid	Artefact : 3		
	<u>Contact</u> Searle									
45-5-3384	Oakdale Campsite 3	AGD	56	297295	6254935	Open site	Valid	Artefact : 3		
	<u>Contact</u> Searle									
45-5-3385	Oakdale Campsite 4	GDA	56	296733	6254945	Open site	Valid	Artefact : 3		
	<u>Contact</u> Searle									
45-5-3386	Oakdale Campsite 5	AGD	56	297788	6254770	Open site	Valid	Artefact : 3		
	<u>Contact</u> Searle									
45-5-3387	Oakdale Campsite 6	AGD	56	297897	6255005	Open site	Valid	Artefact : 3		
	<u>Contact</u> Searle									
45-5-4707	SSP 1	GDA	56	289702	6253505	Open site	Valid	Artefact : -		103913,10391 4
	<u>Contact</u>									
45-5-4708	SSP 2	GDA	56	288626	6252917	Open site	Valid	Artefact : -		
	<u>Contact</u>									
45-5-4709	SSP 3	GDA	56	290685	6253669	Open site	Valid	Artefact : -		103913,10391 4
	<u>Contact</u>									
45-5-4672	Oakdale West Artefact Scatter 1 (OW AS 1)	GDA	56	297234	6255014	Open site	Valid	Artefact : -		
	<u>Contact</u>									
45-5-4673	Oakdale West Isolated Find 1 (OW IF 1)	GDA	56	297349	6255114	Open site	Valid	Artefact : -		
	<u>Contact</u>									
45-5-4674	Oakdale West Artefact Scatter 2 (OW AS 2)	GDA	56	297355	6255099	Open site	Valid	Artefact : -		
	<u>Contact</u>									
45-5-4675	Oakdale West Isolated Find 2 (OW IF 2)	GDA	56	296627	6254876	Open site	Valid	Artefact : -		
	<u>Contact</u>									
45-5-4676	Oakdale West Isolated Find 3 (OW IF 3)	GDA	56	295882	6254754	Open site	Valid	Artefact : -		
	<u>Contact</u>									
45-5-4717	Mamre West Precinct - Archaeological Deposit 1 (MWP-AD1)	GDA	56	293591	6255274	Open site	Valid	Artefact : -		104138
	<u>Contact</u>									
	<u>Recorders</u>									

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4719	Mamre West Precinct - Archaeological Deposit 4 (MWP-AD4)	GDA	56	294089	6255064	Open site	Valid	Artefact : -		
	Contact	Recorders				Biosis Pty Ltd - Wollongong, Miss. Shannon Smith		Permits		
45-5-4720	Mamre West Precinct - Archaeological Deposit 3 (MWP-AD3)	GDA	56	293670	6255005	Open site	Valid	Artefact : -		104138
	Contact	Recorders				Biosis Pty Ltd - Sydney, Biosis Pty Ltd - Wollongong, Mr. James Cole, Miss. Shannon Sn		Permits		
45-5-5274	Bakers Lane SLR AFT 1	GDA	56	295915	6254097	Open site	Valid	Artefact : -		
	Contact	Recorders				Mr. Matthew Kelleher, Kelleher Nightingale Consulting Pty Ltd (Generic users)		Permits		
45-5-5268	Kemps Creek IF-02	GDA	56	295030	6253859	Open site	Valid	Artefact : -		
	Contact	Recorders				Urbis Pty Ltd - Angel Place L8 123 Pitt Street, Miss. Meggan Walker		Permits		
45-5-5269	Kemps Creek IF-01	GDA	56	294976	6253943	Open site	Valid	Artefact : -		
	Contact	Recorders				Urbis Pty Ltd - Angel Place L8 123 Pitt Street, Miss. Meggan Walker		Permits		
45-5-5315	MRP-OS2	GDA	56	296737	6253925	Open site	Valid	Artefact : -		
	Contact	Recorders				EMM Consulting - St Leonards - Individual users, Ms. Taylar Reid		Permits		
45-4-0971	EP3 - "Erskine Park 3"	AGD	56	295814	6254965	Open site	Valid	Artefact : -	Open Camp Site	97503
	Contact	Recorders				Doctor. Jo McDonald		Permits		
45-4-0972	EP4 - "Erskine Park 4 "	AGD	56	295740	6254900	Open site	Valid	Artefact : -	Open Camp Site	97503, 98435
	Contact	Recorders				Doctor. Jo McDonald		Permits		
45-4-0973	EP5 - " Erskine Park 5 "	AGD	56	295349	6254843	Open site	Valid	Artefact : -	Isolated Find	97503, 98435
	Contact	Recorders				Doctor. Jo McDonald		Permits		
45-4-0976	EP8 - " Erskine Park 8 "	AGD	56	294657	6254870	Open site	Valid	Artefact : -	Open Camp Site	97503, 98435
	Contact	Recorders				Doctor. Jo McDonald		Permits		
45-4-0977	EP9 - " Erskine Park 9 "	AGD	56	295440	6254955	Open site	Valid	Artefact : -	Open Camp Site	97503, 98435
	Contact	Recorders				Doctor. Jo McDonald		Permits		
45-4-0978	EP2 - " Erskine Park 2 "	AGD	56	295615	6254982	Open site	Valid	Artefact : -	Open Camp Site	97503, 98435
	Contact	Recorders				Doctor. Jo McDonald		Permits		
45-5-2568	CGD5	AGD	56	293300	6253500	Open site	Valid	Artefact : -	Open Camp Site	98435
	Contact	Recorders				Dominic Steele Archaeological Consulting		Permits		
45-4-0970	EP1 - " Esrkine Park 1"	AGD	56	295277	6254955	Open site	Valid	Artefact : -	Open Camp Site	97503, 98435
	Contact	Recorders				Doctor. Jo McDonald, Stephanie Garling		Permits		
45-5-2550	CGD1	AGD	56	293350	6252800	Open site	Valid	Artefact : -	Open Camp Site	98435
	Contact	Recorders				Dominic Steele Archaeological Consulting		Permits		
45-5-2552	CGD3	AGD	56	293000	6252800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	98435
	Contact	Recorders				Dominic Steele Archaeological Consulting		Permits		
45-5-2554	CGD2	AGD	56	293000	6252900	Open site	Valid	Artefact : -	Open Camp Site	98435

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1769	Lec 3;	AGD	56	292410	6253470	Open site	Valid	Artefact : -	Open Camp Site	1345
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1770	Lec 4;	AGD	56	292410	6253300	Open site	Valid	Artefact : -	Open Camp Site	1345
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1771	Lec 5;	AGD	56	292010	6253080	Open site	Valid	Artefact : -	Open Camp Site	1345
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1772	Lec 6;	AGD	56	292770	6253700	Open site	Valid	Artefact : -	Open Camp Site	1345,97496
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	1586	
45-6-1773	Lec 7;	AGD	56	292830	6253780	Open site	Valid	Artefact : -	Open Camp Site	1345
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1774	Lec 8;	AGD	56	292820	6254050	Open site	Valid	Artefact : -	Open Camp Site	1345,97496
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	1586	
45-6-1776	Lec 2;	AGD	56	292570	6253620	Open site	Valid	Artefact : -	Open Camp Site	1345
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1777	Lec10;	AGD	56	293180	6253070	Open site	Valid	Artefact : -	Open Camp Site	1345,97496,98 435,99352
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	1586,2056	
45-6-1778	Lec 11;	AGD	56	293300	6252820	Open site	Valid	Artefact : -	Open Camp Site	1345,98435
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-6-1779	Lec 12;	AGD	56	293300	6252850	Open site	Valid	Artefact : -	Open Camp Site	1345,98435,99 352
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	2056	
45-6-1780	Lec 1;	AGD	56	292610	6253800	Open site	Valid	Artefact : -	Open Camp Site	1345
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3058	EV1	AGD	56	295751	6254547	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3059	EV2	AGD	56	295663	6254735	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	2237	
45-5-3060	EV3	AGD	56	295666	6254988	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	2237,2391	
45-5-3061	EV4	AGD	56	295822	6254837	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Alan Wheatley					Permits	2391	
45-5-3028	EPTA3	AGD	56	294160	6254370	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3029	EPTA4	AGD	56	294850	6253540	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3030	EPTA5	AGD	56	295170	6253570	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3031	EPTA6	AGD	56	295210	6253410	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3032	EPTA10	AGD	56	293580	6253610	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3033	EPTA11	AGD	56	293340	6253690	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3034	EP-I 1	AGD	56	295260	6253400	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3035	EP-I 2	AGD	56	295190	6253500	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-3036	EP-I 3	AGD	56	295240	6253710	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2188	
45-5-2367	Kemps creek 1 (CK/1);	AGD	56	292800	6252830	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Jim Kohen					Permits		
45-5-4189	RPS LTPAS01	GDA	56	289952	6253747	Open site	Valid	Artefact : 1		103913,103914
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,RPS East Australia Pty Ltd - Echuca Victoria					Permits	4302	
45-5-4102	Kemps Creek IF1	GDA	56	295565	6253701	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dominic Steele Archaeological Consulting					Permits		
45-5-4103	Kemps Creeks IF2	GDA	56	294737	6254040	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dominic Steele Archaeological Consulting					Permits		
45-5-4104	Kemps Creek (logosoc1)	GDA	56	295307	6254094	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dominic Steele Archaeological Consulting					Permits		
45-5-4105	Kemps Creek (logosoc2)	GDA	56	295265	6254066	Open site	Valid	Artefact : -		
	Contact	Recorders	Dominic Steele Archaeological Consulting					Permits		
45-5-4524	Oakdale South AS1	GDA	56	297508	6254973	Open site	Valid	Artefact : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Mr.Alex Timms					Permits		
45-5-4525	Oakdale South IF2	GDA	56	297566	6254552	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders								
45-5-4526	Oakdale South AS2	GDA	56	297513	6254618	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-4527	Oakdale South IF1	GDA	56	297516	6254817	Open site	Valid	Artefact : -		104331
	Contact	Recorders								
45-5-4528	Oakdale South AS3	GDA	56	297508	6254390	Open site	Valid	Artefact : -		104331
	Contact	Recorders								
45-5-4529	Oakdale South AS4	GDA	56	297190	6253944	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-4947	Oakdale South AS5	GDA	56	297775	6254796	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-4948	Oakdale South IF3	GDA	56	297752	6254842	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5073	SSP 7	GDA	56	291662	6253114	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5074	SSP 6	GDA	56	288108	6253363	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5075	SSP 5	GDA	56	287346	6253417	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5133	Oakdale West 18 Isolated Find 01	GDA	56	296303	6254317	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5134	Oakdale West 18 Artefact Scatter 02	GDA	56	296886	6254515	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5135	Oakdale West 18 Artefact Scatter 03	GDA	56	296777	6254242	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5136	Oakdale West 18 Isolated Find 02	GDA	56	296659	6254589	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5137	Oakdale West 18 Artefact Scatter 01	GDA	56	297167	6254820	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5187	MSP-01	GDA	56	294210	6254558	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5188	MSP-02	GDA	56	293594	6253823	Open site	Valid	Artefact : -		
	Contact	Recorders								
45-5-5189	MSP-03	GDA	56	293501	6253805	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders						Permits		
45-5-5190	MSP-04	GDA	56	293580	6253610	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-5186	Mamre Road Artefact Scatter 1901 (MAM AS1901)	GDA	56	295114	6253373	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders						Permits		
45-5-2615	Area D	AGD	56	292900	6253450	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits	1586	
45-5-2859	DTAC 1	AGD	56	297800	6254840	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits	1683	
45-5-2860	DTAC 2	AGD	56	297910	6254820	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits	1683	
45-5-3773	Luddenham Road 1	GDA	56	291493	6255058	Open site	Valid	Artefact : 1		
	Contact Deerubbin LALC	Recorders						Permits		
45-5-3774	Luddenham Road 2	GDA	56	291997	6254930	Open site	Valid	Artefact : 100		
	Contact Deerubbin LALC	Recorders						Permits		
45-5-4390	Luddenham Road 3	GDA	56	292041	6254667	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-4327	Oakdale Central 1	GDA	56	297937	6255084	Open site	Valid	Artefact : 1		
	Contact	Recorders						Permits		
45-5-4328	Oakdale Central 2	GDA	56	297701	6255070	Open site	Valid	Artefact : 1		
	Contact	Recorders						Permits		
45-5-4329	Oakdale Central 3	GDA	56	297665	6255265	Open site	Valid	Artefact : 1		
	Contact	Recorders						Permits		
45-5-4330	Oakdale Central 4	GDA	56	297614	6255227	Open site	Valid	Artefact : 1		
	Contact	Recorders						Permits		
45-5-4778	TNR AFT 12	GDA	56	285626	6253649	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-4780	TNR AFT 11	GDA	56	285725	6254062	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-4781	TNR AFT 10	GDA	56	285746	6254839	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-4807	TNR IF 03	GDA	56	285642	6254526	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514049

<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>Site Status</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
45-5-4922	SSP 4	GDA	56	288806	6253042	Open site	Valid	Artefact : -		103913,103914
	<u>Contact</u>	<u>Recorders</u>	Kelleher Nightingale Consulting Pty Ltd,Ms.Cristany Millicich					<u>Permits</u>	4302	

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6252910 - 6255300 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 99

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514051

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2789	B 94	AGD	56	289140	6249400	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2781	B86	AGD	56	290820	6248920	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2710	DUKE 9	AGD	56	292500	6251800	Open site	Valid	Artefact : -		1345,1539,473 7
	Contact	Recorders	Dominic Steele Archaeological Consulting							
45-5-2816	IF/1	AGD	56	292300	6251750	Open site	Valid	Artefact : -		4737
	Contact	Recorders	Dominic Steele Archaeological Consulting							
45-5-2632	B 44	AGD	56	290900	6248950	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-5240	Elizabeth Drive AFT 2	GDA	56	292088	6249612	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd, Miss. Kristen Taylor							
45-5-2762	B95	AGD	56	289290	6249700	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2763	B87	AGD	56	291080	6249400	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2764	B82	AGD	56	289100	6249470	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2765	B83	AGD	56	289050	6249590	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2768	B41	AGD	56	292100	6249010	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-4049	PAD 2054-6	GDA	56	296512	6249100	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users, Doctor. Alan Williams							
45-5-4708	SSP 2	GDA	56	288626	6252917	Open site	Valid	Artefact : -		
	Contact	Recorders	Matthew Kelleher, Kelleher Nightingale Consulting Pty Ltd, Ms. Cristany Milicich							
45-5-5259	Elizabeth Drive AFT 1	GDA	56	293377	6249426	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd, Miss. Kristen Taylor							
45-5-5230	Elizabeth Precinct Isolated Find 03 (EPIF 03)	GDA	56	293375	6249980	Open site	Valid	Artefact : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay, Ms. Jennifer Norfolk							
45-5-5231	Elizabeth Precinct Isolated Find 02 (EPIF 02)	GDA	56	293466	6250004	Open site	Valid	Artefact : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay, Ms. Jennifer Norfolk							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6249100 - 6252920 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514051

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-5232	Elizabeth Precinct Isolated Find 01 (EPIF 01)	GDA	56	293416	6249892	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>		Artefact - Cultural Heritage Management - Rose Bay,Ms.Jennifer Norfolk				<u>Permits</u>		
45-5-5233	Elizabeth Precinct Artefact Scatter 01 (EPAS 01)	GDA	56	293412	6249873	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>		Artefact - Cultural Heritage Management - Rose Bay,Ms.Jennifer Norfolk				<u>Permits</u>		
45-5-5293	Badgerys Creek West (BCW)	GDA	56	292300	6251255	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney				<u>Permits</u>		
45-5-5294	Badgerys Creek East (BCE)	GDA	56	292790	6251200	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney				<u>Permits</u>		
45-5-5295	M12-Cosgroves Creek East Transect 1 PAD (CCE T1)	GDA	56	290290	6251170	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney				<u>Permits</u>		
45-5-5296	M12-Cosgroves Creek East Transect 2 PAD (CCE T2)	GDA	56	290755	6251100	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Neville Baker,Sydney Water-Parramatta,Mr.Andrew Costello,Jacobs Group (Aus				<u>Permits</u>		
45-5-5297	M12-Cosgroves Creek East Transect 3 PAD (CCE T3)	GDA	56	291450	6251290	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Neville Baker,Sydney Water-Parramatta,Jacobs Group (Australia) Pty Ltd - Nort				<u>Permits</u>		
45-5-5298	Badgerys Creek West B (BWB)	GDA	56	291940	6249640	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Neville Baker,Sydney Water-Parramatta,Mr.Andrew Costello,Jacobs Group (Aus				<u>Permits</u>		
45-5-5299	M12-Cosgroves Creek West (CCW) PAD	GDA	56	289935	6251230	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney				<u>Permits</u>		
45-5-5301	Kemps Creek East (KCE) PAD	GDA	56	296543	6249177	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney				<u>Permits</u>		
45-5-5302	Kemps Creek West (KCW) PAD	GDA	56	296110	6249360	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney				<u>Permits</u>		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6249100 - 6252920 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514051

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-5303	Kemps North West (KNW) PAD	GDA	56	295455	6250265	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney							
45-5-5304	PCP-8	GDA	56	292790	6251200	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney							
45-5-5305	Range Road (RR)	GDA	56	292790	6251200	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney							
45-5-5306	South Creek East (SCE)	GDA	56	293940	6251020	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney							
45-5-5307	South Creek West T1 (SCW T1)	GDA	56	293360	6251085	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Jacobs Group (Australia) Pty Ltd - North Sydney,Mr.Andrew Costello							
45-5-5308	South Creek West T2 (SCW T2)	GDA	56	293360	6251085	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Andrew Costello,Jacobs Group (Australia) Pty Ltd - North Sydney							
45-5-5316	MRP-OS1	GDA	56	294413	6252254	Open site	Valid	Artefact : -		
	Contact	Recorders	EMM Consulting - St Leonards - Individual users,Ms.Taylar Reid							
45-5-5234	Elizabeth Precinct PAD 03	GDA	56	293924	6249724	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Ms.Jennifer Norfolk							
45-5-5235	Elizabeth Precinct PAD 02	GDA	56	293927	6249529	Open site	Not a Site	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Artefact - Cultural Heritage Ma							
45-5-5236	Elizabeth Precinct PAD 01	GDA	56	293200	6249565	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Artefact - Cultural Heritage Ma							
45-5-2551	CGD6	AGD	56	292700	6251900	Open site	Valid	Artefact : -	Open Camp Site	

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6249100 - 6252920 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514051

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Dominic Steele Archaeological Consulting					<u>Permits</u>		
45-5-2553	CGD4	AGD	56	293300	6252500	Open site	Valid	Artefact : -, Modified Tree (Carved or Scarred) : -	Open Camp Site, Scarred Tree	98435
	<u>Contact</u>	<u>Recorders</u>	Dominic Steele Archaeological Consulting					<u>Permits</u>		
45-5-2309	BC/ED1	AGD	56	292260	6249550	Open site	Valid	Artefact : -	Open Camp Site	3346
	<u>Contact</u>	<u>Recorders</u>	Helen Brayshaw					<u>Permits</u>		
45-5-2280	Oaky Creek 1	AGD	56	289000	6249350	Open site	Valid	Artefact : -	Open Camp Site	2378
	<u>Contact</u>	<u>Recorders</u>	Pam Dean-Jones, P Jones					<u>Permits</u>		
45-5-0604	Cecil Park 1	AGD	56	297350	6251470	Open site	Valid	Artefact : -	Open Camp Site	1283,98435
	<u>Contact</u>	<u>Recorders</u>	Smith, M Hanckel					<u>Permits</u>	694	
45-5-0605	Cecil Park 2	AGD	56	297600	6251780	Open site	Valid	Artefact : -	Open Camp Site	1283,98435
	<u>Contact</u>	<u>Recorders</u>	Smith, M Hanckel					<u>Permits</u>		
45-6-1775	Lec 9;	AGD	56	293200	6252700	Open site	Valid	Artefact : -	Open Camp Site	1345,98435
	<u>Contact</u>	<u>Recorders</u>	Mary Dallas Consulting Archaeologists (MDCA)					<u>Permits</u>		
45-5-0215	South Creek	AGD	56	293800	6249900	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	362
	<u>Contact</u>	<u>Recorders</u>	Ms. Laila Haglund					<u>Permits</u>		
45-5-0496	Fleurs1 Fleurs Radio Telescope	AGD	56	293750	6250730	Open site	Valid	Artefact : -	Open Camp Site	961,1018,98435
	<u>Contact</u>	<u>Recorders</u>	University of Sydney					<u>Permits</u>		
45-5-0528	Fleurs 2 (Fleurs Prospect)	AGD	56	292650	6251150	Open site	Valid	Artefact : -	Open Camp Site	1018
	<u>Contact</u>	<u>Recorders</u>	Richard Wright					<u>Permits</u>		
45-5-2991	TCE 1	AGD	56	293300	6252700	Open site	Valid	Artefact : -		99352
	<u>Contact</u> T Russell	<u>Recorders</u>	Dominic Steele Archaeological Consulting					<u>Permits</u>	2056	
45-5-5066	B129	GDA	56	289263	6249105	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd, Mrs. Jo Dibden					<u>Permits</u>		
45-5-5068	B131	GDA	56	291374	6249478	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd, Mrs. Jo Dibden					<u>Permits</u>		
45-5-5086	B164	GDA	56	291416	6249269	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi					<u>Permits</u>		
45-5-5087	B165	GDA	56	291638	6249555	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi					<u>Permits</u>		
45-5-5088	B166	GDA	56	291597	6249204	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi					<u>Permits</u>		
45-5-5089	B163	GDA	56	291331	6249177	Open site	Valid	Artefact : -		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514051

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5094	B154	GDA	56	291387	6249360	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5095	B153	GDA	56	292169	6249253	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5096	B152	GDA	56	292043	6249416	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5097	B151	GDA	56	291950	6249517	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5104	PAD 2	GDA	56	294516	6249243	Open site	Valid	Potential Archaeological Deposit (PAD) : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5105	PAD 1	GDA	56	288830	6250071	Open site	Valid	Potential Archaeological Deposit (PAD) : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
41-5-0014	M12-AS-04	GDA	56	294361	6250957	Open site	Valid	Artefact : 1			
	Contact	Recorders	Jacobs Group (Australia) Pty Ltd - Newcastle, Miss. Chelsea Jones								Permits
45-5-5172	B170	GDA	56	292275	6249513	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5173	B169	GDA	56	291139	6249197	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-5174	B168	GDA	56	290418	6249371	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi								Permits
45-5-2665	B88	AGD	56	291220	6249120	Open site	Valid	Artefact : -			
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd								Permits
45-5-3802	Isolated Artefact 1 (Penrith)	GDA	56	287238	6252000	Open site	Valid	Artefact : 1			
	Contact	Recorders	Ms. Mary Dallas								Permits
45-5-3803	Isolated Artefact 2 (Penrith)	AGD	56	287504	6252095	Open site	Valid	Artefact : 1			
	Contact	Recorders	Ms. Mary Dallas								Permits
45-5-3804	Isolated Artefact 4 (Penrith)	AGD	56	287276	6251479	Open site	Valid	Artefact : 1			
	Contact	Recorders	Ms. Mary Dallas								Permits
45-5-3805	OS 1	AGD	56	287973	6252553	Open site	Valid	Artefact : 3			
	Contact	Recorders	Ms. Mary Dallas								Permits
45-5-3806	OS 2	AGD	56	286575	6252169	Open site	Valid	Artefact : 2			

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514051

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Ms.Mary Dallas					Permits		
45-5-3808	OS 3	AGD	56	287435	6252155	Open site	Valid	Artefact : 4		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-4779	TNR AFT 13	GDA	56	286413	6252059	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4783	TNR AFT 18	GDA	56	286462	6249630	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4786	TNR AFT 14	GDA	56	286758	6251468	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4787	TNR AFT 17	GDA	56	287144	6249775	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4788	TNR AFT 15	GDA	56	286985	6250420	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4790	TNR AFT 19	GDA	56	287276	6249519	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4796	TNR AFT 16	GDA	56	287012	6250214	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4808	TNR IF 04	GDA	56	287033	6250644	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson					Permits		
45-5-4936	M12-AS-02	GDA	56	289990	6251404	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Neville Baker,Sydney Water-Parramatta					Permits		
45-5-4748	M12 A2	GDA	56	292624	6251214	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					Permits		
45-5-4749	M12 A4	GDA	56	293785	6251051	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					Permits		
45-5-4750	M12 A3	GDA	56	292725	6251214	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					Permits		
45-5-4767	M12 A5	GDA	56	296537	6249457	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					Permits		
45-5-4747	M12 A1	GDA	56	292194	6251184	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					Permits		
45-5-5330	Elizabeth Precinct Isolated Find 05 (EP IF 05)	GDA	56	293287	6249478	Open site	Valid	Artefact : -		
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Ms.Alyce Haast					Permits		
45-5-5331	Elizabeth Precinct Isolated Find 04 (EP IF 04)	GDA	56	293336	6249535	Open site	Valid	Artefact : -		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Ms.Alyce Haast							
								Permits		

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2012	SC2;Cecil Park Shooting Complex;	AGD	56	297760	6247810	Open site	Valid	Artefact : -	Isolated Find	3857
	Contact	Recorders	Permits							
45-5-2013	SC1;Cecil Park Shooting Complex;	AGD	56	297800	6247960	Open site	Valid	Artefact : -	Isolated Find	3857
	Contact	Recorders	Permits							
45-5-2427	IFSC 10;Cecil Park;	AGD	56	297680	6247790	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Permits							
45-5-2429	CPSC 3;Cecil Park;	AGD	56	297710	6248020	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Permits							
45-5-2788	B 112	AGD	56	291490	6248790	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2562	EG6	AGD	56	288745	6248166	Open site	Valid	Artefact : 6	Open Camp Site	
	Contact	Recorders	Permits							
45-5-2781	B86	AGD	56	290820	6248920	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2782	B84	AGD	56	289980	6248560	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2623	B 68	AGD	56	289800	6246810	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2630	B 40	AGD	56	291900	6247660	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Permits							
45-5-2783	B43	AGD	56	289150	6248700	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2767	B53	AGD	56	292070	6247620	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2769	B-14	AGD	56	292070	6247700	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2770	B70	AGD	56	288500	6247400	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2771	B69	AGD	56	287950	6247000	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2813	B104	AGD	56	290300	6247520	Open site	Valid	Artefact : -		
	Contact	Recorders	Permits							
45-5-2814	B103	AGD	56	290250	6247270	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6246880 - 6249110 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 102

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2685	B74	AGD	56	291520	6247320	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2680	B78	AGD	56	289160	6247790	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4098	BC-01-09	GDA	56	292062	6247272	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4099	BC-EX01-11	GDA	56	291932	6247569	Open site	Valid	Artefact : 11		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3999	PAD 2001-6	GDA	56	295825	6248852	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4000	Artefact Scatter PAD 2002-46	GDA	56	296555	6247583	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4001	Artefact Scatter PAD 2003-46	GDA	56	296487	6246928	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4006	Artefact Scatter PAD 2007-4	GDA	56	295792	6248524	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4007	Artefact Scatter 2008-4	GDA	56	297641	6248524	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4008	Isolated Object 2009-5	GDA	56	297443	6248524	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4009	Isolated Object 2010-5	GDA	56	297432	6248202	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4010	Isolated Object 2011-5	GDA	56	297479	6248304	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4011	PAD 2012-6	GDA	56	297436	6247607	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6246880 - 6249110 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 102

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4012	PAD 2013-6	GDA	56	297516	6247145	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams					<u>Permits</u>		
45-5-4049	PAD 2054-6	GDA	56	296512	6249100	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams					<u>Permits</u>		
45-5-4688	B137	GDA	56	288290	6248680	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					<u>Permits</u>		
45-5-4689	B138	GDA	56	289169	6248810	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					<u>Permits</u>		
45-5-4690	B139	GDA	56	289336	6248914	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					<u>Permits</u>		
45-5-4691	B140	GDA	56	289400	6248982	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					<u>Permits</u>		
45-5-4692	B141	GDA	56	289232	6248893	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					<u>Permits</u>		
45-5-5281	Cross Street Kemps Creek AFT 1	GDA	56	296973	6248376	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generic users)					<u>Permits</u>	4577	
45-5-2586	B3	AGD	56	290240	6247220	Open site	Valid	Artefact : -	Isolated Find	
	<u>Contact</u>	<u>Recorders</u>	Mr.Kelvin Officer					<u>Permits</u>		
45-5-2310	KC/ED2;	AGD	56	297520	6248760	Open site	Valid	Artefact : -	Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Helen Brayshaw					<u>Permits</u>		
45-5-0213	South Creek;	AGD	56	293700	6247000	Open site	Valid	Artefact : -	Open Camp Site	104106
	<u>Contact</u>	<u>Recorders</u>	Ms.Laila Haglund					<u>Permits</u>		
45-5-0214	Kemps Creek;	AGD	56	296100	6248300	Open site	Valid	Artefact : -	Open Camp Site	
	<u>Contact</u>	<u>Recorders</u>	Ms.Laila Haglund					<u>Permits</u>		
45-5-0517	Badgery's Creek / Longleys Road Badgery's Creek	AGD	56	291940	6247650	Open site	Valid	Artefact : -	Open Camp Site	1018
	<u>Contact</u>	<u>Recorders</u>	Mr.Allan Lance					<u>Permits</u>		
45-5-5066	B129	GDA	56	289263	6249105	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					<u>Permits</u>		
45-5-5071	B134	GDA	56	288311	6248711	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					<u>Permits</u>		
45-5-5072	B135	GDA	56	287741	6246938	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					<u>Permits</u>		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-5090	B158	GDA	56	291916	6247879	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5091	B145	GDA	56	287546	6248235	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5092	B143	GDA	56	286695	6247256	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5093	B142	GDA	56	286827	6247528	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5098	B144	GDA	56	286615	6247089	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5099	B146	GDA	56	291304	6248825	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5100	B147	GDA	56	291272	6248841	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5101	B149	GDA	56	291781	6249036	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5079	B155	GDA	56	292110	6248827	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5080	B156	GDA	56	291953	6248581	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5081	B157	GDA	56	292146	6248243	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5082	B159	GDA	56	289069	6247812	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5083	B160	GDA	56	291510	6247663	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5084	B161	GDA	56	290387	6246994	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5085	B162	GDA	56	291157	6248456	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5102	B148	GDA	56	291448	6248568	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							
45-5-5103	B150	GDA	56	291780	6249055	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd, Miss. Jasmine Fenyvesi							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6246880 - 6249110 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 102

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-5162	BCBW18 AS 01	GDA	56	293069	6247136	Open site	Valid	Artefact : -		
	Contact	Recorders		Artefact - Cultural Heritage Management - Rose Bay,Mr.ryan taddeucci					Permits	
45-5-5163	BCBW18 AS 03	GDA	56	293557	6247292	Open site	Valid	Artefact : -		
	Contact	Recorders		Artefact - Cultural Heritage Management - Rose Bay,Mr.ryan taddeucci					Permits	
45-5-5165	BCBW18 IF 01	GDA	56	293014	6246939	Open site	Valid	Artefact : -		
	Contact	Recorders		Artefact - Cultural Heritage Management - Rose Bay,Mr.ryan taddeucci					Permits	
45-5-4941	LU-IA-17	GDA	56	288175	6248750	Open site	Valid	Artefact : -		
	Contact	Recorders		AECOM Australia Pty Ltd - Sydney,Mr.Luke Wolfe					Permits	
45-5-5022	B113	GDA	56	291594	6248980	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					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	
45-5-5051	B114	GDA	56	288033	6247964	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					Permits	
45-5-5052	B115	GDA	56	287542	6247179	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					Permits	
45-5-5058	B121	GDA	56	292147	6248734	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					Permits	
45-5-5059	B122	GDA	56	288102	6248382	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					Permits	
45-5-5064	B127	GDA	56	288754	6248012	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					Permits	
45-5-5065	B128	GDA	56	289363	6248993	Open site	Valid	Artefact : 1		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden					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	
45-5-2664	B89	AGD	56	288300	6248680	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd					Permits	
45-5-2667	B90	AGD	56	291800	6248760	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd					Permits	
45-5-2668	B93	AGD	56	289150	6248250	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd					Permits	

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6246880 - 6249110 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 102

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2671	B91	AGD	56	287330	6247730	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							
45-5-2678	B80	AGD	56	289100	6248650	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2679	B81	AGD	56	289000	6248800	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2681	B77	AGD	56	289050	6247750	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
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2683	B76	AGD	56	291860	6247720	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2687	B71	AGD	56	289150	6247650	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2656	B102	AGD	56	290400	6247070	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2690	B59	AGD	56	291550	6247420	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2704	B13	AGD	56	291370	6246850	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2705	B15	AGD	56	291000	6248120	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-3106	Kemps Creek (KC PAD 1)	AGD	56	296000	6248875	Open site	Valid	Potential Archaeological Deposit (PAD) : 1, Artefact : 1		97456,98064
	Contact	Recorders	Jo McDonald Cultural Heritage Management see GML							
45-5-4791	TNR AFT 25	GDA	56	286670	6247693	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson							
45-5-4792	TNR AFT 20	GDA	56	287212	6248889	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson							
45-5-4793	TNR AFT 22	GDA	56	287032	6248550	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6246880 - 6249110 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 102

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514054

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4794	TNR AFT 23	GDA	56	286651	6248317	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson							
45-5-4795	TNR AFT 24	GDA	56	286534	6247873	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							
45-5-4798	TNR AFT 26	GDA	56	286602	6247478	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							
45-5-4799	TNR AFT 27	GDA	56	286055	6247628	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							
45-5-4800	TNR AFT 28	GDA	56	286488	6247279	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson							
45-5-4937	M12-AS-01	GDA	56	297650	6248694	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Neville Baker,Sydney Water-Parramatta							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6246880 - 6249110 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 102

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2790	B 54	AGD	56	288280	6245560	Open site	Valid	Art (Pigment or Engraved) :-		
	Contact									Permits
45-5-2791	B 11	AGD	56	289700	6246200	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2798	B27	AGD	56	291650	6245090	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2779	B17	AGD	56	291060	6244300	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2780	B65	AGD	56	291310	6246110	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2618	B 32	AGD	56	286370	6246560	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2619	B 29	AGD	56	291970	6244700	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2620	B 18	AGD	56	291100	6243960	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2621	B 19	AGD	56	291230	6243620	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2622	B 20	AGD	56	291110	6243510	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
45-5-2628	B 38	AGD	56	290750	6243430	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2629	B 39	AGD	56	286980	6246450	Open site	Valid	Artefact :-		
	Contact									Permits
45-5-2631	B 42	AGD	56	288150	6246050	Open site	Valid	Artefact :-		
	Contact									Permits

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2633	B 45	AGD	56	288580	6245840	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2634	B 8	AGD	56	288120	6245500	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact									Permits
45-5-2635	B 7	AGD	56	288020	6245150	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2636	B 6	GDA	56	288030	6244919	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2637	B 5	AGD	56	289470	6246250	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2638	B 4	GDA	56	288340	6245652	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2639	B 21	AGD	56	291060	6243490	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2640	B 22	AGD	56	290620	6243800	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2641	B 23	AGD	56	290710	6243460	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2642	B 24	AGD	56	287040	6246000	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2643	B 25	AGD	56	287050	6246390	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2644	B 26	AGD	56	291550	6245110	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2784	B 106	AGD	56	289560	6245450	Open site	Valid	Art (Pigment or Engraved) : -		
	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	Art (Pigment or Engraved) : -		
	Contact									Permits
45-5-2787	B 110	AGD	56	291250	6246230	Open site	Valid	Artefact : -		
	Contact									Permits

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2766	B108	AGD	56	292300	6246010	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2772	B33	AGD	56	290480	6244800	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2812	b105	AGD	56	289920	6245360	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2702	B10	AGD	56	289550	6246130	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-3963	ALN-IF-01	GDA	56	296499	6245984	Open site	Valid	Artefact : 1		103786
	Contact	Recorders		Australian Museum Consulting (AM Consulting),Mrs.Jenna Weston				Permits		
45-5-3966	ALN-IF-04	GDA	56	297889	6246602	Open site	Valid	Artefact : 1		103786
	Contact	Recorders		Australian Museum Consulting (AM Consulting),Mrs.Jenna Weston				Permits		
45-5-4002	Isolated Object 2004-5	AGD	56	296478	6246591	Open site	Valid	Artefact : 1		103786
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams				Permits		
45-5-4003	Artefact Scatter PAD 2005-846	GDA	56	296202	6246065	Open site	Valid	Artefact : -		103786
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams				Permits		
45-5-4005	PAD 2006-6	GDA	56	295790	6245041	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams				Permits		
45-5-4014	Artefact Scatter PAD 2015-46	GDA	56	298032	6245823	Open site	Partially Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		103786
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher				Permits	3837	
45-5-4015	Isolated Object 2016-5	GDA	56	297480	6245528	Open site	Valid	Artefact : -		103786
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams				Permits		
45-5-4016	PAD 2017-6	GDA	56	296388	6245649	Open site	Valid	Potential Archaeological Deposit (PAD) : -		103786
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams				Permits		
45-5-4017	PAD 2018-6	GDA	56	296377	6244929	Open site	Valid	Potential Archaeological Deposit (PAD) : -		103783,103786
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams				Permits		
45-5-4021	Isolated Object 2022-5	GDA	56	295399	6245634	Open site	Destroyed	Artefact : -		
	Contact	Recorders		Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,AECOM				Permits		
45-5-5280	Ramsay Road South AFT 1	GDA	56	293129	6244136	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generic users)							
45-5-5291	FOURTH AVENUE	GDA	56	297277	6244546	Open site	Valid	Artefact : 1	Permits	4577
	Contact	Recorders	Mr.Miles Robson							
45-5-2583	B 30	AGD	56	292370	6244490	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact	Recorders	Mr.Kelvin Officer							
45-5-0905	Bringelly 1	GDA	56	293005	6243550	Open site	Valid	Artefact : -	Permits	Open Camp Site 2457,2499
	Contact	Recorders	Doctor.Jo McDonald,Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (
45-5-3096	B58	AGD	56	290530	6246180	Open site	Destroyed	Artefact : 2	Permits	4577
	Contact T Russell	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-4146	TNRU10	GDA	56	289307	6244080	Open site	Valid	Artefact : 1	Permits	3752
	Contact	Recorders	Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay							
45-5-4147	TNRU11	GDA	56	289417	6243880	Open site	Valid	Artefact : 1	Permits	3894
	Contact	Recorders	Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay							
45-5-5067	B130	GDA	56	290085	6246717	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5069	B132	GDA	56	288663	6246138	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5070	B133	GDA	56	288818	6246047	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5164	BCBW18 AS 02	GDA	56	293128	6246842	Open site	Valid	Artefact : -	Permits	
	Contact	Recorders	Artefact - Cultural Heritage Management - Rose Bay,Mr.ryan taddeucci							
45-5-5078	B136	GDA	56	289532	6246401	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5053	B116	GDA	56	286258	6246773	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5054	B117	GDA	56	288782	6246337	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5055	B118	GDA	56	290118	6246822	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5056	B119	GDA	56	287790	6246334	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5057	B120	GDA	56	290162	6246756	Open site	Valid	Grinding Groove : 1	Permits	
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden							
45-5-5060	B123	GDA	56	288134	6245959	Open site	Valid	Artefact : 1	Permits	

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-5061	B124	GDA	56	288283	6245779	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-5062	B125	GDA	56	285378	6246620	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-5063	B126	GDA	56	285196	6246684	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-2-0369	Bringelly 1;	GDA	56	293005	6243550	Open site	Valid	Artefact : -	Open Camp Site	2457
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>	4577	
45-5-2658	B67	AGD	56	290150	6246700	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2660	B64	AGD	56	291300	6246000	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2661	B63	AGD	56	291450	6245880	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2662	B61	AGD	56	291100	6245450	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2663	B79	AGD	56	287900	6246390	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2666	B85	AGD	56	290000	6244893	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2669	B96	AGD	56	291270	6245670	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2670	B92	AGD	56	287650	6245800	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2672	B97	AGD	56	291270	6245510	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2674	B100	AGD	56	290870	6245740	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2675	B99	AGD	56	291950	6246080	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-2676	B98	AGD	56	291840	6245800	Open site	Valid	Modified Tree (Carved or Scarred) :		
	<u>Contact</u>	<u>Recorders</u>						-		
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2677	B16	AGD	56	291830	6244780	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2616	B 28	AGD	56	291700	6244980	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2617	B 31	AGD	56	287350	6245410	Open site	Valid	Artefact : -		
	Contact	Recorders	Robert Paton							
45-5-2684	B73	AGD	56	291080	6246280	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2686	B72	AGD	56	290800	6246500	Open site	Valid	Artefact : -		102196
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2689	B62	AGD	56	295050	6245290	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2691	B60	AGD	56	290900	6245480	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2692	B56	AGD	56	288460	6245530	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2693	B55	AGD	56	290310	6246680	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
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							
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							
45-5-2696	B50	AGD	56	289720	6246120	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2697	B49	AGD	56	289200	6245800	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2698	B48	AGD	56	288810	6245800	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2699	B46	AGD	56	288760	6245940	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514056

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2700	B9	AGD	56	289120	6245900	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2701	B47	AGD	56	288530	6245620	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2703	B12	AGD	56	289840	6246320	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2706	B57	AGD	56	289200	6245750	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-4797	TNR AFT 30	GDA	56	286634	6246090	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							
45-5-4801	TNR AFT 29	GDA	56	285946	6246336	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							
45-5-4802	TNR AFT 31	GDA	56	286351	6246252	Open site	Valid	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr							
45-5-5317	EDM IF1	GDA	56	297809	6243447	Open site	Valid	Artefact : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Mr.Cameron Neal							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6243390 - 6246890 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 104

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-5242	Eight Ave Austral Scatter 2	GDA	56	297572	6242348	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Eco - Connections,Mr.Daniel Claggett				<u>Permits</u>	4616	
45-5-2759	McCann road #4	AGD	56	294320	6241120	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>		Ms.Elizabeth White				<u>Permits</u>		
45-5-2760	McCann road #3	AGD	56	294280	6241130	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>		Ms.Elizabeth White				<u>Permits</u>		
45-5-3850	BRP-IF-01	GDA	56	291766	6242103	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3851	BRP-IF-02	GDA	56	291899	6242193	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Leigh Bate				<u>Permits</u>		
45-5-3852	BRP-IF-03	GDA	56	292795	6241850	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3853	BRP-IF-04	GDA	56	294167	6241721	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Leigh Bate				<u>Permits</u>		
45-5-3854	BRP-IF-05	GDA	56	295605	6241463	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3855	BRP-IF-06	GDA	56	297381	6241187	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3856	BRP-IF-07	GDA	56	297478	6241243	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Leigh Bate				<u>Permits</u>		
45-5-3858	BRP-IF-09	GDA	56	296004	6241350	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3859	BRP-IF-10	GDA	56	295372	6241329	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Mr.Leigh Bate				<u>Permits</u>		
45-5-3860	BRP-IF-11	GDA	56	294826	6241522	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3884	BRP-IF-14	GDA	56	291811	6242085	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3885	BRP-IF-15	GDA	56	291384	6242089	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3886	BRP-IF-16	GDA	56	290559	6242142	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	
45-5-3887	BRP-S-10	GDA	56	296851	6242085	Open site	Destroyed	Artefact : 1		103783
	<u>Contact</u>	<u>Recorders</u>		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				<u>Permits</u>	3742	

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6241150 - 6243400 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-3888	BRP-S-01	GDA	56	290284	6242177	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Leigh Bate				Permits		
45-5-3889	BRP-S-02	GDA	56	290179	6242213	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Leigh Bate				Permits		
45-5-3890	BRP-S-03	GDA	56	290057	6242260	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Leigh Bate				Permits	4103	
45-5-3891	BRP-S-04	GDA	56	290292	6242260	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Leigh Bate				Permits		
45-5-3892	BRP-S-05	GDA	56	291096	6242172	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3893	BRP-S-06	GDA	56	291194	6242134	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3894	BRP-S-07	GDA	56	290786	6242168	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3895	BRP-S-08	GDA	56	290265	6242342	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Leigh Bate				Permits		
45-5-3896	BRP-S-09	GDA	56	294188	6241633	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3897	BRP-S-11	GDA	56	296390	6241200	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3898	BRP-S-12	GDA	56	296277	6241285	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3899	BRP-S-25	GDA	56	291775	6242137	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor,Mr.Matt				Permits	3742	
45-5-3866	BRP-IF-12	GDA	56	293618	6241760	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Leigh Bate				Permits		
45-5-3867	BRP-IF-13	GDA	56	292861	6241776	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3868	BRP-S-13	GDA	56	296114	6241329	Open site	Destroyed	Artefact : 1		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3869	BRP-S-14	GDA	56	295431	6241442	Open site	Destroyed	Aboriginal Resource and Gathering : 1, Artefact : -		
	Contact	Recorders		Kelleher Nightingale Consulting Pty Ltd,Mr.Leigh Bate,Miss.Kristen Taylor				Permits	3742	
45-5-3870	BRP-S-15	GDA	56	295206	6241463	Open site	Destroyed	Artefact : 1		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6241150 - 6243400 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3871	BRP-S-16	GDA	56	295069	6241463	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3872	BRP-S-17	GDA	56	294967	6241477	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3873	BRP-S-18	GDA	56	294710	6241532	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3875	BRP-S-20	GDA	56	294610	6241536	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3876	BRP-S-21	GDA	56	293906	6241604	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3877	BRP-S-22	GDA	56	293759	6241624	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3878	BRP-S-23	GDA	56	293685	6241624	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3879	BRP-S-24	GDA	56	293438	6241681	Open site	Destroyed	Artefact : 1	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-3900	BRP-S-10-PAD	GDA	56	296851	6241320	Open site	Destroyed	Potential Archaeological Deposit (PAD) : 1, Artefact : -	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4018	PAD 2019-6	GDA	56	297367	6242079	Open site	Valid	Potential Archaeological Deposit (PAD) : -	103783	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4019	PAD 2020-6	GDA	56	297450	6242075	Open site	Destroyed	Potential Archaeological Deposit (PAD) : -, Artefact : -	103783	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4020	Isolated Object 2021-5	GDA	56	296796	6243361	Open site	Valid	Artefact : -	4245	103783
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		
45-5-4023	Artefact Scatter PAD 2024-46	GDA	56	296274	6241323	Open site	Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -	3742	
	<u>Contact</u>	<u>Recorders</u>						<u>Permits</u>		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6241150 - 6243400 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4024	Artefact Scatter PAD 2025-46	GDA	56	294669	6241517	Open site	Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-4025	Artefact Scatter PAD 2026-4	GDA	56	293880	6241611	Open site	Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-4026	PAD 2027-46	GDA	56	293491	6241722	Open site	Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-4027	Artefact Scatter PAD 2028-46	GDA	56	293137	6241753	Open site	Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-4028	PAD 2029-6	GDA	56	292816	6241772	Open site	Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-4029	PAD 2030-6	GDA	56	292473	6241928	Open site	Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Mr.Mattl Permits							
45-5-4030	Isolated Object 2031-5	GDA	56	292022	6242043	Open site	Destroyed	Artefact : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-4031	PAD 2032	GDA	56	296851	6241215	Open site	Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Kelleher Permits							
45-5-5255	BR-IF-001	GDA	56	290075	6241983	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Kayandel Archaeological Services,Miss.Meggan Walker Permits							
45-5-4647	Boral Bringelly Artefact Reburial Location	GDA	56	289118	6241644	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Josh Symons Permits							
45-5-4713	BBOS5 same site as 45-5-4741	GDA	56	289128	6242257	Open site	Valid	Artefact : -		
	Contact	Recorders	Mrs.Kylie McDonald Permits							

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6241150 - 6243400 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4714	BBOS6 same site as 45-5-4745	GDA	56	289085	6242253	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mrs.Kylie McDonald					Permits	4463	
45-5-4715	BBOS7	GDA	56	288947	6242421	Open site	Valid	Artefact : -		
	Contact	Recorders	Mrs.Kylie McDonald					Permits		
45-5-4716	BBOS8 same site as 45-5-4744	GDA	56	288941	6242099	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mrs.Kylie McDonald					Permits		
45-5-5279	Wynyard Avenue South Creek AFT 1	GDA	56	292881	6243072	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generic users)					Permits	4577	
45-5-5257	BR-ST-001	GDA	56	290094	6242514	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Kayandel Archaeological Services, Miss.Meggan Walker					Permits		
45-5-2855	Lot 127D	AGD	56	295600	6241100	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Ms.Elizabeth White					Permits	1642	
45-5-4285	BB OS1	GDA	56	289525	6241628	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Georgia Wright					Permits		
45-5-4286	BB OS2	GDA	56	289211	6241486	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Miss.Georgia Wright					Permits		
45-5-4287	BB OS3	GDA	56	288952	6241444	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Georgia Wright					Permits		
45-5-4288	BB OS4	GDA	56	288703	6241630	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Georgia Wright					Permits		
45-5-4142	TNRU6	GDA	56	290988	6241174	Open site	Valid	Artefact : 2		
	Contact	Recorders	Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay					Permits	3894	
45-5-4143	TNRU7	GDA	56	290997	6241303	Open site	Valid	Artefact : 7		
	Contact	Recorders	Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay					Permits	4103	
45-5-4145	TNRU9	GDA	56	289944	6243299	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay					Permits	4103	
45-5-4148	TNRU12	GDA	56	291220	6241470	Open site	Valid	Artefact : 1		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay					<u>Permits</u>		
45-5-4150	TNRU14	GDA	56	290596	6242136	Open site	Destroyed	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Kelleher Nightingale Consulting Pty Ltd,Doctor.Sandra Wallace,Artefact - Cultural H					<u>Permits</u>	3742	
45-5-4964	Eight Ave Austral Scatter	GDA	56	297530	6242401	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Mr.David Burke					<u>Permits</u>	4616	
45-5-5017	Kelly Street AD 1	GDA	56	295666	6242099	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Biosis Pty Ltd - Sydney,Mr.James Cole					<u>Permits</u>		
45-5-4962	SA-AS1-17	GDA	56	296870	6241825	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Geordie Oakes,AECOM Australia Pty Ltd - Sydney					<u>Permits</u>	4553	
45-5-2732	MCCANN ROAD #5	AGD	56	294360	6241130	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Ms.Elizabeth White					<u>Permits</u>		
45-5-2733	MCCANN ROAD #2	AGD	56	294260	6241100	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Ms.Elizabeth White					<u>Permits</u>		
45-5-3799	TNR-1	AGD	56	289869	6241339	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Ms.Andrea Ward					<u>Permits</u>	3229	
45-5-4744	BB OS8 same site aas 45-5-4716	GDA	56	288927	6242147	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	EMM Consulting - St Leonards - Individual users,Mr.Andrew Crisp					<u>Permits</u>		
45-5-4745	BB OS6 same site as 45-5-4714	GDA	56	289085	6242253	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	EMM Consulting - St Leonards - Individual users,Mr.Andrew Crisp					<u>Permits</u>	4463	
45-5-4751	TNRB AS01	GDA	56	291174	6241420	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Artefact - Cultural Heritage Management - Rose Bay,Artefact - Cultural Heritage Ma					<u>Permits</u>	4103	
45-5-4912	Fifth Avenue 1	GDA	56	296727	6241565	Open site	Valid	Artefact : -		104137
	<u>Contact</u>	<u>Recorders</u>	Biosis Pty Ltd - Sydney,Mr.James Cole					<u>Permits</u>	4167	
45-5-4932	Solway Road PAD	GDA	56	290126	6242900	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Artefact - Cultural Heritage Management - Rose Bay,Mr.ryan taddeucci					<u>Permits</u>		
45-5-4741	BB OS5 same site as 45-5-4713	GDA	56	289128	6242257	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mrs.Rebecca Newell,EMM Consulting - St Leonards - Individual users					<u>Permits</u>		
45-5-4742	BB OS7	GDA	56	288947	6242242	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mrs.Rebecca Newell,EMM Consulting - St Leonards - Individual users					<u>Permits</u>		
45-5-5318	Tenth Avenue Austral AFT 1	GDA	56	296903	6243221	Open site	Valid	Artefact : -		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SYD0220086

Client Service ID : 514057

<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>Site Status</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
	<u>Contact</u>	<u>Recorders</u>	Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generic users)					<u>Permits</u>		

Report generated by AHIMS Web Service on 19/06/2020 for Tse Siang Lim for the following area at Datum :GDA, Zone : 56, Eastings : 284800 - 298050, Northings : 6241150 - 6243400 with a Buffer of 0 meters. Additional Info : To inform an ACHA report.. Number of Aboriginal sites and Aboriginal objects found is 87

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Appendix 3 – Individual site cards



National Parks and Wildlife Service

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



45-5-2620

Artefact

[✓] New recording

[] Additional Info

1:250,000 map sheet:

SYDNEY

NPWS Code

45

Zone 2 5b

AMG Grid reference

Full reference - please include leading digits

250K
291100 mE
25K

250K
6243960 mN
25K

Scale of map used for grid reference
Please use largest scale available

[✓] 25K, 50K (preferred)

[] 100K

[] 250K

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

HEAD OFFICE USE ONLY:

NPWS Site no: 45-5-2620

Site types: Isolated Find

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager: _____

Address: _____

Site name: B18

Locality/property name: Badgerys Creek

NPWS District:

Region: Sydney

Reason for investigation

Second Sydney Airport EIS (1997) Assessment.

Portion no:

Parish:

Photos taken?

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?

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

refer report.

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

refer report.

Site recorded by:

Address/institution:

NAVIN OFFICER
HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date:

July 2000 (NPWS sitecard)

1996 (field recording)

0

Artefact

[✓] New recording

[] Additional Info

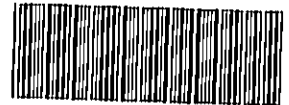


National Parks and Wildlife Service

Box 1967, Hurstville NSW 2220. Tel: (02) 9585 6444

Standard Site Recording Form

Revised 5/88



45-5-2621

1:250,000 map sheet: SYDNEY NPWS Code A5

Zone = SL

AMG Grid reference 291230 mE 6243620 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: 45-5-2621Site types: Open Camp Site

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager: _____

Address: _____

Site name: B19Locality/property name: Badgerys Creek

NPWS District: _____

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

Portion no: _____

Parish: _____

Photos taken? _____

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.Are sites in NPWS Register? yes.

Site Types include: isolated finds, open artefact scatters and scarred trees.

Have artefacts been removed from site? no.

When? _____

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)

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.

NPWS Report Catalogue #

Checklist

Surface visibility
damage/disturbance/
threat to site

Condition of site

refer report.

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

refer report.

Site recorded by:
Address/institution

NAVIN OFFICER
HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date

July 2000 (NPWS site card)
1996 (field recording)

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



45-5-2622

1:250,000 map sheet:

SYDNEY

NPWS Code

145

HEAD OFFICE USE ONLY:

NPWS Site no: 45-5-2622

Site types: Open Camp Site

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager: _____

Address: _____

AMG Grid reference

Full reference - please include leading digits

250K

291110

mE

250K

6243510

mN

25K

5/6

25K

Scale of map used for grid reference
Please use largest scale available☒ 25K, 50K
(preferred)☐ 100K☐ 250K

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

WARRAGAMBA

Site name: B20

Locality/property name:

Badgerys Creek

NPWS District:

Region: Sydney

Reason for investigation

Second Sydney Airport EIS (1997) Assessment.

Portion no:

Parish:

Photos taken?

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.

Are sites in NPWS Register?

yes.

Site Types include: isolated finds, open artefact scatters
and scarred trees.

Have artefacts been removed from site?

no.

When?

By whom?

Deposited where?

Is site important to local Aborigines?

yes - varying degrees of significance (refer report).

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

Gandangara L.A.L.C. (refer report).

Contacted for this recording?

(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

refer report.

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

refer report.

Site recorded by:

Address/institution:

NAVIN OFFICER
HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date:

July 2000 (NPWS site card)

1996 (field recording)

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



45-5-2628

1:250,000 map sheet:

SYDNEY

NPWS Code

45

HEAD OFFICE USE ONLY:

NPWS Site no: 45-5-2628

Site types:

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager:

Address:

AMG Grid reference

Full reference - please include leading digits

250K

290750

mE

250K

6243430

mN

25K

5/6

25K

Scale of map used for grid reference
Please use largest scale available[✓] 25K, 50K
(preferred)

[] 100K

[] 250K

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

WARRAGAMBA

Site name: B 38

Locality/property name: Badgerys Creek

NPWS District:

Region: Sydney

Reason for investigation

Second Sydney Airport EIS (1997) Assessment.

Portion no:

Parish:

Photos taken?

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.

Are sites in NPWS Register?

yes.

Site Types include: isolated finds, open artefact scatters
and scarred trees.

Have artefacts been removed from site?

no.

When?

By whom?

Deposited where?

Is site important to local Aborigines?

yes - varying degrees of significance (refer report).

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

Gandangara L.A.L.C. (refer report).

Contacted for this recording?

(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

refer report.

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

refer report.

Site recorded by:

Address/institution:

NAVIN OFFICER
HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date:

July 2000 (NPWS site card)

1996 (field recording)

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



45-5-2639

1:250,000 map sheet:

SYDNEY

NPWS Code

14.5

HEAD OFFICE USE ONLY:

NPWS Site no: 45-5-2639

Site types: Open Camp site

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager

Address:

AMG Grid reference

Full reference - please include leading digits

250K

291060

mE

250K

6243490

mN

25K

5/6

25K

Scale of map used for grid reference
Please use largest scale available[✓] 25K, 50K
(preferred)

[] 100K

[] 250K

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

WARRAGAMBA

Site name: B 21

Locality/property name: Badgerys Creek

NPWS District:

Region: Sydney

Reason for investigation

Second Sydney Airport EIS (1997) Assessment.

Portion no:

Parish:

Photos taken?

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?

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

refer report.

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

refer report.

Site recorded by:

Address/institution

NAVIN OFFICER
HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date:

July 2000 (NPWS sitecard)
1996 (field recording)

Site Name/code CD 62
 Recorder DEMLINE/Thayer (Chapman)
 Date 10/12/96
 Photos

☐ map grid 29106 624349
☐ GPS
☐ mark map & plot later

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: 15m width/depth: 15m height:

Gradient: ☒ gen.flat ☐ low ☐ mod. ☐ high

Aspect: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☒ W ☐ NW
open

Visibility & Exposure

exposure type: Partial for 1st

soil/matrix type: Grey Soil / clay - yellow

ground visibility in exposure 20%

exposure dimensions X 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 ☐ upper slopes ☐ minor escarpment
☐ knoll ☐ mid slopes ☐ discontinuous outcrop
☐ shoulder ☐ basal slopes ☐ isolated top/outcrop
☐ saddle ☐ rock platform

☒ valley floor ☐ colluvial fan

☐ terrace

☐ dune ☒ river 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 Casuarina

SITE CONTENTS

Artefact numbers

actual no: 39 11

Estimate:

- ☒ 1-5 ☐ 16-50 ☐ 101-500
☐ 6-15 ☐ 50-100 ☐ >500

Artefact density 0.003

average (a/m²) 1/34

max. (a/m²)

Artefact material types

	✓	no.	%
quartz	<input checked="" type="checkbox"/>	1	9
quartzite	<input checked="" type="checkbox"/>	2	18
silcrete	<input checked="" type="checkbox"/>	2	64
chert	<input type="checkbox"/>		
rhyolite	<input type="checkbox"/>		
volcanic	<input type="checkbox"/>		
pet'd wood	<input type="checkbox"/>		
tuff	<input type="checkbox"/>		
other: mudstone		1	2

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:

Artefact descriptions

	✓	no.	percentage
flakes	<input checked="" type="checkbox"/>	29	82
flaked pieces	<input checked="" type="checkbox"/>	2	18
cores	<input type="checkbox"/>		
hatchet head/frag't	<input type="checkbox"/>		
secondary flaking	<input type="checkbox"/>		
use wear	<input type="checkbox"/>		
pebble cortex	<input checked="" type="checkbox"/>	4	36
microliths	<input type="checkbox"/>		
backed blades	<input type="checkbox"/>		
geometric microliths	<input type="checkbox"/>		
microblade cores	<input checked="" type="checkbox"/>		
bipolar cores	<input checked="" type="checkbox"/>	1	9
single platform cores	<input type="checkbox"/>		
multiplatform cores	<input type="checkbox"/>		
hammerstones	<input type="checkbox"/>		
anvil stones	<input type="checkbox"/>		
grinding stones	<input type="checkbox"/>		
hearth stones	<input type="checkbox"/>		
manuports	<input type="checkbox"/>		

Abraded/Pecked features

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

Individual artefact descriptions (up to 10) / notes:

- 1 FI Yellow Silcrete 22 x 26 x 4 - 4 neg scars dorsal surface include one long narrow stop fracture scar near platform dorsal surface
Vertical surface waves
- 2 Flt Red Site 31 x 26 x 14 - 45% cortex - decalified flake (engraved)
- 3 FI Red Silcrete 9 x 18 x 7 - 20% Cortex - one very narrow flake scar on vertical surface runs the length of back edge

SITE SKETCHES

No drawings

See Comment re MAD on CD 9

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;

40m further south more artefacts located

- 4 FI Red Silcrete 17 x 15 x 4
- 5 Flt Grey Quartzite 22 x 17 x 14 - 1 Blade scar on dorsal surface
- stop fracture
- 6 B/FI Yellow/Red Silcrete 18 x 20 x 7 - Distal point missing
- 7 B/FI Red Silcrete 14 x 22 x 6 - Distal point missing
- 8 FI Grey Quartzite 11 x 18 x 7 - 20% Cortex
- 9 Chip Quartz
- 10 FI Mudstone Chert 21 x 22 x 9 - 60% Cortex - decalified A
- weather scar - on platform
bipolar - scars on hemisphere & platform
- 11 FI Red Silcrete 20 x 11 x 6 - 4 neg scars & 1 rotation

This site extends from the back (see map) to the creek

Artefact

[✓] New recording

[] Additional Info

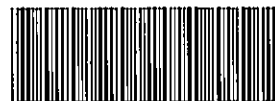


National Parks and Wildlife Service

Box 1967, Hurstville NSW 2220. Tel: (02) 9585 6444

Standard Site Recording Form

Revised 5/88



45-5-2640

1:250,000 map sheet: SYDNEY NPWS Code 45
 Zone = SB
 AMG Grid reference 290620 mE 6243800 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: 45-5-2640Site types: OpenCamp Site

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager: _____

Address: _____

Site name: B22Locality/property name: Badgerys Creek

NPWS District: _____

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

Portion no: _____

Parish: _____

Photos taken? _____

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.Are sites in NPWS Register? yes.Site Types include: isolated finds, open artefact scatters and scarred trees.Have artefacts been removed from site? no.

When? _____

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

refer report.

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

refer report.

Site recorded by.
 Address/institution

NAVIN OFFICER
 HERITAGE CONSULTANTS
 102 JERVOIS ST
 DEAKIN ACT 2600

Date

July 2000 (NPWS site card)
 1996 (field recording)

0

Site Name/code CD 63
 Recorder Deanne Thompson
 Date 10/1/96
 Photos 16

☐ map grid 29062 6243 80
☐ GPS
☐ mark map & plot later

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: exposed open drains
 soil/matrix type: clayey soil
 ground visibility in exposure 20%
 exposure dimensions X 0% 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

Bedrock
☐ sandstone ☐ sand sheet ☐ wetland margin
☐ shales ☐ lake margin

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

SITE CONTENTS

Artefact numbers
 actual no. 3
 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	<input type="checkbox"/>		
quartzite	<input type="checkbox"/>		
silcrete	<input checked="" type="checkbox"/>	<u>2</u>	<u>100%</u>
chert	<input type="checkbox"/>		
rhyolite	<input type="checkbox"/>		
volcanic	<input type="checkbox"/>		
pet'd wood	<input type="checkbox"/>		
tuff	<input type="checkbox"/>		
other	<input checked="" type="checkbox"/>	<u>1</u>	<u>34%</u>

Artefact descriptions

	✓	no.	percentage
flakes	<input checked="" type="checkbox"/>	<u>3</u>	<u>100%</u>
flaked pieces	<input type="checkbox"/>		
cores	<input type="checkbox"/>		
hatchet head/frag't	<input type="checkbox"/>		
secondary flaking	<input type="checkbox"/>		
use wear	<input type="checkbox"/>		
pebble cortex	<input checked="" type="checkbox"/>	<u>1</u>	<u>33%</u>
microliths	<input type="checkbox"/>		
backed blades	<input type="checkbox"/>		
geometric microliths	<input type="checkbox"/>		
microblade cores	<input type="checkbox"/>		
bipolar cores	<input type="checkbox"/>		
single platform cores	<input type="checkbox"/>		
multiplatform cores	<input type="checkbox"/>		
hammerstones	<input type="checkbox"/>		
anvil stones	<input type="checkbox"/>		
grinding stones	<input type="checkbox"/>		
hearth stones	<input type="checkbox"/>		
manuports	<input type="checkbox"/>		

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:

Abraded/Pecked features
☐ grinding grooves: no. of grooves
 no. of groups
 groove length: max: min:
 groove width: max: max:
☐ channels: no.
☐ other:

visual artefact descriptions (up to 10) notes:

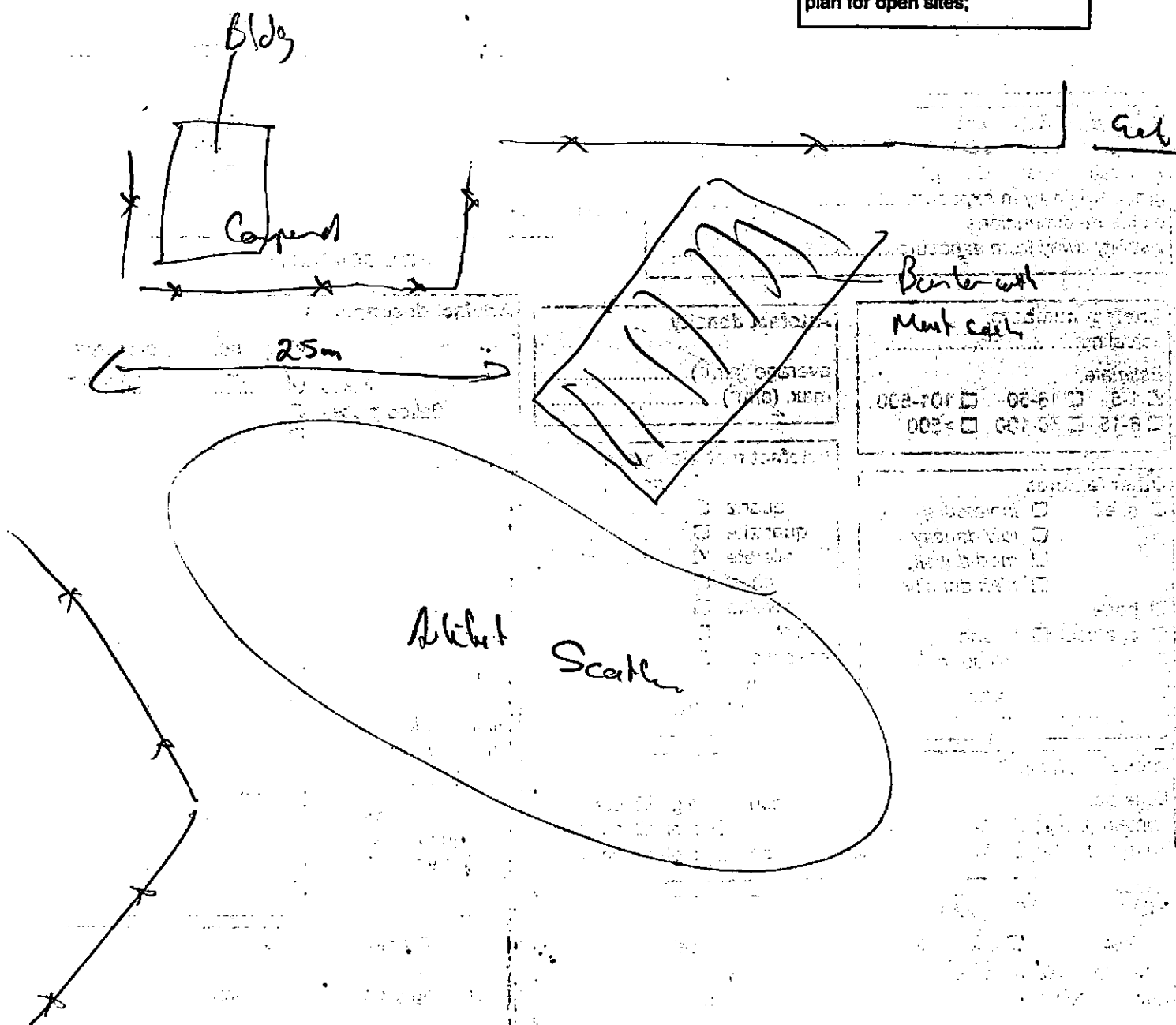
1. FI Red Silcrete 18 x 12 x 9
2. FI Grey Silcrete 14 x 20 x 3
3. FI Yellow Mudstone 17 x 11 x 5

- 2 Neg Score 1 Retcher
- 3 " " edged dagger
- 1 " " 70% Corrugated Glass

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;



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



45-5-2641

1:250,000 map sheet:

SYDNEY

NPWS Code

45

Zone = 56

AMG Grid reference

250K

290710

mE

250K

6243460

mN

Full reference - please include leading digits

25K

5/6

25K

Scale of map used for grid reference
Please use largest scale available[✓] 25K, 50K
(preferred)

[] 100K

[] 250K

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

WARRAGAMBA

HEAD OFFICE USE ONLY:

NPWS Site no: 45-5-2641

Site types: Open Camp Site

Accessioned by: _____ Date: _____

Data entered by: _____ Date: _____

Owner/Manager

Address

Site name: B 23

Locality/property name: Badgerys Creek

NPWS District:

Region: Sydney

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

Portion no:

Parish:

Photos taken?

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.

Are sites in NPWS Register? yes.

Site Types include: isolated finds, open artefact scatters
and scarred trees.

Have artefacts been removed from site? no.

When?

By whom?

Deposited where?

Is site important to local Aborigines?
Give contact(s) name(s) + address(es)

yes - varying degrees of significance (refer report).

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

refer report.

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

refer report.

Site recorded by.
Address/institutionNAVIN OFFICER
HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date

July 2000 (NPWS site card)
1996 (field recording)

Site Name/code CD 64
 Recorder Deane / Cooper
 Date 10/12/96
 Photos No

- ☐ map grid
☐ GPS
☐ mark map & plot later

29071 624346

Site Type

- ☒ open artefact scatter
☐ isolated find
☐ open midden
☐ open grinding grooves
☐ open engravings
☐ quarry
☐ procurement site
☐ burial
- ☐ rockshelter with:
☐ surface artefacts
☐ arch'l deposit
☐ midden deposit
☐ pigment art
☐ engraved art
☐ grinding grooves
☐ 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: drainage ditch
 soil/matrix type: clayey soil
 ground visibility in exposure 50%
 exposure dimensions 1.5 X 20m X
 visibility away from exposure 5%

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 grass

SITE CONTENTS

Artefact numbers

actual no. 6
 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	<input checked="" type="checkbox"/>	1	25
quartzite	<input checked="" type="checkbox"/>	2	33
silcrete	<input checked="" type="checkbox"/>	3	75
chert	<input type="checkbox"/>		
rhyolite	<input type="checkbox"/>		
volcanic	<input type="checkbox"/>		
pet'd wood	<input type="checkbox"/>		
tuff	<input type="checkbox"/>		
other			

Artefact descriptions

	no.	percentage
flakes	<input checked="" type="checkbox"/> 3	75
flaked pieces	<input checked="" type="checkbox"/> 1	25
cores	<input type="checkbox"/>	
hatchet head/frag't	<input type="checkbox"/>	
secondary flaking	<input type="checkbox"/>	
use wear	<input type="checkbox"/>	
pebble cortex	<input type="checkbox"/>	
microliths	<input type="checkbox"/>	
backed blades	<input type="checkbox"/>	
geometric microliths	<input type="checkbox"/>	
microblade cores	<input type="checkbox"/>	
bipolar cores	<input type="checkbox"/>	
single platform cores	<input type="checkbox"/>	
multiplatform cores	<input type="checkbox"/>	
hammerstones	<input type="checkbox"/>	
anvil stones	<input type="checkbox"/>	
grinding stones	<input type="checkbox"/>	
hearth stones	<input type="checkbox"/>	
manuports	<input type="checkbox"/>	

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:

Abraded/Pecked features

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

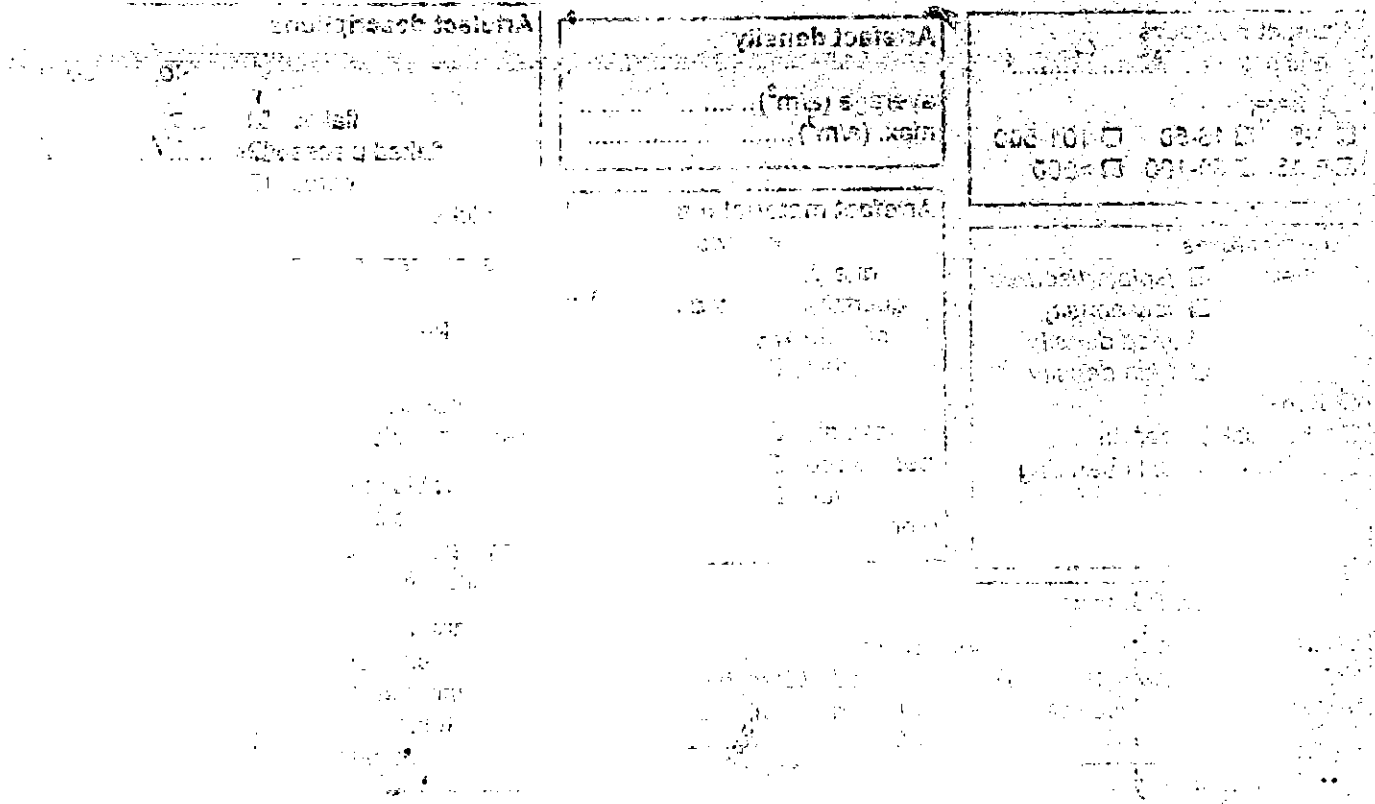
Individual artefact descriptions (up to 10) / notes:

1. Chip Ak
2. Br Flak Red Silcrete 18 X 15 X 4 - Distal portion missing - Broken Blade
3. Fl " " 36 X 26 X 6 - Local platform; 3 Neg Scars dorsal surface
4. Fl " " 27 X 23 X 8 - Step flake on main neg scar
3 neg scars

SITE SKETCHES

No drawing - site is drainage ditch near elbow (with culvert)
off road leading SE from main buildings. Close to antenna
Cave. Main artefacts to SE on other side of culvert.

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;



Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 45-5-5481

Date recorded: 23-04-2021

Site Location Information

Site name: ACAS01

Easting: 290949 Northing: 6243534 Coordinates must be in GDA (MGA)

Horizontal Accuracy (m): 5

Zone: 56 Location method: Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title Surname First name
Dr. Lim Tse Siang

Organisation: Extent Heritage

Address: 3/73 Union Street Pyrmont NSW 2009

Phone: 0468355819 E-mail: tlim@extent.com.au

Site Context Information

Land Form Pattern: Undulating Plain Land Use: Semirural

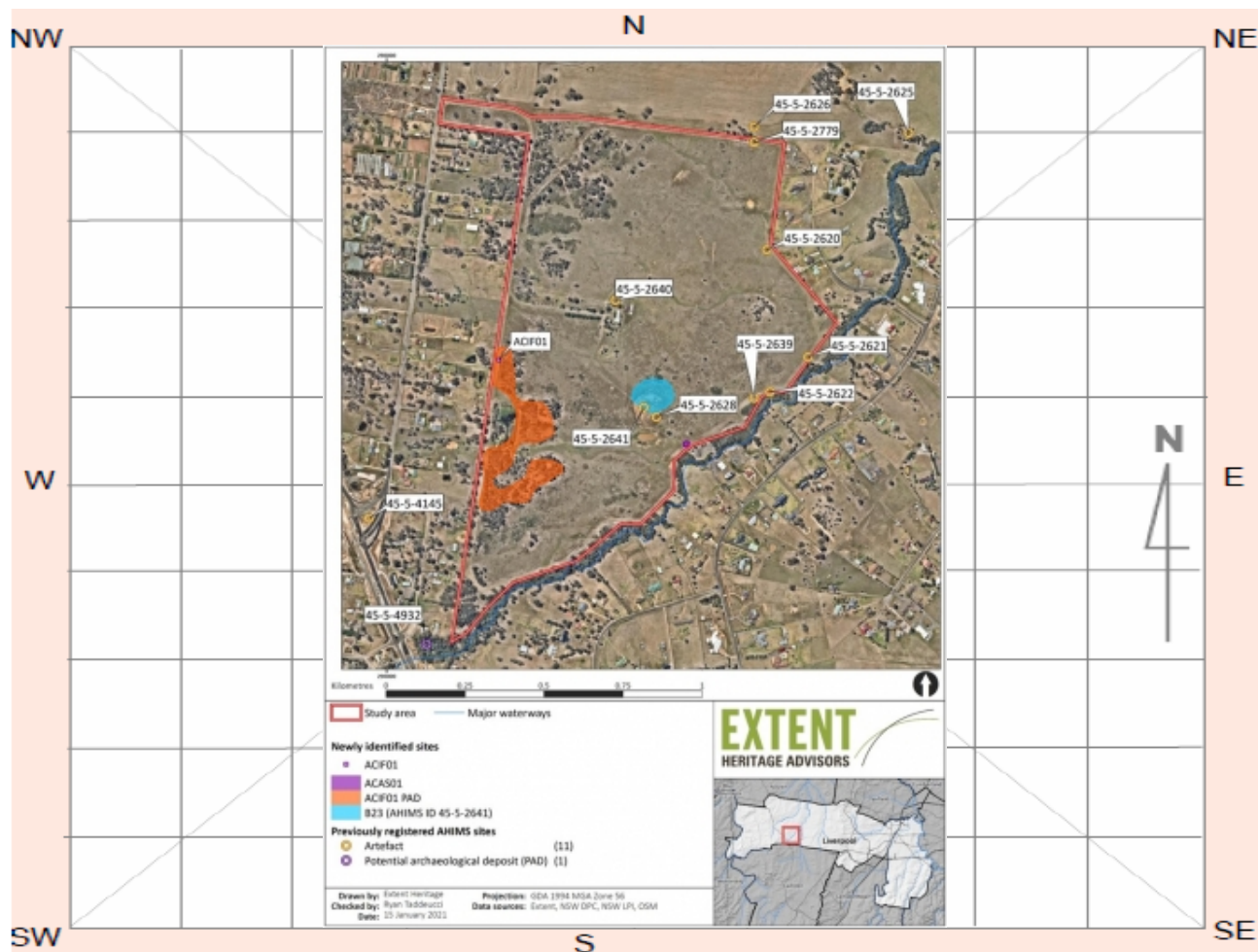
Land Form Unit: Plain Vegetation: Cleared

Distance to Water (m): 20 Primary Report: Western Parkland City Authority Cultural Heritage Study ACHA

How to get to the site: The site is located along the eastern boundary of the property at 215 Badgerys Creek Road, Bringelly (Lot 10, DP 1235662). The site is located within an area of exposure associated with a vehicle track, approximately 20m north of Thompsons Creek.

Other site information: As the site is located approximately 130 m south of B 23 (AHIMS ID 45-5-2641), the two sites may be connected as part of a wide complex of sites.

Site location map



Site contents information

open/closed site:

Site condition:

Features:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)
1. <input type="text" value="Artefact"/>	<input type="text" value="4"/>	<input type="text" value="18"/>	<input type="text" value="18"/>

Description:

The site is a low-density artefact scatter comprising four surface artefacts: one silcrete core fragment, two silcrete complete flakes and one silcrete proximal flake.

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)
2. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Site photographs



Description:	In-situ photograph of ACAS01-01.
--------------	----------------------------------

Description:



Description:	In-situ photograph of ACAS01-03 (left) and ACAS01-04 (right).
--------------	---

[illegible]

Description:

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:

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 45-5-5480

Date recorded: 23-04-2021

Site Location Information

Site name: ACIF01

Easting: 290355 Northing: 6243801 Coordinates must be in GDA (MGA)

Horizontal Accuracy (m): 5

Zone: 56 Location method: Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title Surname First name
Dr. Lim Tse Siang

Organisation: Extent Heritage

Address: 3/73 Union Street Pyrmont NSW 2009

Phone: 0468355819 E-mail: tlim@extent.com.au

Site Context Information

Land Form Pattern: Undulating Plain Land Use: Semirural

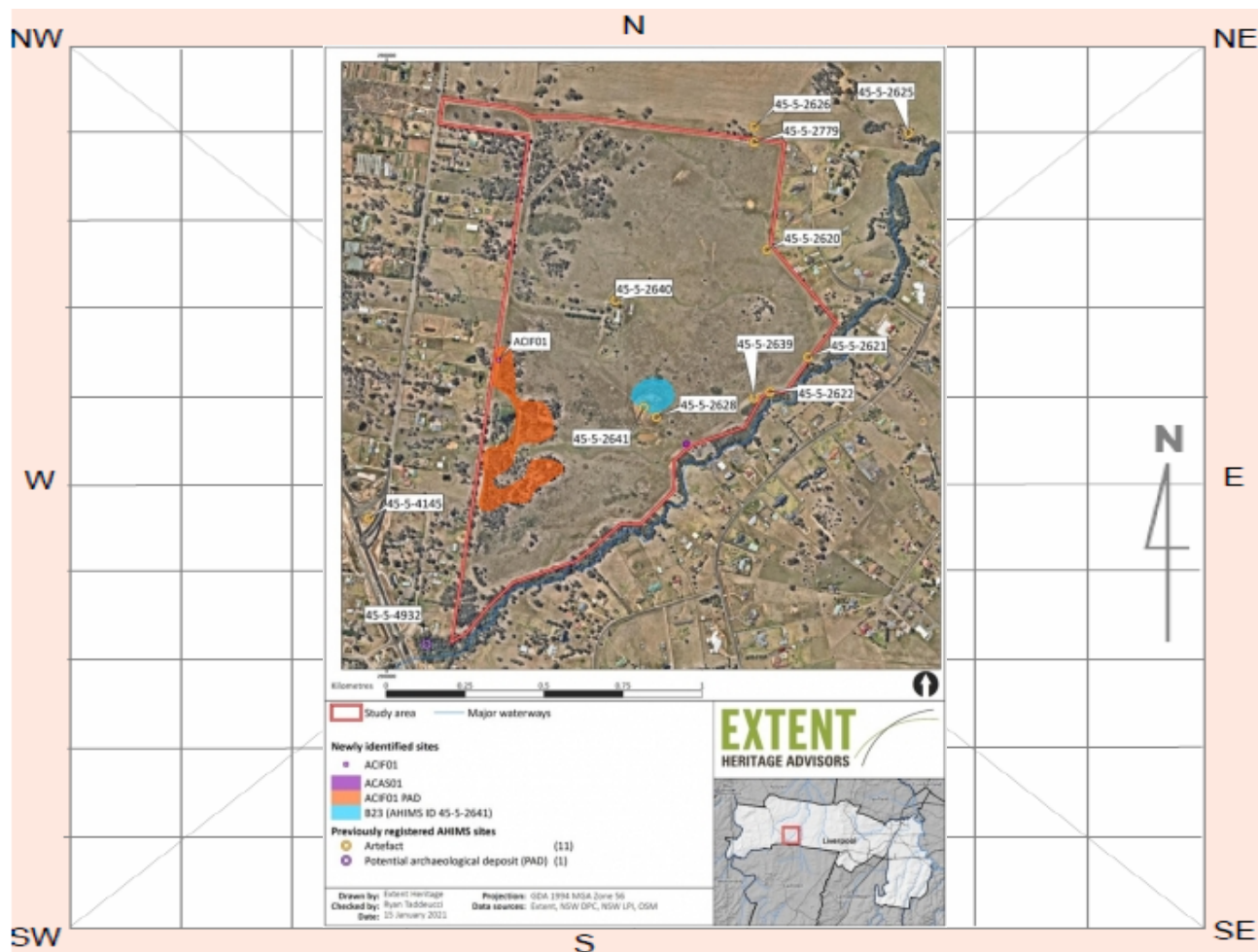
Land Form Unit: Plain Vegetation: Cleared

Distance to Water (m): 700 Primary Report: Western Parkland City Authority Cultural Heritage Study ACHAR

How to get to the site: The site is located along the western boundary of the property at 215 Badgerys Creek Road, Bringelly (Lot 10, DP 1235662) on a vehicle track.

Other site information:

Site location map



Site contents information

open/closed site:

Site condition:

Features:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)
1. <input type="text" value="Artefact"/>	<input type="text" value="1"/>	<input type="text" value="3"/>	<input type="text" value="3"/>

Description:

The artefact is a single medial mudstone fragment.

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)
2. <input type="text" value="Potential Archaeological Deposit"/>	<input type="text"/>	<input type="text" value="550"/>	<input type="text" value="250"/>

Description:

This PAD is identified in association with the one artefact at this site. Further archaeological investigations are required to determine if any subsurface artefacts are present within the site extent.

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

3.

Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

4.

Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

5.

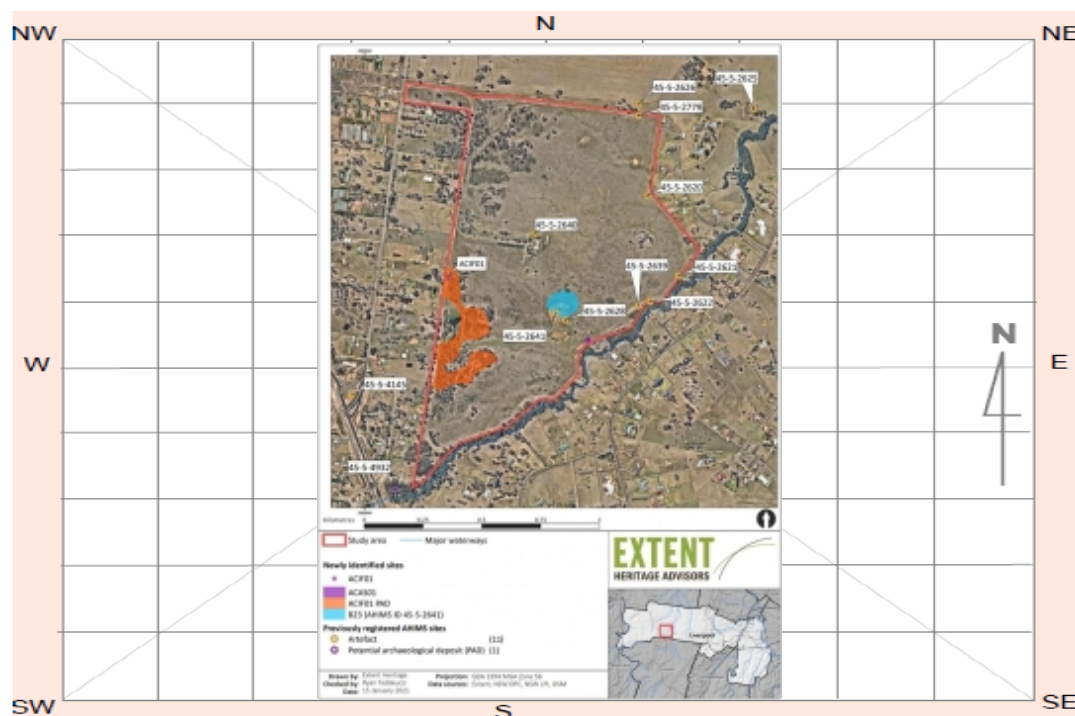
Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Other Site Info:

Site plan



Site photographs



Description: View east across ACIF01, showing vegetation to the east and slope of landform.

Description:



Description:	In-situ photograph of medial mudstone fragment, identified at ACIF01.
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A blank 6x6 grid with a dotted border and two diagonal lines intersecting at the center. The grid is composed of 6 columns and 6 rows of squares. A dotted line runs from the top-left corner to the bottom-right corner, and another dotted line runs from the top-right corner to the bottom-left corner. The two lines intersect at the center of the grid, specifically at the intersection of the third and fourth columns and the third and fourth rows.

Description:

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:

AHIMS site ID: 45-5-5588

Date recorded: 08-02-2022

Site Location Information

Site name: BCC Isolated Artefact 1

Easting: 290896 Northing: 6243466 Coordinates must be in GDA (MGA)

Horizontal Accuracy (m): 5

Zone: 56 Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title Surname First name
Ms. Morris Hannah
Organisation: Extent Heritage Pty Ltd
Address: 3/73 Union Street Pyrmont
Phone: 0452334339 E-mail: hmorris@extent.com.au

Site Context Information

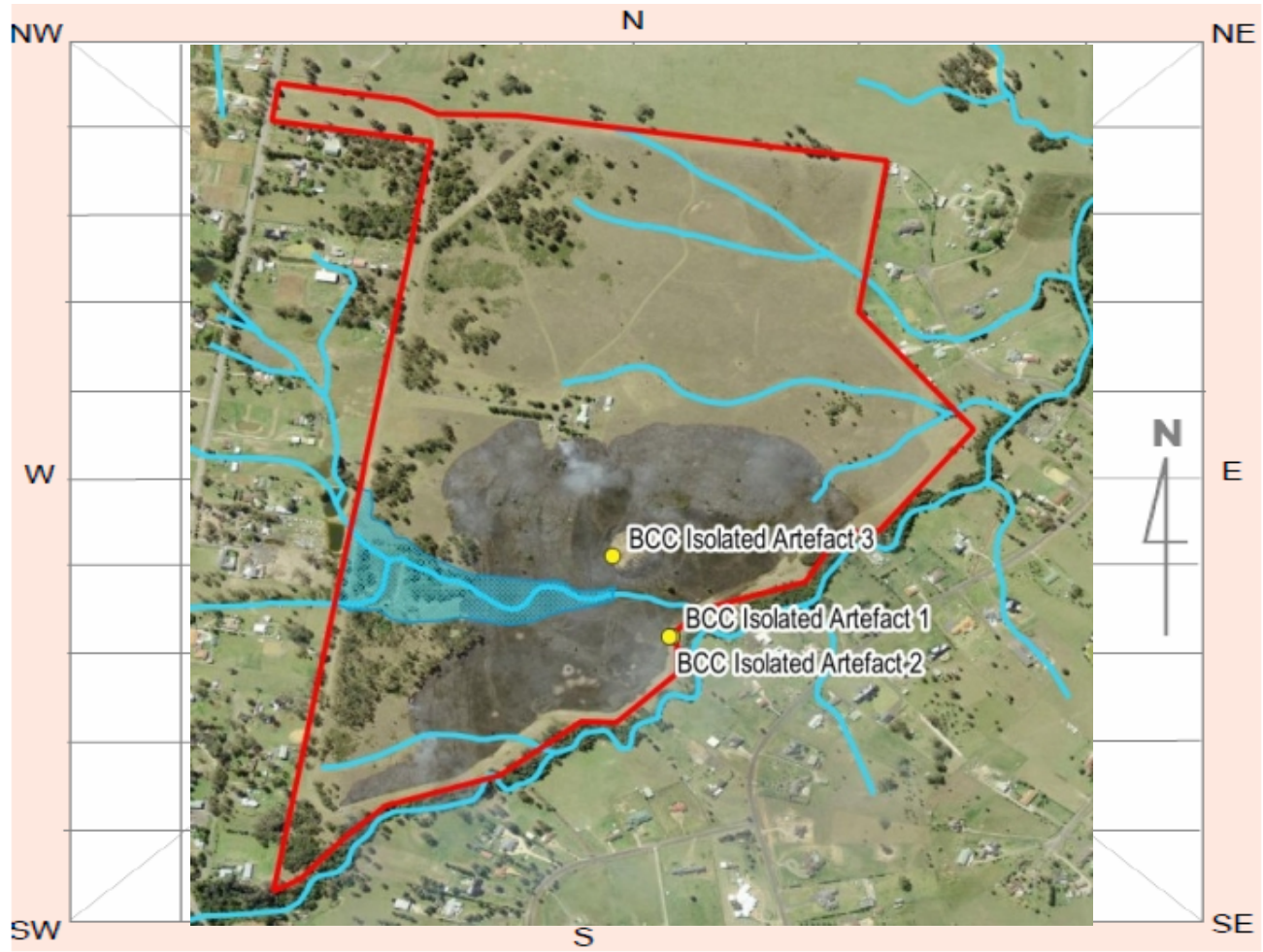
Land Form Pattern: Undulating Plain Land Use: Industrial
Land Form Unit: Terrace Vegetation: Cleared
Distance to Water (m): 58 Primary Report: Extent Heritage 2022 Bradfield City Centre ACHAR

How to get to the site: Access via 215 Badgerys Creek Road. Drive through cleared access track around site extent.

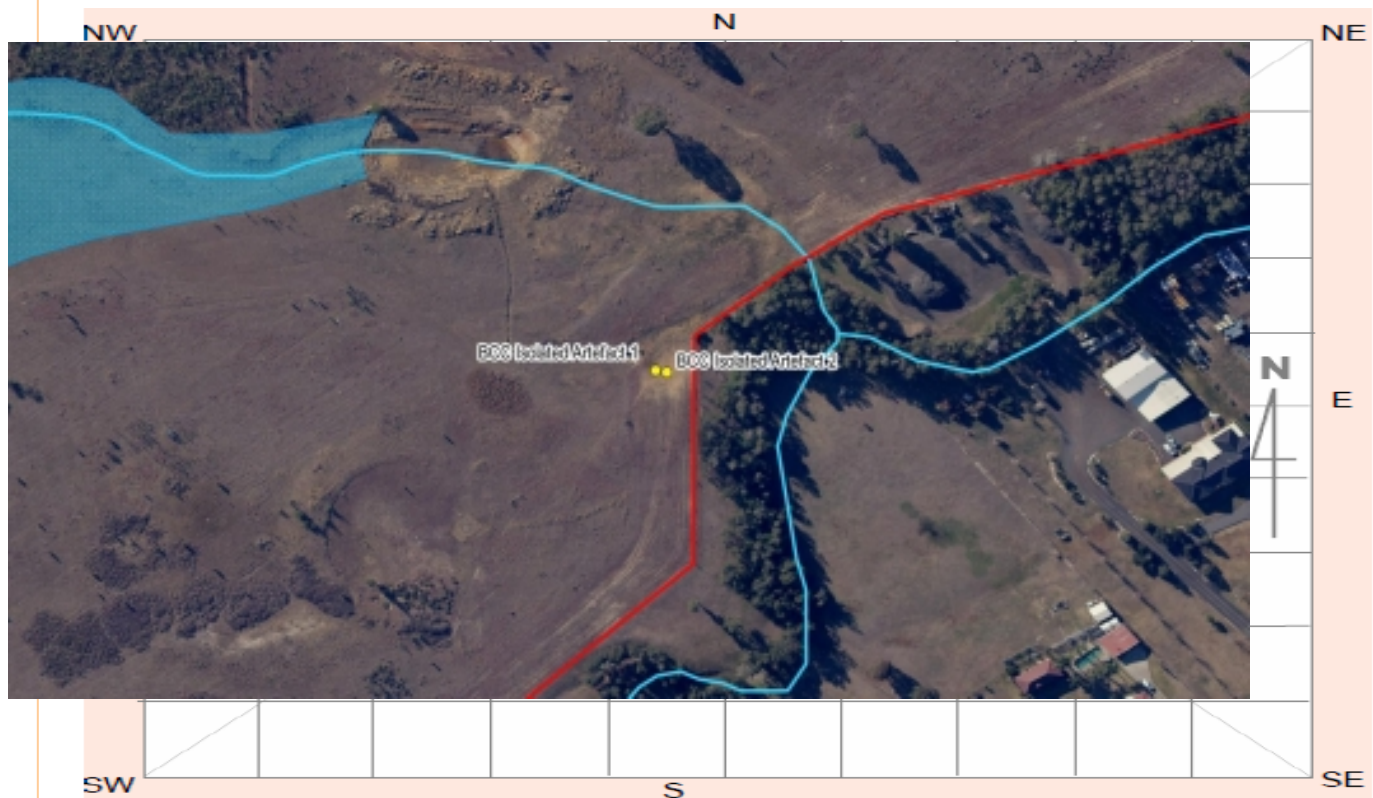
Other site information:

The site was on an exposure vehicle track. It has low research potential as it is likely to have been subject to the ongoing taphonomic processes impacting the archaeological integrity of surface artefact. The site has low educational and scientific value to its representative nature.

Site location map



Site plan



Site contents information

open/closed site:

Open

Site condition:

Weathering

Features:

		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
1.	<div>Artefact</div>	<div>1</div>	<div>1</div>	<div>1</div>	<div></div>	<div></div>	<div></div>	<div></div>

Feature condition:

Description:

BCC Isolated Artefact 1 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491). It was identified 3.8 m west of BCC Isolated Artefact 2. The artefact comprised a red silcrete flake without clear evidence of retouching

Features:

		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
2.	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Feature condition:

Description:

Features:

		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
3.	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Feature condition:

Description:

Features:

4.

Feature condition:

Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

5.

Feature condition:

Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

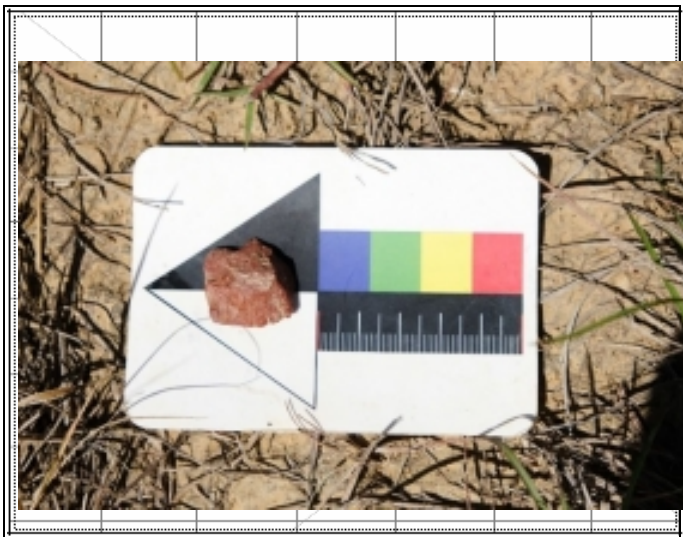
Site photographs



Description: Location of isolated surface artefacts (marked by spray cans). BCC Isolated Artefact 1 (left).

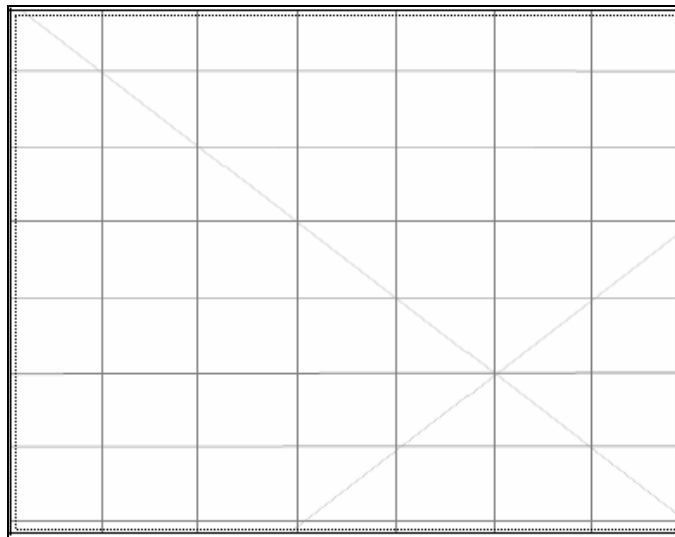


Description: silcrete artefact



Description:

silcrete artefact



Description:

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:

Site interpretation and community statement

AHIMS site ID: 45-5-5589

Date recorded: 08-02-2022

Site Location Information

Site name: BCC Isolated Artefact 2

Easting: 290899

Northing: 6243465

Coordinates must be in GDA94 (MGA)

Horizontal Accuracy (m):

1

Zone: 56

Differential GPS

Recorder Information

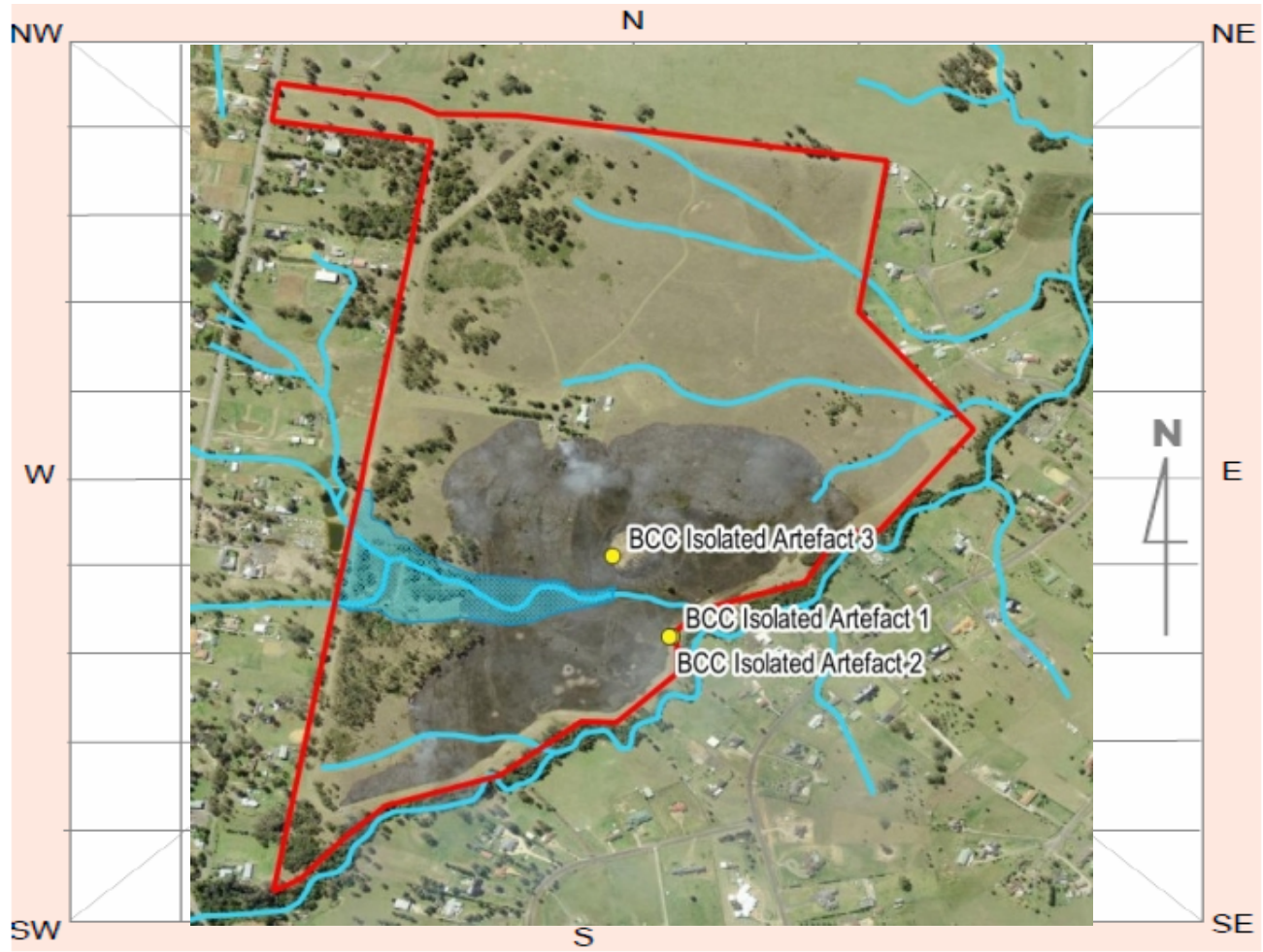
(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Morris	Hannah
Organisation:	Extent Heritage Pty Ltd	
Address:	3/73 Union Street Pyrmont	
Phone:	0452334339	E-mail: hnmorris@extent.com.au

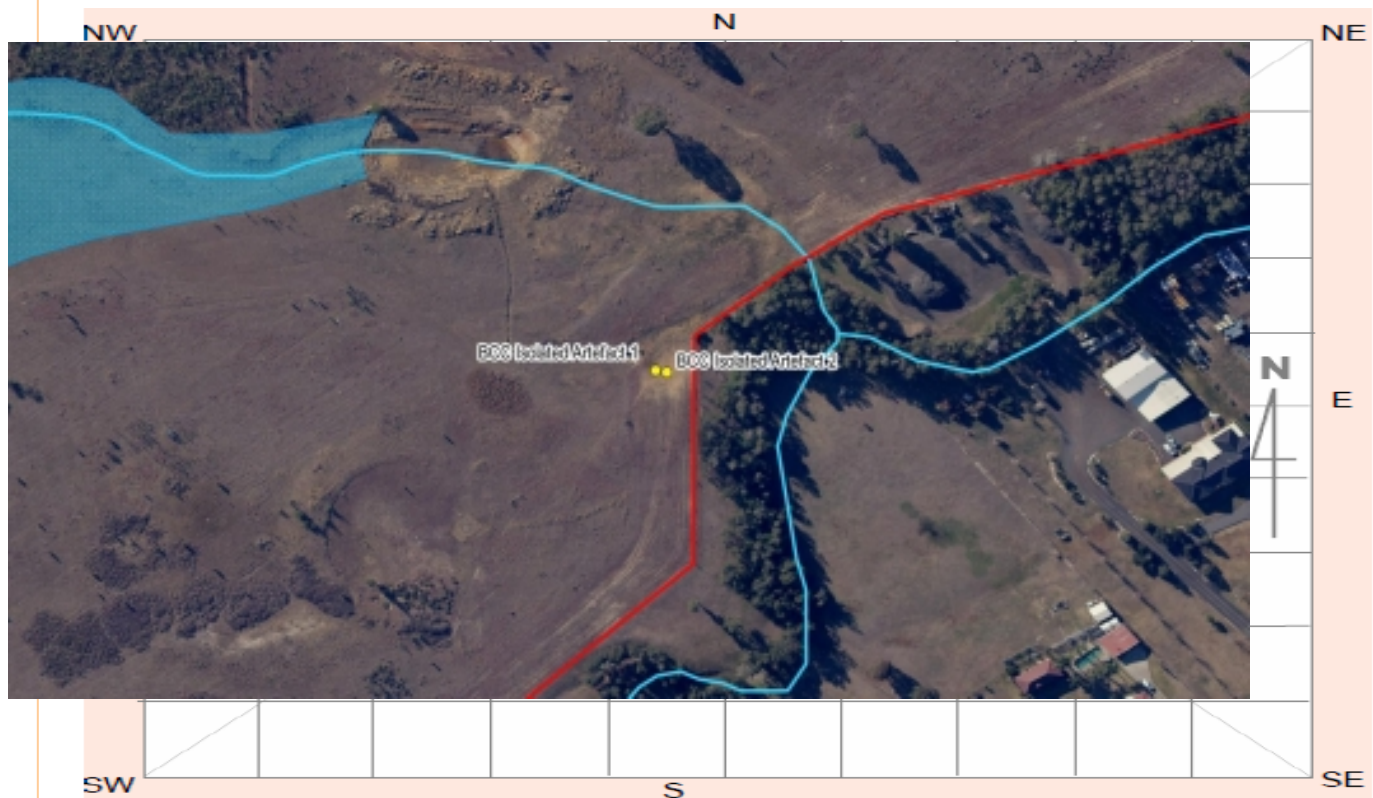
Site Context Information

Land Form Pattern:	Undulating Plain	Land Use:	Industrial
Land Form Unit:	Terrace	Vegetation:	Cleared
Distance to Water (m):	58	Primary Report:	Extent Heritage 2022 Bradfield City Centre ACHAR
How to get to the site:	Access via 215 Badgerys Creek Road. Drive through cleared access track around site extent.		
Other site information:	The site was on an exposure vehicle track. It has low research potential as it is likely to have been subject to the ongoing taphonomic processes impacting the archaeological integrity of surface artefact. The site has low educational and scientific value to its representative nature.		

Site location map



Site plan



Site contents information

open/closed site:

Open

Site condition:

Weathering

Features:

		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
1.	<div>Artefact</div>	<div>1</div>	<div>1</div>	<div>1</div>	<div></div>	<div></div>	<div></div>	<div></div>
Feature condition: <div></div>								

Description:

BCC Isolated Artefact 1 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491). It was identified 3.8 m east of BCC Isolated Artefact 1. The artefact comprised an IMT flake.

Features:

		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
2.	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Feature condition: <div></div>								

Description:

Features:

		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
3.	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Feature condition: <div></div>								

Description:

Features:

4.

Feature condition:

Description:

Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Features:

5.

Feature condition:

Description:

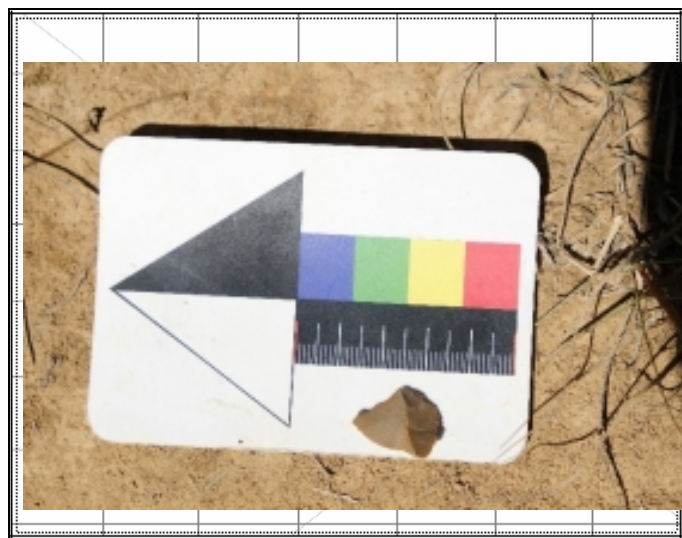
Scarred Trees

Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Site photographs



Description:



Description:

Description:

Description:

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:

Site interpretation and community statement

AHIMS site ID: 45-5-5590

Date recorded: 08-02-2022

Site Location Information

Site name: BCC Isolated Artefact 3

Easting: 290781

Northing: 6243634

Coordinates must be in GDA94 (MGA)

Horizontal Accuracy (m):

5

Zone: 56

Differential GPS

Recorder Information

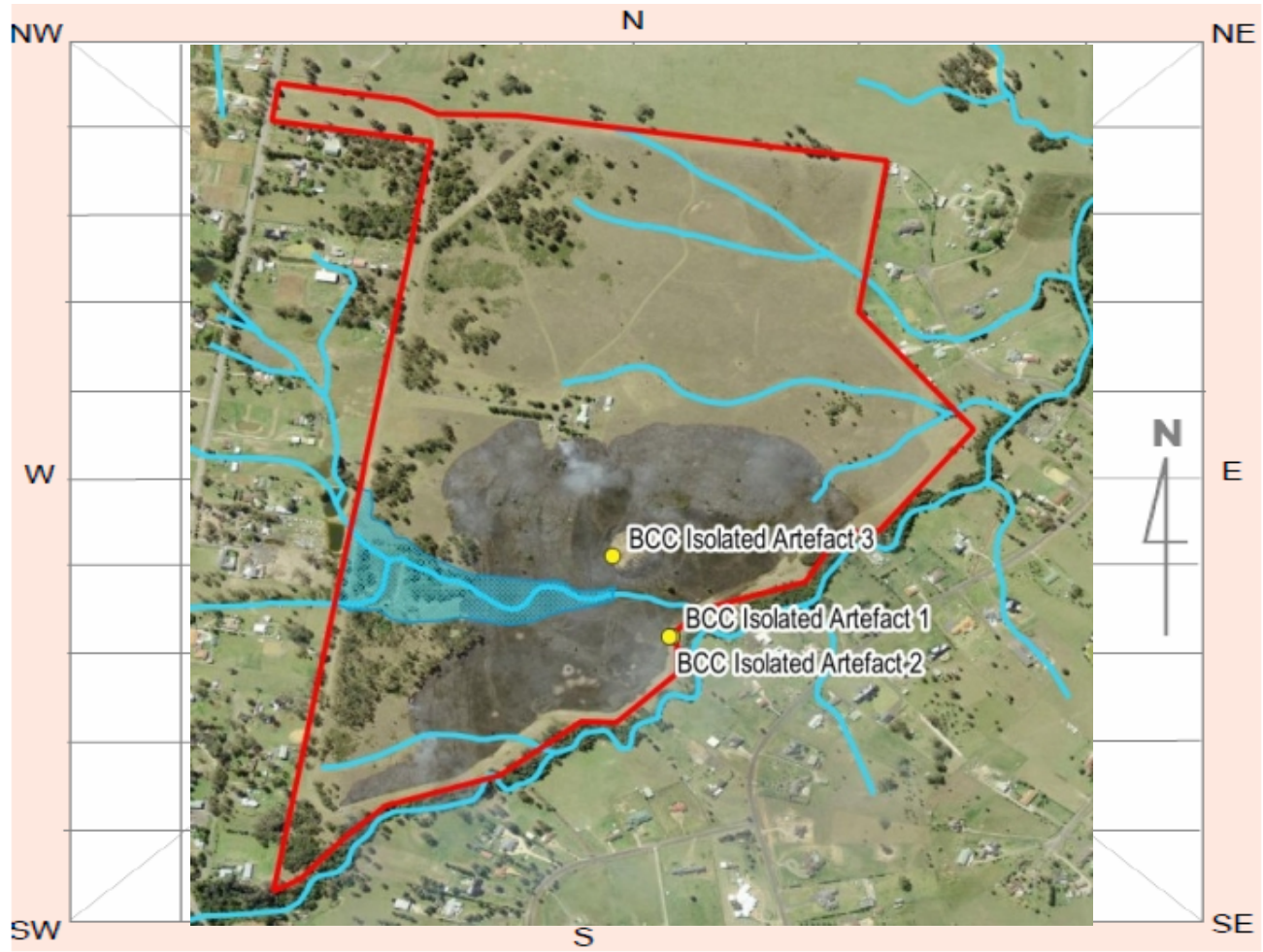
(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Morris	Hannah
Organisation:	Extent Heritage Pty Ltd	
Address:	3/73 Union Street Pyrmont	
Phone:	0452334339	E-mail: hnmorris@extent.com.au

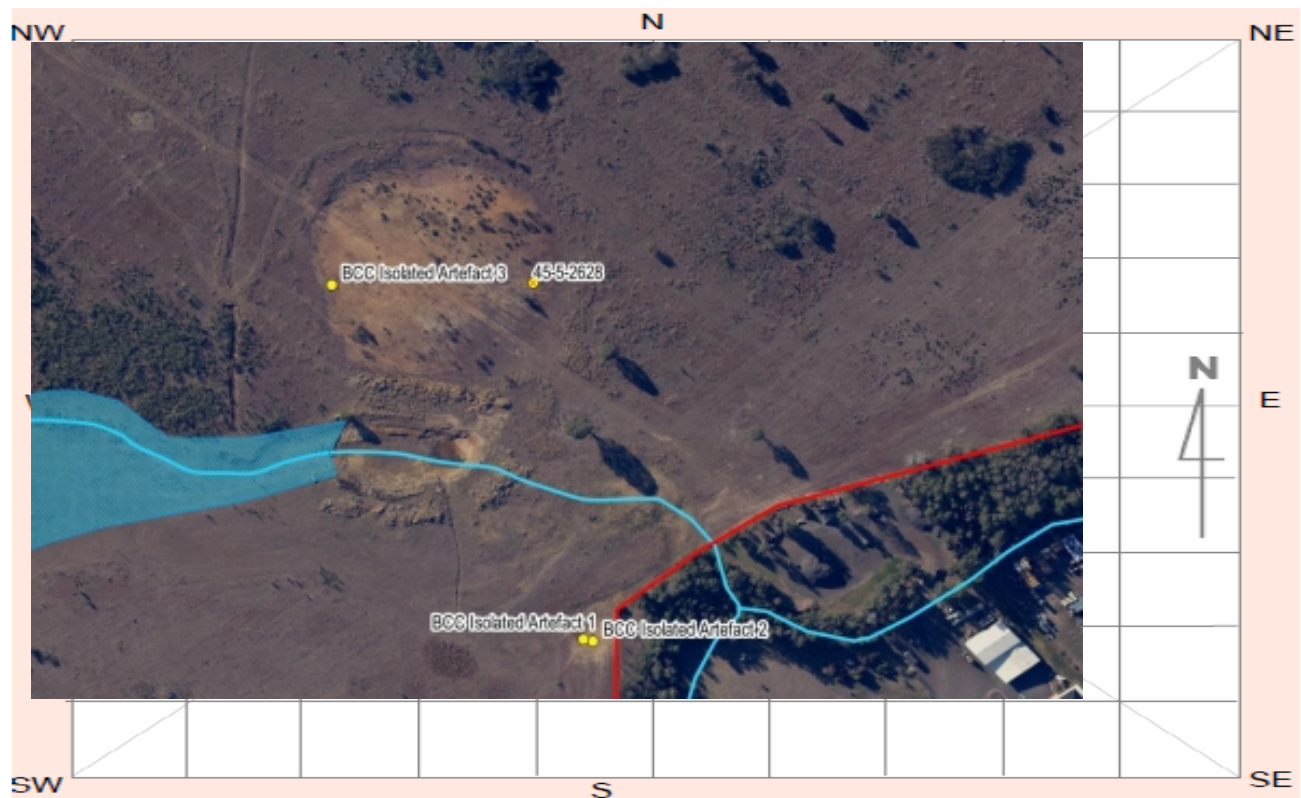
Site Context Information

Land Form Pattern:	Undulating Plain	Land Use:	Industrial
Land Form Unit:	Terrace	Vegetation:	Cleared
Distance to Water (m):	80	Primary Report:	Extent Heritage 2022 Bradfield City Centre ACHAR
How to get to the site:	Access via 215 Badgerys Creek Road. Drive through cleared access track around site extent.		
Other site information:	The site was on a RAAF aerial exposure. It has low research potential as it is likely to have been subject to the ongoing taphonomic processes impacting the archaeological integrity of surface artefact. The site has low educational and scientific value to its representative nature.		

Site location map



Site plan



Site contents information

open/closed site:

Open

Site condition:

Weathering

Features:

		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
1.	<div>Artefact</div>	<div>1</div>	<div>1</div>	<div>1</div>	<div></div>	<div></div>	<div></div>	<div></div>
Feature condition: <div></div>								

Description:

BCC Isolated Artefact 3 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491). It was identified 31.5 m south-west of the extent of B 23 (AHIMS ID 45-5-2641). The artefact comprised a red silcrete flake.

Features:

		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
2.	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Feature condition: <div></div>								

Description:

Features:

		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
3.	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Feature condition: <div></div>								

Description:

Features:

4.

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
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Feature condition:

Description:

Features:

5.

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
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Feature condition:

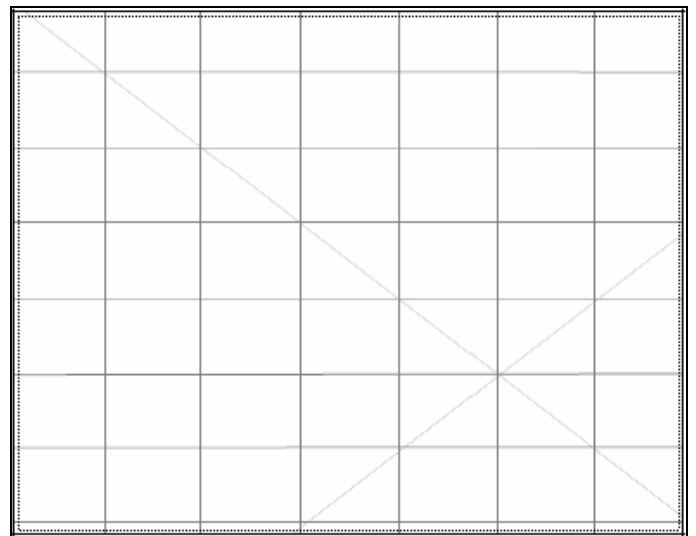
Description:

Site photographs



Description:

No photo of artefact



Description:

Description:

Description:

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:

Site interpretation and community statement

Appendix 4 – Consultation records

Pre-Notification

Agency	Contact	Type	Date	Description	Extent contact
Pre-Notifications		Outgoing			
Heritage NSW	Greater Sydney Aboriginal Cultural Heritage		2020-10-15	Requested details of any Aboriginal organisations or individuals who may be interested in the project, using the original study area boundary.	Tom Sapienza
Heritage NSW	Greater Sydney Aboriginal Cultural Heritage		2020-10-19	Re-requested details of any Aboriginal organisations or individuals who may be interested in the project, using the finalised study area boundary the client settled on.	Tom Sapienza
Gandangara Local Aboriginal Land Council	General Manager		2020-10-19	Requested details of any Aboriginal organisations or individuals who may be interested in the project, using the finalised study area boundary.	Tom Sapienza
Greater Sydney Local Land Services	General Manager				
Liverpool City Council	General Manager				
NTSCorp	General Manager				
National Native Title Tribunal	General Manager		2020-10-19	Requested details of any Aboriginal organisations or individuals who may be interested in the project. Submitted request for search of Tribunal Registers.	Tom Sapienza
Office of the Registrar Aboriginal Land Rights Act 1983	The Office of the Registrar				
Pre-Notification		Incoming			
Gandangaara LALC	Darren Duncan	Phone	2020-10-20	Rang to register an interest, and sent through details as well. Rang because Gandangara LALC had been involved in some digs with AECOM recently in near the same area, and Darren wanted to check what was going on with things. Darren said he was keen for the fieldwork to happen on this project sooner rather than later, and that he would support efforts to expedite the consultation process.	Tom Sapienza
NNTT	Automated response		2020-10-20	No native title over the study area.	Tom Sapienza
Heritage NSW	Barry Gunther		2020-10-20	Madeline rang Barry to apologise and explain the fact that we sent through multiple data requests, and they discussed the possibility of expediting the search request for reasons related to trying to achieve fieldwork prior to Christmas. Tom later spoke further with Barry and forwarded the specific RAP request information, and Barry sent through the list at the end of the day.	Tom Sapienza Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
Liverpool City Council	Thomas Wheeler		2020-11-04	Thomas sent through a MDB mail merge of Aboriginal groups, but it was flagged by Outlook as spam and I could not open the attachment. Asked him to re-send in another format.	Tom Sapienza
Notifications					
Outgoing – sent by email					
A1 Indigenous Services	Carolyn Hickey	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Amanda Hickey Cultural Services	Amanda Hickey	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Aragung Aboriginal Cultural Heritage Site Assessments	Jamie Eastwood	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Barking Owl Aboriginal Corporation	Jody Kulakowski	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Barraby Cultural Services	Lee Field	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
B.H. Heritage Consultants	Nola Hampton	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
B.H. Heritage Consultants	Ralph Hampton	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Biamanga	Seli Storer	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Bilinga	Simalene Carriage	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Butucarbin Aboriginal Corporation	Jennifer Beale	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Callendulla	Corey Smith	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
-	Clive Freeman	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
		Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Darug Aboriginal Land Care	Mark Dyer	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Darug Boorooberongal Elders Aboriginal Corporation	Paul Hand	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Darug Land Observations	Jamie Workman and Anna Workman	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Dharug	Andrew Bond	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Dhinawan Culture and Heritage	Stephen Fields	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Didge Ngunawal Clan	Lillie Carroll and Paul Boyd	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Galamaay Cultural Consultants	Robert Slater	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Gandangara Local Aboriginal Land Council	Melissa Williams	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Garrara Aboriginal Corporation	Raymond Ingrey	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Ginninderra Aboriginal Corporation	Steven Johnson and Krystle Carroll	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Goodradigbee Cultural and Heritage Aboriginal Corporation	Caine Carroll	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Gulaga	Wendy Smith	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Guntawang Aboriginal Resources Incorporated	Wendy Morgan	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Gunyu	Kylie Ann Bell	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Jerringong	Joanne Anne Stewart	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Kamilaroi Yankuntjatjara Working Group	Phil Khan	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Munyunga	Kaya Dawn Bell	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Mura Indigenous Corporation	Phillip Carroll	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Murra Bidgee Mullangari Aboriginal Corporation	Darleen Johnson and Ryan Johnson	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Murramarang	Roxanne Smith	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Murrumbul	Mark Henry	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Ngambaa Cultural Connections	Kaarina Slater	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Nundagurri	Newton Carriage	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Pemulwuy CHTS	Pemulwuy Johnson	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Tharawal Local Aboriginal Land Council	Robyn Straub	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Thauaira	Shane Carriage	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Thoorga Nura	John Carriage	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Waawaar Awaa Aboriginal Corporation	Rodney Gunther	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Wailwan Aboriginal Group	Philip Boney	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Walbunja	Hika Te Kowhai	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Walgalu	Ronald Stewart	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Warragil Cultural Services	Aaron Slater	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Wingikara	Hayley Bell	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Daniel Chalker	Wori Woilywa	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Wurrumay	Kerrie Slater and Vicky Slater	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Yerramurra	Robert Parson	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Yulay Cultural Services	Arika Jalomaki	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Yurrandaali	Bo Field	Email	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Notifications		Outgoing - Sent by post			
Badu	Karia Lea Bond	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Cubbitch Barta	Glenda Chalker	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Darug Tribal Aboriginal Corporation	-	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Goobah Developments	Basil Smith	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Minnamunnung	Aaron Broad	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Tocomwall	Scott Franks	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Wullung	Lee-Roy James Boota	Letter	2020-10-21	Sent invitation to register interest in the project.	Tom Sapienza
Communication problems					
Garrara Aboriginal Corporation	Raymond Ingrey	Email	2020-10-21	Email could not be delivered because the domain does not exist. Attempted an alternate email address.	Tom Sapienza
Mura Indigenous Corporation	Phillip Carroll	Email	2020-10-21	Email address does not exist at domain. Phone number is not connected, so cannot check with Phillip as to whether he has an updated email address. Sending post to physical postal address.	Tom Sapienza
B.H. Heritage Consultants	Nola Hampton	Email	2020-10-22	Email could not be delivered because the domain does not exist. I think there is a typo in Nola's email address and will attempt contact at a corrected version of the email address.	Tom Sapienza
Registrations of interest		Incoming			
Kamilaroi Yankuntjatjara Working Group	Phil Khan		2020-10-21	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC. Phil responded to say it's OK.	Tom Sapienza
Wurrumay	Vicky Slater		2020-10-21	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC. Vicky responded to say they were registered with the OEH database inclusion list.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Didge Ngunawal Clan	Lilly Carroll and Paul Boyd		2020-10-21	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC. Lilly responded to say it's OK.	Tom Sapienza
Wailwan Aboriginal Group	Philip Boney		2020-10-21	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Wori Woilywa	Daniel Chalker		2020-10-21	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Freeman and Marx	Clive Freeman		2020-10-22	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC. Clive rang and gave verbal permission to send through that information.	Tom Sapienza
Yulay Cultural Services	Arika Jalomaki		2020-10-22	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Ginninderra Aboriginal Corporation	Krystle Carroll		2020-10-22	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Warragil Cultural Services	Aaron Slater		2020-10-23	Registered interest; I acknowledged and sent thanks. Followed up to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Dhinawan Culture and Heritage	Stephen Fields		2020-10-23	Registered interest; I acknowledged and sent thanks. Followed up 2020-10-23 to enquire if it was okay to send their information to Heritage NSW and Gandangara LALC. Stephen responded to say it's OK.	Tom Sapienza
Barraby Cultural Services	Lee Field		2020-10-23	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Yurrandaali	Bo Field		2020-10-24	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
			2020-10-24		Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
			2020-10-25		Tom Sapienza
Goodradigbee Cultural and Heritage Aboriginal Corporation	Caine Carroll		2020-10-25	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
A1 Indigenous Services	Carolyn Hickey		2020-10-25	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Widescope Indigenous Group	Donna Hickey		2020-10-26	Registered interest by phone. I rang and Donna confirmed it's okay to send information to LALC and Heritage NSW, and that we don't need to redact mythology information in the final report.	Tom Sapienza
Barking Owl Aboriginal Corporation	Jody Kulakowski		2020-10-26	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Cubbitch Barta	Glenda Chalker		2020-10-30	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC. Glenda responded to say that she didn't even think there should be a choice: everyone who registers should have their info sent along to the two organisations. If the groups don't want to be known, they shouldn't register and shouldn't be part of the process. All correspondence to be undertaken with Glenda via both email and post.	Tom Sapienza
Aragung	Jamie Eastwood		2020-11-02	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Ngambaa Cultural Connections	Kaarina Slater		2020-11-05	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC. Kaarina responded to say it was OK.	Tom Sapienza
Wurrumay	Vicky Slater		2020-11-05	Registered interest via email and phone. Phone discussion of project, Vicky said it was okay to pass along their info to LALC and Heritage NSW.	Tom Sapienza
Waawaar Awaa	Rodney Gunther		2020-11-05	Phone call with verbal registration of interest, and no problem to pass along their info to Heritage NSW and Gandangara LALC.	Tom Sapienza
Butucarbin	Jennifer Beale		2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Amanda Hickey Cultural Services	Amanda DeZwart		2020-11-15	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Responses sent c/o Nirrummurrin					
Badu	Karia Bond	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Bidawal	Daisy Stewart	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Bilinga	Simalene Carriage	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Birrungal	Louis Hockey	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Bullawayaya	Lisa Dixon	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Bulling Gang	Whane Carberry	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Curwur Murre	Donald Smith	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Dharug	Andrew Rixon	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Dhurga	Stacey Higgins	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Djanaba Gaxabara	Jay Stevenson	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Djiringanj	Adam Johnson	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Elouera	Lionel Brown	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Eora	Kahu Brennan	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Gadung	Kathy Burns	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Gangangarra	Kim Carriage	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Garranga Bumarri	Donna Wray	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Golangaya	Sam Peters	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Gulla Gunar	Clayton Moore	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Gunyu	Mundarra Drew	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Kurringgai	Toni Banda	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Minnamunnung	Aaron Michael Broad	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Munyangachts	Jason Booth	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Murrumbul	Shane Saunders	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Ngario	Steven Pittman	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Ngunawal Aboriginal Corporation	Edward Stewart	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Nundagurri	Thomas Tighe	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Tarlarra Te Kowhai	Chairperson	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Tharawal	John Stewart	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Thauaira	Jeffery Daves	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Thawa	Grey Kerry	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza

Agency	Contact	Type	Date	Description	Extent contact
Thurumba	Ray Moffat	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Walbunja Aboriginal Corporation	Hika Tekowhai	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Walgalu	Ronald Steward	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Wandandian	William Bond	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Wimbalaya Nura	Mary Parsons	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Wingikara	Travis Dixon	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Wirambie	Vivian Lacey	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Yaxa Burra	Violet Banda	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Yerramurra	Nathan Walker-Davis	Email	2020-11-06	Registered interest; I acknowledged, sent thanks and enquired if it was okay to send their information to Heritage NSW and Gandangara LALC.	Tom Sapienza
Cultural Values Workshop					
Cubbitch Barta	Glenda Chalker	Email	2020-11-02	Sent email to inform workshop date (16 November) and seek confirmation of availability for that date.	Dr. Madeline Shanahan
Cubbitch Barta	Glenda Chalker	Email	2020-11-02	Phone call to inform workshop date.	Dr. Madeline Shanahan
Deerubbin LALC	Steve Randall	Email	2020-11-02	Sent email to inform workshop date (16 November) and seek confirmation of availability for that date.	Dr. Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
Deerubbin LALC	Steve Randall	Phone	2020-11-02	Phone call to inform workshop date. Steve said that he did not think the study area is in their boundary and requested that the study area boundary be sent on to him.	Dr. Madeline Shanahan
Gandangara LALC	Darren Duncan	Email	2020-11-02	Sent email to inform workshop date (16 November) and seek confirmation of availability for that date.	Dr. Madeline Shanahan
Gandangara LALC	Darren Duncan	Phone	2020-11-02	Phone call to inform workshop date. Darren was informed that email to Ruth bounced back, and he replied saying that he could pass on the information.	Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Justine Coplin	Phone	2020-11-02	Phone call to inform workshop date. Justine requested invitation list for workshop, and wanted to consider whether she will attend Focus Group 1 or Focus Group 2.	Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Justine Coplin	Email	2020-11-02	<p>Sent email thanking Justine for the preceding phone call; informed Justine that the study area for this phase of the project is the Aero Core precinct only, and that Extent Heritage is the main heritage consultant for this project. Also informed Justine that Extent Heritage is working closely with Zion Engagement and Planning who are engaged separately as specialists in Aboriginal community engagement and consultation. Informed Justine that Zion advises for additional Darug groups to be consulted (besides the original focus group convened by Extent Heritage earlier this year), and that another cultural values workshop should be held for this additional consultation to take place. Hence, two more workshops will take place, following the same format and facilitated by Extent Heritage, to discuss cultural values for the precinct and gather feedback on how these should be reflected in design.</p> <p>Informed Justine that Extent Heritage will be inviting Cubbitch Barta Native Title Claimants Aboriginal Corporation, Deerubbin Local Aboriginal Land Council and Gandangara Local Aboriginal Land Council for a workshop on 16 November. Also informed Justine that Zion will be organizing another workshop for Dharug Strategic Management Group, Dharug Ngurra Aboriginal Corporation, Darug Aboriginal Cultural Heritage Assessments, Darug Aboriginal Land Care, Darug Land</p>	Dr. Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
				<p>Observations and Burbaga Aboriginal Corporation on 18 November.</p> <p>Invitation extended to Justine to participate in either of the two sessions, as she has participated in the very first focus group earlier this year. Assured Justine that the agenda and format will be the same at both workshops.</p>	
Deerubbin LALC	Steve Randall	Email	2020-11-04	Sent email to let Steve know that the study area boundaries lie outside the boundaries of the Deerubbin LALC, and to keep him notified on the work done with the focus group at the Cultural Values Workshop.	Dr. Madeline Shanahan
Cubbitch Barta	Glenda Chalker	Email	2020-11-05	Sent follow up email on workshop about the plan and schedule on 16 November; informed about invoicing arrangements for the workshop; requested number of participants from her organisation that will be attending the workshop for catering and social distancing requirements; informed that the meeting place, agenda and conference venue of the workshop will be confirmed next week.	Dr. Madeline Shanahan
Gandangara LALC	Darren Duncan	Email	2020-11-05	Sent follow up email on workshop about the plan and schedule on 16 November; informed about invoicing arrangements for the workshop; requested number of participants from her organisation that will be attending the workshop for catering and social distancing requirements; informed that the meeting place, agenda and conference venue of the workshop will be confirmed next week.	Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Justine Coplin	Phone	2020-11-05	Phone call to Justine (about the workshop on 16 November) – no answer.	Dr. Madeline Shanahan
Gandangara LALC	Darren Duncan	Phone	2020-11-06	Phone call from Darren requesting for the workshop to be postponed to a later date, as he has other commitments to attend to on 16 November.	Dr. Madeline Shanahan
Gandangara LALC	Darren Duncan	Email	2020-11-06	Sent email following up on phone conversation about Darren being unable to attend the workshop on 16 November due to his other commitments, and that Extent Heritage will organize (and get back to him about) another date for the workshop in the week beginning 23 November instead.	Dr. Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
Cubbitch Barta	Glenda Chalker	Phone	2020-11-06	Phone call to inform Glenda that the workshop scheduled on 16 November will be postponed to a later date, and that Extent will be in touch with a new date once it is organised.	Dr. Madeline Shanahan
Cubbitch Barta	Glenda Chalker	Email	2020-11-06	Sent email following up on postponing the workshop on 16 November, and that Extent will be in touch with a new date once it is organised.	Dr. Madeline Shanahan
Deerubbin LALC	Steve Randall	Phone	2020-11-06	Phone call to Steve (on postponing the workshop on 16 November) – no answer.	Dr. Madeline Shanahan
Darug Land Observations	Jamie Workman and Anna Workman	Phone	2020-11-06	Phone call to Jamie and Anna to inform them on additional cultural values mapping work – no answer.	Dr. Madeline Shanahan
Darug Land Observations	Jamie Workman and Anna Workman	Email	2020-11-06	Follow up email to Jamie and Anna to inform them on additional cultural values mapping work.	Dr. Madeline Shanahan
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	Phone	2020-11-06	Phone call to Gordon to inform him on additional cultural values mapping work. Gordon requested to be in a session with Darug groups only	Dr. Madeline Shanahan
Cubbitch Barta	Glenda Chalker	Phone	2020-11-11	Phone call to Glenda to organize separate visit at her house on 17 November.	Dr. Madeline Shanahan
Cubbitch Barta	Glenda Chalker	Email	2020-11-11	Follow up email to Glenda to check if both Chole Sullivan (GHD) and Madeline can visit Glenda at 10.30am on 17 November to discuss the project and record any information that Glenda would like to share as part of the cultural values workshop process.	Dr. Madeline Shanahan
Deerubbin LALC	Steve Randall	Phone	2020-11-11	Phone call to Steve – Steve advised that Deerubbin LALC will not be able to participate in the cultural values workshop as the study area is not within Deerubbin's boundaries.	Dr. Madeline Shanahan
Deerubbin LALC	Steve Randall	Email	2020-11-11	Follow up email to Steve to confirm that Deerubbin LALC does not wish to be part of the cultural values work associated with the Aero Core precinct as it is not within their boundaries. Informed Steve that Extent Heritage will get back in touch with Deerubbin LALC if commissioned to conduct similar cultural values work for areas within their boundaries.	Dr. Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
Gandangara LALC	Darren Duncan	Phone	2020-11-11	Phone call to Darren – Darren advised that Gandangara LALC is available to meet Extent Heritage on site on the week beginning 23 November 2020.	Dr. Madeline Shanahan
Gandangara LALC	Darren Duncan	Email	2020-11-11	Follow up email to Darren to confirm if 24 November at 10am suit Gandangara LALC to meet and spend a couple of hours on site to discuss cultural values for the study area.	Dr. Madeline Shanahan
Burbaga Aboriginal Corporation	Sandra Lee	Email	2020-11-16	Email to Sandra (previously contacted by GHD) inviting her to attend a cultural values workshop relating to the Aero Core precinct on 30 November. Informed Sandra that the rates for the consultation will be \$150 per hour per group, that Extent Heritage will inform her on the specifics on the workshop (location, agenda and time) shortly, and requested that she confirm her attendance.	Dr. Madeline Shanahan
Darug Strategic Management Group	DSMG Admin	Email	2020-11-16	Email to DSMG admin (previously contacted by GHD) inviting him to attend a cultural values workshop relating to the Aero Core precinct on 30 November. Informed DSMG admin that the rates for the consultation will be \$150 per hour per group, that Extent Heritage will inform them on the specifics on the workshop (location, agenda and time) shortly, and requested that they confirm their attendance.	Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Justine Coplin	Phone	2020-11-16	Phone call to Justine inviting her to participate in the cultural values workshop relating to the Aero Core precinct on 30 November – Justine confirmed her attendance, but expressed reservations about a list of people.	Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Justine Coplin	Email	2020-11-16	Follow-up email to Justine inviting her to attend a cultural values workshop relating to the Aero Core precinct on 30 November. Informed Justine that the rates for the consultation will be \$150 per hour per group, and that Extent Heritage will inform her on the specifics on the workshop (location, agenda and time) shortly.	
Darug Land Observations	Jamie Workman and Anna Workman	Phone	2020-11-16	Phone call to Jamie inviting them to participate in the cultural values workshop relating to the Aero Core precinct on 30 November – no answer, left a message.	Dr. Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	Phone	2020-11-16	Phone call to Gordon inviting them to participate in the cultural values workshop relating to the Aero Core precinct on 30 November – spoke to two other individuals confirming their attendance, but they also requested for an invitation letter.	Dr. Madeline Shanahan
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton and Celestine Everingham	Letter	2020-11-16	Sent requested invitation letter for cultural values workshop relating to the Aero Core precinct on 30 November; informed Gordon and Celestine that the rates for the consultation will be \$150 per hour per group, and that Extent Heritage will inform them on the specifics on the workshop (location, agenda and time) shortly.	Dr. Madeline Shanahan
Darug Ngurra Aboriginal Corporation	Darug Ngurra Aboriginal Corporation	Phone	2020-11-16	Phone call to DNAC inviting them to participate in the cultural values workshop relating to the Aero Core precinct on 30 November – no answer, left a message and filled out online form for their organisation.	Dr. Madeline Shanahan
Gandangara LALC	Ruth Sheridan	Phone	2020-11-18	Phone call to GLALC inviting to meet with Extent Heritage to undertake cultural values mapping associated with the Aero Core Precinct on 24 November at 10am – no answer, left a message.	Dr. Madeline Shanahan
Gandangara LALC	Ruth Sheridan	Email	2020-11-18	Follow up email to GLALC inviting to meet with Extent Heritage to undertake cultural values mapping associated with the Aero Core Precinct on 24 November at 10am. Previous email to Darren Duncan was also attached.	Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Justine Coplin	Email	2020-11-25	Email to Justine informing her about the plan for the cultural values workshop which will start at 9am, Monday 30 November. Details include where to meet, safety clothing requested by the main contractor and the hourly rate for the work. Informed Justine to invoice Extent Heritage directly for the work.	Dr. Madeline Shanahan
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton and Celestine Everingham	Letter	2020-11-25	Sent letter to Gordon and Celestine informing them about the plan for the cultural values workshop which will start at 9am, Monday 30 November. Details include where to meet, safety clothing requested by the main contractor and the hourly rate for the work. Informed Gordon and Celestine to invoice Extent Heritage directly for the work.	Dr. Madeline Shanahan
ACHAR methodology	Outgoing				

Agency	Contact	Type	Date	Description	Extent contact
A1 Indigenous Services	Carolyn Hickey	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Aragung Aboriginal Cultural Heritage Site Assessments	Jamie Eastwood	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Badu	Karia Lea Bond	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski (Director)	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Barraby Cultural Services	Lee Field (Manager)	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Bidawal	Daisy Stewart	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Bilinga	Simalene Carriage	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Birrungal	Louis Hockey	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Bullawaya	Lisa Dixon	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Bulling Gang	Whane Carberry	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Butucarbin Aboriginal Corporation	Jennifer Beale	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
		Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Cubbitch Barta	Glenda Chalker	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Curwur Murre	Donald Smith	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Dharug	Andrew Bond	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Dhinawan Culture & Heritage Pty Ltd	Stephen Fields	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Dhurga	Stacey Higgins	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Didge Ngunawal Clan	Lilly Carroll and Paul Boyd	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Djanaba Gaxabara	Jay Stevenson	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Djiringanj	Adam Johnson	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Elouera	Lionel Brown	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Eora	Kahu Brennan	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Freeman and Marx	Clive Freeman	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Gadung	Kathy Burns	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Gandangara Local Aboriginal Land Council	Melissa Williams CEO	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Gangangarra	Kim Carriage	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Garranga Bumarri	Donna Wray	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Ginninderra Aboriginal Corporation	Krystle Carroll	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Golangaya	Sam Peters	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Goodradigbee Cultural & Heritage Aboriginal Corporation	Caine Carroll	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Gulla Gunar	Clayton Moore	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
		Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Gunyu	Kylie Ann Bell and Mundarra Drew	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Kamilaroi Yankuntjatjara Working Group	Phil Khan	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Kurringgai	Toni Banda	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Minnamunnung	Aaron Broad	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Munyunga	Kaya Dawn Bell and Jason Booth	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Murrumbul	Shane Saunders	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Ngambaa Cultural Connections	Kaarina Slater	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Ngario	Steven Pittman	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Ngunawal Aboriginal Corporation	Edward Stewart	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Nundagurri	Thomas Tighe	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Tarlarra Te Kowhai	Tarlarra Te Kowhai	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Tharawal	John Stewart	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Thauaira	Jeffery Daves	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Thawa	Greg Kerry	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Thurumba	Ray Moffat	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Waawaar Awaa Aboriginal Corporation	Rodney Gunther	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Wailwan Aboriginal Group	Philip Boney	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Walgalu	Ronald Stewart	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Wandandian	William Bond	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Warragil Cultural Services	Aaron Slater (Manager)	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Widescope Indigenous Group	Steven Hickey and Donna Hickey	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Wimbalaya Nura	Mary Parsons	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Wingikara	Travis Dixon	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Wirambie	Vivian Lacey	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Wori Woilywa	Daniel Chalker	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Wurrumay Pty Ltd	Kerrie Slater and Vicky Slater	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Yaxa Burra	Violet Banda	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Yerramurra	Nathan Walker-Davis	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Yulay Cultural Services	Arika Jalomaki (Manager)	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Yurrandaali	Bo Field (Manager)	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Goobah	Basil Smith	Email	2020-11-11	Send out ACHAR methodology, requesting comment by 9 December 2020.	Ryan Taddeucci
Amanda Hickey Cultural Services	Amanda DeZwart	Email	2020-11-16	Send out ACHAR methodology, requesting comment by 9 December 2020.	Tom Sapienza
ACHAR methodology	Incoming				
Curwur Murre	Donald Smith	Email	2020-11-11	Could not deliver.	Ryan Taddeucci
Gadung	Kathy Burns	Email	2020-11-11	Could not deliver.	Ryan Taddeucci
Golangaya	Sam Peters	Email	2020-11-11	Could not deliver.	Ryan Taddeucci
Gulla Gunar	Clayton Moore	Email	2020-11-11	Could not deliver.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Warragil	Aaron Slater	Email	2020-11-11	Agrees with the proposed assessment methodology.	Ryan Taddeucci
DNC	Lilly Carroll	Email	2020-11-11	Agrees with the proposed assessment methodology.	Ryan Taddeucci
Wurrumay	Vicky Slater	Phone	2020-11-12	Vicky rang to confirm when the comments for the methodology are due and when the survey will take place. Vicky noted that she holds ancestral knowledge of the study area and is a traditional owner. Vicky asked to be included in all fieldwork.	Ryan Taddeucci
Wailwan Aboriginal Group	Philip Boney	Email	2020-11-12	Agrees with the proposed methodology.	Ryan Taddeucci
Wurrumay	Vicky Slater	Email	2020-11-12	Thanks for sending the methodology	Ryan Taddeucci
Ngambaa Cultural Connections	Kaarina Slater	Email	2020-11-14	Agrees with the proposed methodology.	Ryan Taddeucci
Yurrandaali	Bo Field	Email	2020-11-15	Agrees with the proposed methodology and would like to be involved in any upcoming fieldwork.	Ryan Taddeucci
A1 Indigenous Services	Carolyn Hickey	Email	2020-11-15	Agrees with the proposed methodology and would like to be involved in any future works within the project.	Ryan Taddeucci
Wurrumay	Vicky Slater	Phone	2020-11-16	Vicky rang to raise two points. First, the timeframes in the provided methodology were incorrect and should be clarified for groups. Second, she wanted to know why the workshops were being scheduled to run before the methodology review period was done, and with no time for anyone receiving the methodology to attend them, and also wanted to know whether they were going to be invited to the workshops.	Tom Sapienza
Barraby Cultural Services	Lee Field (Manager)	Email	2020-11-16	Agrees with the proposed methodology.	Ryan Taddeucci
Widescope Indigenous Group	Steven Hickey	Email	2020-11-16	Agrees with the proposed methodology and would like to be involved in any future works within the project.	Ryan Taddeucci
Yulay Cultural Services	Arika Jalomaki	Email	2020-11-19	Agrees with the proposed methodology and would like to be involved in upcoming fieldwork.	Ryan Taddeucci
Goobah	Basil Smith	Email	2020-11-20	Supports the proposed methodology, would like to be updated on future developments.	Ryan Taddeucci
Kamilaroi Yankuntjatjara Working Group	Phil Khan	Email	2020-11-25	Supports the methodology and notes that the study area is significant to Aboriginal people of the past and present.	Ryan Taddeucci
Freeman and Marx	Clive Freeman	Email	2020-11-26	Would like to be updated on the project and would like to participate in work.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Walbunja	Hika Te Kowhai	Phone	2020-11-27	Called Extent Brisbane office to speak to Ryan. Ryan was unavailable and could not take the call but was sent a message to contact Hika.	Tiffany Ho
Walbunja	Hika Te Kowhai	Phone	2020-11-27	Requested additional information regarding the survey and noted that the RAPs should be provided an opportunity to participate in the fieldwork program in addition to the LALC. Ryan explained that representatives of the RAPs have been engaged for participation in the survey and that because there are 64 RAPs for the project, not everyone will be able to participate in the survey. Ryan also noted that there may be additional opportunities to participate in fieldwork if test excavations take place. Hika noted that the South Coast Groups have knowledge of the study area and would provide details in a written response to the ACHAR methodology.	Ryan Taddeucci
Wori Woilywa	Daniel Chalker	Email	2020-12-09	The study area is considered to be sacred land, as is all Aboriginal land. Notes that it is difficult to investigate Aboriginal land use and history, as the post-contact modification of the study area has removed archaeological material. Any works taking place within the study area should be cultural appropriate. A full coverage survey and test excavation program is recommended.	Ryan Taddeucci
Archaeological Survey					
Gandangara LALC	Melissa Williams	Email	2020-11-20	Sent email inviting Gandangara LALC to participate in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Requested for their response and relevant work insurances by close of business 27.11.2020. Informed them that Extent Heritage will send additional project information and the contract for engagement after receiving their responses and work insurances.	Tse Siang Lim; Ryan Taddeucci
Waawaar Awaa Aboriginal Corporation	Rodney Gunther	Email	2020-11-20	Sent email inviting Waawaar Awaa Aboriginal Corporation to participate in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Requested for their response and relevant work insurances by close of business 27.11.2020. Informed them that Extent Heritage will send additional project information and the	Tse Siang Lim; Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
				contract for engagement after receiving their responses and work insurances.	
Wurrumay	Vicky Slater	Email	2020-11-20	Sent email inviting Wurrumay to participate in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Requested for their response and relevant work insurances by close of business 27.11.2020. Informed them that Extent Heritage will send additional project information and the contract for engagement after receiving their responses and work insurances.	Tse Siang Lim; Ryan Taddeucci
Wurrumay	Vicky Slater	Email	2020-11-20	Received email response confirming Vicky's participation in the survey, and received both workers and public liability insurances.	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-20	Sent email informing Vicky that the certificate of currency for workers insurance appears to have recently expired (31.10.2020), and requested Vicky to send an updated certificate of currency for that insurance.	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-20	Received email from Vicky saying that she will send the correct certificate of currency for workers insurance soon.	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-20	Received updated certificate of currency for workers insurance from Vicky.	Tse Siang Lim
Waawaar Awaa Aboriginal Corporation	Rodney Gunther	Email	2020-11-23	Received email response confirming Rodney's participation in the survey, and received both workers and public liability insurances.	Tse Siang Lim
Gandangara LALC	Darren Duncan and Ruth Sheridan	Email	2020-11-25	Sent email to Darren and Ruth inviting Gandangara LALC to participate in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Requested for their response and relevant work insurances by close of business 27.11.2020. Informed them that Extent Heritage will send additional project information and the contract for engagement after receiving their responses and work insurances.	Tse Siang Lim
Gandangara LALC	Darren Duncan	Email	2020-11-26	Received email from Darren confirming his participation in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020); requested Extent Heritage to complete and submit GLALC application form prior to engagement.	Tse Siang Lim

Agency	Contact	Type	Date	Description	Extent contact
Gandangara LALC	Darren Duncan and Ruth Sheridan	Phone	2020-11-26	Called Darren to ask if GLALC can accept rates budgeted by Extent Heritage for the survey as the official rates by GLALC are higher; Darren passed the request on to Ruth who gave us a lower rate to consider.	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-27	Received email from Vicky confirming her participation in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020).	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-27	Sent email to Vicky confirming her participation in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020).	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-27	Received email from Vicky confirming her roster for the archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020) – she will be participating for all three days.	Tse Siang Lim
Wurrumay	Vicky Slater	Email	2020-11-27	Sent email to Vicky confirming her roster for the archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020) – she will be participating for all three days.	Tse Siang Lim
Darug Custodian Aboriginal Corporation	Tylah Blunden and Justine Coplin	Email	2020-11-30	Sent email to Tylah and Justine inviting Darug Custodian Aboriginal Corporation to participate in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Requested for their response and relevant work insurances as soon as possible. Informed them that Extent Heritage will send additional project information and the contract for engagement after receiving their responses and work insurances.	Tse Siang Lim; Dr. Madeline Shanahan
Darug Custodian Aboriginal Corporation	Tylah Blunden	Phone	2020-12-01	Called Tylah to confirm her participation in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Tylah confirmed that she is able to participate in all three days of the survey. Requested Tylah to send copies of her workers and public liability insurances to Extent Heritage.	Tse Siang Lim
Darug Custodian Aboriginal Corporation	Tylah Blunden	Email	2020-12-01	Emailed Tylah to confirm her participation in archaeological survey at Aero Core Precinct (07.12.2020-09.12.2020). Requested Tylah to send copies of her workers and public liability insurances to Extent Heritage.	Tse Siang Lim
Darug Custodian Aboriginal Corporation	Tylah Blunden	Email	2020-12-01	Received email from Tylah with copies of her works and public liability insurances attached.	Tse Siang Lim

Agency	Contact	Type	Date	Description	Extent contact
Test excavation methodology – Version 1		Outgoing			
A1 Indigenous Services	Carolyn Hickey	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Amanda Hickey Cultural Services	Amanda DeZwart	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Aragung Aboriginal Cultural Heritage Site Assessments	Jamie Eastwood	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Badu	Karia Lea Bond	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski (Director)	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Barraby Cultural Services	Lee Field (Manager)	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Bidawal	Daisy Stewart	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Bilinga	Simalene Carriage	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Birrungal	Louis Hockey	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Bullawaya	Lisa Dixon	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Bulling Gang	Whane Carberry	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Butucarbin Aboriginal Corporation	Jennifer Beale	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
[REDACTED]	[REDACTED]	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Cubbitch Barta	Glenda Chalker	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Curwur Murre	Donald Smith	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Dharug	Andrew Bond	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Dhinawan Culture & Heritage Pty Ltd	Stephen Fields	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Dhurga	Stacey Higgins	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Didge Ngunawal Clan	Lilly Carroll and Paul Boyd	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Djanaba Gaxabara	Jay Stevenson	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Djiringanj	Adam Johnson	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Elouera	Lionel Brown	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Eora	Kahu Brennan	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Freeman and Marx	Clive Freeman	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Gadung	Kathy Burns	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Gandangara Local Aboriginal Land Council	Melissa Williams CEO	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Gangangarra	Kim Carriage	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Garranga Bumarri	Donna Wray	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Ginninderra Aboriginal Corporation	Krystle Carroll	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Golangaya	Sam Peters	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Goodradigbee Cultural & Heritage Aboriginal Corporation	Caine Carroll	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Gulla Gunar	Clayton Moore	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
		Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Gunyu	Kylie Ann Bell and Mundarra Drew	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Kamilaroi Yankuntjatjara Working Group	Phil Khan	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Kurringgai	Toni Banda	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Minnamunnung	Aaron Broad	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Munyunga	Kaya Dawn Bell and Jason Booth	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Murrumbul	Shane Saunders	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Ngambaa Cultural Connections	Kaarina Slater	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Ngario	Steven Pittman	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Ngunawal Aboriginal Corporation	Edward Stewart	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Nundagurri	Thomas Tighe	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Tarlarra Te Kowhai	Tarlarra Te Kowhai	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Tharawal	John Stewart	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Thauaira	Jeffery Daves	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Thawa	Greg Kerry	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Thurumba	Ray Moffat	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Waawaar Awaa Aboriginal Corporation	Rodney Gunther	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Wailwan Aboriginal Group	Philip Boney	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Walgalu	Ronald Stewart	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Wandandian	William Bond	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Warragil Cultural Services	Aaron Slater (Manager)	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Widescope Indigenous Group	Steven Hickey and Donna Hickey	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Wimbalaya Nura	Mary Parsons	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Wingikara	Travis Dixon	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Wirambie	Vivian Lacey	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Wori Woilywa	Daniel Chalker	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Wurrumay Pty Ltd	Kerrie Slater and Vicky Slater	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Yaxa Burra	Violet Banda	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Yerramurra	Nathan Walker-Davis	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Yulay Cultural Services	Arika Jalomaki (Manager)	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Yurrandaali	Bo Field (Manager)	Email	2021-06-15	Send out test excavation methodology, requesting comment by 14 July 2021.	Ryan Taddeucci
Test excavation methodology – Version 1	Incoming				
Curwur Murre	Donald Smith	Email	2021-06-15	Could not deliver.	Ryan Taddeucci

Agency	Contact	Type	Date	Description	Extent contact
Gadung	Kathy Burns	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Golangaya	Sam Peters	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Gulla Gunar	Clayton Moore	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Warragil Cultural Services	Aaron Slater	Email	2021-06-15	Agrees with the test excavation methodology	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-15	Hika left a message to discuss the project	Ryan Taddeucci
Didge Ngunawal Clan	Lilly Carroll	Email	2021-06-15	Agrees with the test excavation methodology	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-16	Ryan returned Hika's call. No answer – left a message.	Ryan Taddeucci
Gandangara LALC	Ruth Sheridan	Email	2021-06-16	Would like to be present during test excavations. Would like to speak to Extent about a deposit of rare artefacts identified in the rural grasslands around Bringelly and Luddenham.	Ryan Taddeucci
Wailwan Aboriginal Group	Philip Boney	Phone	2021-06-16	Agrees with the proposed methodology and would like to be involved in the excavation program.	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-16	Hika left a message to discuss the project	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-17	Ryan returned Hika's phone call. Hika expressed concern that the remainder of the study area outside of the identified areas of PAD are not being subject to test excavation. Ryan explained that the study has been subject to previous excavation by AECOM as part of the Sydney Metro project and that most of the study area has been subject to historic disturbance. Therefore, the test excavation program will focus on the areas of PAD identified by the survey report. Hika would also like to see the maximum area of test excavation permissible by the Code of Practice (0.5%) of the investigation area. Ryan explained that the purpose of the 0.5% is to minimise harm through investigations and that the general principal is to keep testing to a minimum to ensure no harm occurs without an AHIP. Hika was asked to provide written comments for inclusion in the consultation log.	Ryan Taddeucci
Gandangara LALC	Ruth Sheridan	Phone	2021-06-17	Ryan called Ruth to discuss the sites mentioned in the email.	Ryan Taddeucci
Cubbitch Barta Native Title	Glenda Chalker	Email	2021-06-07	"It is my opinion that 30 metre intervals is too far apart. I believe the minimum should be 20metres'.	Attn. Ryan Taddeucci Sent to Hannah Morris

Agency	Contact	Type	Date	Description	Extent contact
				<p>Questions 'why is the western section of ACF01 PAD not being investigated...If you are going to test the PAD then all of it should be tested unless this area is not to be impacted by the proposed development'.</p> <p>Requested topographical information to be included into the methodology to understand the landscape.</p> <p>Suggests 'we should be testing to prove a lack of artefactual material presence in some places , just as much as trying to prove the presence of artefactual material.'</p> <p>'All excavated material should be WET sieved using a 3mm sieve'.</p> <p>'If you are seeking advice on the methodology, then this should be taken into that advice and not dismissed.'</p>	
Cubbitch Barta Native Title	Glenda Chalker	Phone	2021-06-07	Hannah Morris (HM) called Glenda Chalker (GC) in response to her email to further discuss concerns and new methodology to be proposed. HM hears concerns about trench location in relation to PAD ACF01 (Extent had already reassessed to move trenches). HM Stated that Extent had decided to add additional trenches along waterways. GC says she agrees and did not bring that up because she had not been on site to understand the level of disturbance. HM mentioned that several trenches would likely be relocated and we can further investigate the PAD where necessary and discuss further with all REPs on site during the program. GC seemed happy with response to updated methodology and looks forward to receiving the new version.	Hannah Morris
Gandangara LALC	Ruth Sheridan	Email	2021-06-21	'The methodology itself appears to be sound.' Would like to further 'discuss findings of rare ochre deposits in the area that were not captured in other reports.'	Madeline Shanahan
Walbunja	Hika Te Kowhai	Phone	2021-06-30	Hika left a message to discuss the project.	Madeline Shanahan
Walbunja	Hika Te Kowhai	Phone	2021-06-30	Madeline Shanahan (MS) returned Hika's call. Hika says he is ok with the methodology. MS told Hika that Extent had listened to the feedback, that the methodology was being revised and would be reissued soon.	Madeline Shanahan

Agency	Contact	Type	Date	Description	Extent contact
Test excavation methodology – Version 2		Outgoing			
All RAPS		Email	2021-08-20	Extent sent all RAPS the revised test excavation methodology. Comments due Friday 17 September.	
Test excavation methodology – Version 2		Incoming			
Curwur Murre	Donald Smith	Email	2021-06-15	Could not deliver.	Hannah Morris
Gadung	Kathy Burns	Email	2021-06-15	Could not deliver.	Hannah Morris
Golangaya	Sam Peters	Email	2021-06-15	Could not deliver.	Hannah Morris
Gulla Gunar	Clayton Moore	Email	2021-06-15	Could not deliver.	Hannah Morris
Wailan Aboriginal Group	Philip Boney	Email	2021-08-31	Wailan Aboriginal Group has no comments.	Hannah Morris
Aragung	James Eastwood	Email	2021-09-03	Arangung agrees with and supports the test excavation and methodology. Arangung would like to be up dating to all future development and would like to be considered for participation in the test excavation.	Hannah Morris
Wailwan	Phil Boney	Email	2021-08-31	Wailwan has no more comments to add.	Hannah Morris
Yulay	Arika Jalomaki	Email	2021-09-11	Yulay Cultural has reviewed and agrees with the updated methodology.	Hannah Morris
Widescope	Steven Hickey	Email	2021-09-07	Widescope supports the recommendations outlined in the draft methodology.	Hannah Morris
KYWG	Kadibulla Khan	Email	2021-09-06	<p>“The study area is highly significant to Aboriginal people, especially since there are water ways within the study area and around. Aboriginal people would have and still do utilise these water ways, many daily activities would have taken place as the whole of the area, is of significance to us. Once flora fauna was thriving in this area, resource rich for the Aboriginal peoples.”</p> <p>“We would like to recommend further testing of the whole study area. It is important to also include a [sic] Interpretation plan for the project, this can be achieved through design, art, native gardens, apps, signage and many other ways. Interpretation is important as it is a way in which Aboriginal people are being recognised for</p>	Hannah Morris

Agency	Contact	Type	Date	Description	Extent contact
				being the[sic] one of the oldest live [sic] cultures in the world.” “A keeping place also should be sort of any artefacts found, to ensure they are kept on country rather than in and [sic] office on a shelf. Both keeping place and interpretation educates the wider community about Aboriginal culture and is a part of the connecting to country framework.” “We would like to agree to your methodology, and we support you [sic] report.” “We are all happy with the progress in this job and hold no restraints.”	
Didge Ngunawal	Paul Boyd and Lilly Carroll	Email	2021-08-20		Hannah Morris
Test Excavation – Invitation to Participate					
Gandangara LALC	Ms Williams	Email	2021-09-21	Invitation to participate in test excavation program.	Hannah Morris
Arangung	Jamie Eastwood	Email	2021-09-21	Invitation to participate in test excavation program.	Hannah Morris
Cubbitch Barta	Glenda Chalker	Email	2021-09-21	Invitation to participate in test excavation program.	Hannah Morris
Walbunja	Hika Te Kowhai	Email	2021-09-30	Invitation to participate in test excavation program.	Hannah Morris
Didge Ngunawal Clan	Paul Boyd	Email	2021-09-30	Invitation to participate in test excavation program.	Hannah Morris
First Building due diligence Outgoing					
All RAPS		Email	2021-07-14	Extent sent all RAPs the First Building due diligence repot. Comments were due by 10 November 2021.	Hannah Morris
First Building due diligence Incoming					
Curwur Murre	Donald Smith	Email	2021-06-15	Could not deliver.	Hannah Morris
Gadung	Kathy Burns	Email	2021-06-15	Could not deliver.	Hannah Morris
Golangaya	Sam Peters	Email	2021-06-15	Could not deliver.	Hannah Morris
Gulla Gunar	Clayton Moore	Email	2021-06-15	Could not deliver.	Hannah Morris
Cubbitch Barta	Glenda Chalker	Email	2021-11-03	“I have no further recommendations for this proposed project, that could impact on this project from not proceeding as planned.”	Glenda Chalker
Waawaar Awaa	Rodney Gunther	Email	2021-11-04	Waawaar Awaa Aboriginal Corporation supports the attached report.	Hannah Morris

Agency	Contact	Type	Date	Description	Extent contact
		Email	2021-11-06		Hannah Morris

Appendix 5 – Test Excavation Methodology

EXTENT

HERITAGE ADVISORS
TO AUSTRALIA AND
THE ASIA PACIFIC



Western Parkland City Authority Cultural Heritage Study

Test Excavation Methodology

Prepared for Western Parkland City Authority

June 2021 – FINAL

Local Government Area: Liverpool

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Document information

Extent Heritage project no.:	0220189
Client:	Western City and Aerotropolis Authority
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Heritage advisor(s):	Ryan Taddeucci Tse Siang Lim
Author(s):	Hannah Morris Tse Siang Lim Ryan Taddeucci

Document control

Version	Internal reviewer	Date	Review type
DRAFT01	Ryan Taddeucci	10/05/2021	Technical
DRAFT02	Madeline Shanahan	13/05/2021	QA
DRAFT03	Hannah Morris	28/05/2021	Technical
DRAFT03	Madelaine Shanahan	05/07/2021	QA

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1. Introduction

1.1 Project background

Western Parkland City Authority propose to undertake development on approximately 115 ha of land at the Bradfield City Centre (formerly known as Stage 1 Aerotropolis Core Precinct) (Figure 1) (hereafter, referred to as the study area). The Bradfield City Centre will be the nation's newest city centre, a 24-hour global metropolis with facilities for research, innovation and advanced manufacturing, education and training, and world-class technology industries and businesses oriented around a new Sydney Metro station. Bradfield will complement the existing city centres of Penrith, Liverpool and Campbelltown, but with a unique focus on advanced manufacturing and training that will drive ideas from conception to commercialisation and from manufacturing to markets.

Extent Heritage Pty Ltd (Extent Heritage) has been engaged by Western Parkland City Authority to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) to identify any Aboriginal object or places within the proposed Bradfield City Centre. The results of this assessment will be used to inform the development of a master plan for the Bradfield City Centre.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) database was completed on 16 June 2020 for an area of land which encompasses the study area. The search resulted in the identification of eight registered sites within the study area:

- B 22 (AHIMS ID 45-5-2640)
- B 17 (AHIMS ID 45-5-2779)
- B 18 (AHIMS ID 45-5-2620)
- B 19 (AHIMS ID 45-5-2621)
- B 20 (AHIMS ID 45-5-2622)
- B 21 (AHIMS ID 45-5-2639)
- B 23 (AHIMS ID 45-5-2641)
- B 38 (AHIMS ID 45-5-2628)

A full coverage survey of the study area was attempted on 7 December 2020, with representatives of the Registered Aboriginal Parties (RAPs). The survey resulted in the identification of two previously unrecorded Aboriginal sites—an isolated find and associated area of Potential Archaeological Deposit (PAD) in the western edge of the site (ACIF01 / AHIMS ID 45-5-5480) and a low-density artefact scatter containing four artefacts (ACAS01 / AHIMS ID 45-5-5481). In addition, an additional nine Aboriginal objects were identified at the location of B

23 (AHIMS ID 45-5-2641). No Aboriginal objects were identified at the recorded location of the remaining seven AHIMS registered sites.

Based on the results of background research and this survey, a test excavation program is required to fully understand the nature of subsurface archaeological remains within the study area.

Extent Heritage has been engaged by the Western Parkland City Authority to prepare this test excavation methodology in accordance with the Code of Practice and the recommendations of the previously completed archaeological assessments. In accordance with the Code of Practice and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a; the 'Consultation Requirements'), Extent Heritage has commenced consultation with Aboriginal stakeholders. The results of ongoing consultation with Aboriginal stakeholders are outlined in Section 2.

A draft methodology was distributed to Aboriginal stakeholders on 15 June 2021. Based on stakeholder feedback, Extent Heritage has significantly revised the scope of the testing program. The updated program, outlined in this version of the excavation methodology, includes an investigation of the nature and extent of potential subsurface artefacts across PAD ACIF01 (AHIMS ID 45-5-5480), test trenches along the waterways of Moore Gully and Thompsons Creek, and an additional area of testing in the north-western corner of the site to investigate areas predicted to contain low potential for Aboriginal archaeology. These revisions were also determined by results of additional research undertaken by Extent Heritage which more fully revealed the nature of disturbance and potential across the site.

1.2 Study area

The study area is defined as the Lot 10, DP 1235662 and is located at 215 Badgerys Creek Road, Bringelly. The study area is surrounded by private properties and is currently comprised of rural residential and rural lots.

The study area lies within the boundaries of the Liverpool Local Government Areas (LGAs) and Gandangara Local Aboriginal Land Council (LALC). The study area is entirely within the county of Cumberland and Cabramatta parish, and is on land traditionally associated with the Darug people.

The proposed development would involve construction works associated with mixed use development, including bulk earthworks, construction of infrastructure (roads, footpaths, stormwater, etc.), buildings, environmental controls, and landscaping.

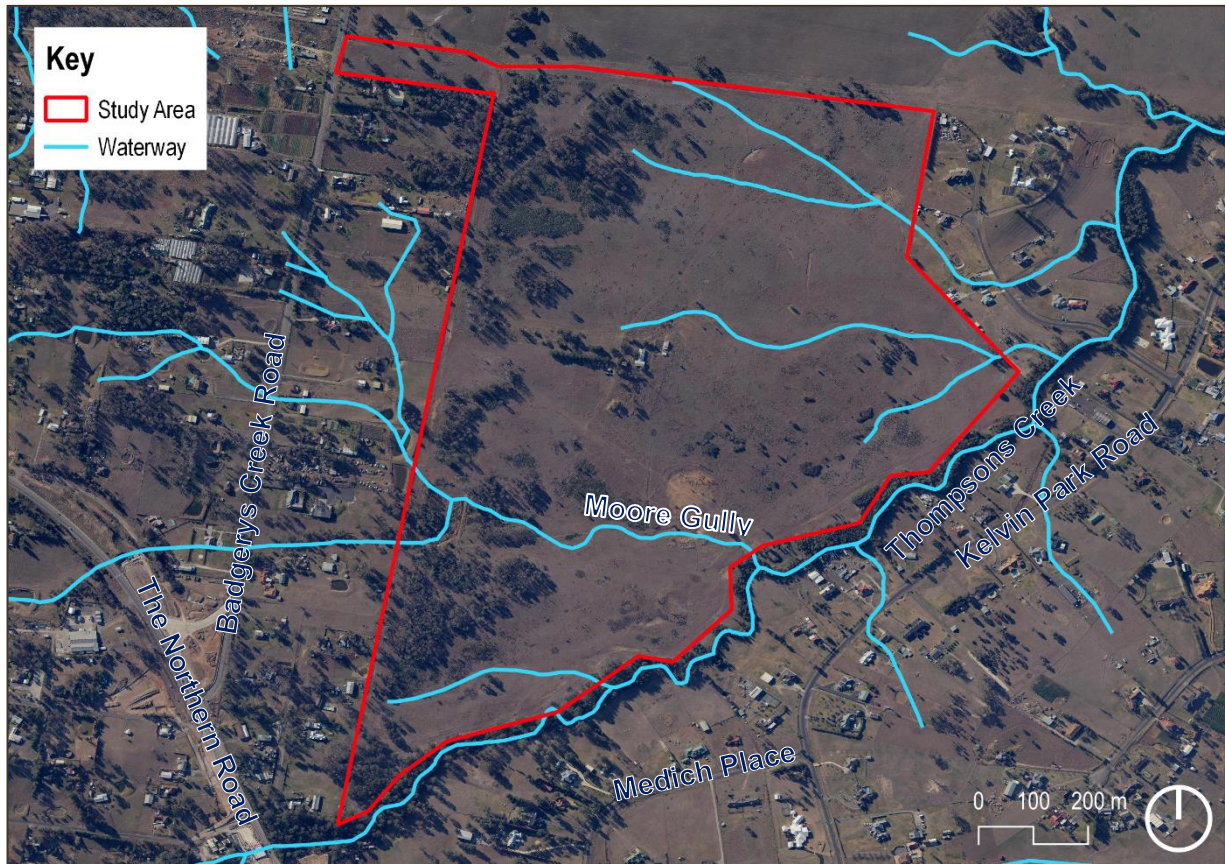


Figure 1. Study area.

2. Aboriginal consultation

2.1 Consultation process in NSW

Aboriginal stakeholder consultation for the project has been undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a; the 'Consultation Requirements').

2.2 Identification of RAPs

In accordance with Stage 4.1.2 of the Consultation Requirements, Extent Heritage corresponded with the following organisations to obtain the names of Aboriginal people who may hold cultural knowledge of the study area:

- Greater Sydney Local Land Services
- Liverpool City Council
- Native Title Service Corporation (NTSCorp)
- Gandangara LALC

- Heritage NSW (DPC)
- National Native Title Tribunal
- Office of the Registrar, *Aboriginal Land Rights Act 1983*.

In accordance with Step 4.1.3 of the Consultation Requirements, an advertisement was placed on buysearchsell.com.au on 24 October 2020 inviting Aboriginal individuals or organisations to register an interest in the project by 5 November 2020. In addition, correspondence was sent to all Aboriginal individuals and organisations identified through the completion of Step 4.1.2 on 21 October 2020, inviting them to register an interest in the project by 5 November 2020.

The consultation process has resulted in the identification of 64 Registered Aboriginal Parties (RAPs) (Table 1).

Table 1: List of Registered Aboriginal Parties.

Contact	Organisation
Carolyn Hickey	A1 Indigenous Services
Amanda DeZwart	Amanda Hickey Cultural Services
Jamie Eastwood	Aragung Aboriginal Cultural Heritage Site Assessments
Karia Lea Bond	Badu
Mrs Jody Kulakowski	Barking Owl Aboriginal Corporation
Lee Field	Barraby Cultural Services
Daisy Stewart	Bidawal
Simalene Carriage	Bilinga
Louis Hockey	Birrungal
Lisa Dixon	Bullawaya
Whane Carberry	Bulling Gang
Jennifer Beale	Butucarbin Aboriginal Corporation
Marilyn Carroll-Johnson	Corroboree Aboriginal Corporation
Glenda Chalker	Cubbitch Barta
Donald Smith	Curwur Murre
Andrew Bond	Dharug
Stephen Fields	Dhinawan Culture & Heritage Pty Ltd
Stacey Higgins	Dhurga
Lilly Carroll and Paul Boyd	Didge Ngunawal Clan
Jay Stevenson	Djanaba Gaxabara

Contact	Organisation
Adam Johnson	Djiringanj
Lionel Brown	Elouera
Kahu Brennan	Eora
Clive Freeman	Freeman and Marx
Kathy Burns	Gadung
Melissa Williams	Gandangara Local Aboriginal Land Council
Kim Carriage	Gangangarra
Donna Wray	Garranga Bumarri
Krystle Carroll	Ginninderra Aboriginal Corporation
Sam Peters	Golangaya
Caine Carroll	Goodradigbee Cultural & Heritage Aboriginal Corporation
Clayton Moore	Gulla Gunar
Cherie Carroll Turrise	Gunjeewong CHC
Kylie Ann Bell and Mundarra Drew	Gunyuu
Phil Khan	Kamilaroi Yankuntjatjara Working Group
Toni Banda	Kurringgai
Aaron Broad	Minnamunnung
Kaya Dawn Bell and Jason Booth	Munyunga
Shane Saunders	Murrumbul
Kaarina Slater	Ngambaa Cultural Connections
Steven Pittman	Ngario
Edward Stewart	Ngunawal Aboriginal Corporation
Thomas Tighe	Nundagurri
Tarlarra Te Kowhai	Tarlarra Te Kowhai
John Stewart	Tharawal
Jeffery Daves	Thauaira
Greg Kerry	Thawa
Ray Moffat	Thurumba
Rodney Gunther	Waawaar Awaa Aboriginal Corporation
Philip Boney	Wailwan Aboriginal Group
Hika Te Kowhai	Walbunja

Contact	Organisation
Ronald Stewart	Walgalu
William Bond	Wandandian
Aaron Slater	Warragil Cultural Services
Steven Hickey and Donna Hickey	Widescope Indigenous Group
Mary Parsons	Wimbalaya Nura
Travis Dixon	Wingikara
Vivian Lacey	Wirambie
Daniel Chalker	Wori Woilywa
Kerrie Slater and Vicky Slater	Wurrumay Pty Ltd
Violet Banda	Yaxa Burra
Nathan Walker-Davis	Yerramurra
Arika Jalomaki	Yulay Cultural Services
Bo Field	Yurrandaali

2.3 Test excavation methodology

A test excavation methodology was sent to all RAPs on 15 June 2021 for review. Table 2 summarises the responses from RAPs to the draft methodology.

Table 2 Response from RAPs to the draft methodology.

Agency	Contact	Type	Date	Description	Contact
Curwur Murre	Donald Smith	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Gadung	Kathy Burns	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Golangaya	Sam Peters	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Gulla Gunar	Clayton Moore	Email	2021-06-15	Could not deliver.	Ryan Taddeucci
Warragil Cultural Services	Aaron Slater	Email	2021-06-15	Agrees with the test excavation methodology	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-15	Hika left a message to discuss the project	Ryan Taddeucci
Didge Ngunawal Clan	Lilly Carroll	Email	2021-06-15	Agrees with the test excavation methodology	Ryan Taddeucci

Walbunja	Hika Te Kowhai	Phone	2021-06-16	Ryan returned Hika's call. No answer – left a message.	Ryan Taddeucci
Gandangara LALC	Ruth Sheridan	Email	2021-06-16	Would like to be present during test excavations. Would like to speak to Extent about a deposit of rare artefacts identified in the rural grasslands around Bringelly and Luddenham.	Ryan Taddeucci
Wailwan Aboriginal Group	Philip Boney	Phone	2021-06-16	Agrees with the proposed methodology and would like to be involved in the excavation program.	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-16	Hika left a message to discuss the project	Ryan Taddeucci
Walbunja	Hika Te Kowhai	Phone	2021-06-17	<p>Ryan returned Hika's phone call. Hika expressed concern that the remainder of the study area outside of the identified areas of PAD are not being subject to test excavation. Ryan explained that the study has been subject to previous excavation by AECOM as part of the Sydney Metro project and that most of the study area has been subject to historic disturbance. Therefore, the test excavation program will focus on the areas of PAD identified by the survey report. Hika would also like to see the maximum area of test excavation permissible by the Code of Practice (0.5%) of the investigation area. Ryan explained that the purpose of the 0.5% is to minimise harm through investigations and that the general principal is to keep testing to a minimum to ensure no harm occurs without an AHIP. Hika was asked to provide written comments for inclusion in the consultation log.</p> <p>Action required: Update the test excavation methodology to include additional information requested.</p>	Ryan Taddeucci
Gandangara LALC	Ruth Sheridan	Phone	2021-06-17	Ryan called Ruth to discuss the sites mentioned in the email.	Ryan Taddeucci
Cubbitch Barta Native Title	Glenda Chalker	Email	2021-06-07	"It is my opinion that 30 metre intervals is too far apart. I	Attn. Ryan Taddeucci

				<p>believe the minimum should be 20metres’.</p> <p>Questions ‘why is the western section of ACF01 PAD not being investigated...If you are going to test the PAD then all of it should be tested unless this area is not to be impacted by the proposed development’.</p> <p>Requested topographical information to be included into the methodology to understand the landscape.</p> <p>Suggests ‘we should be testing to prove a lack of artefactual material presence in some places , just as much as trying to prove the presence of artefactual material.’</p> <p>‘All excavated material should be WET sieved using a 3mm sieve’.</p> <p>‘If you are seeking advice on the methodology, then this should be taken into that advice and not dismissed.’</p>	Sent to Hannah Morris
Cubbitch Barta Native Title	Glenda Chalker	Phone	2021-06-07	<p>Hannah Morris (HM) called Glenda Chalker (GC) in response to her email to further discuss concerns and new methodology to be proposed. HM hears concerns about trench location in relation to PAD ACF01 (Extent had already reassessed to move trenches). HM Stated that Extent had decided to add additional trenches along waterways. GC says she agrees and did not bring that up because she had not been on site to understand the level of disturbance. HM mentioned that several trenches would likely be relocated and we can further investigate the PAD where necessary and discuss further with all REPs on site during the program. GC seemed happy with response to updated methodology and looks forward to receiving the new version.</p>	Hannah Morris
Gandangara LALC	Ruth Sheridan	Email	2021-06-21	<p>‘The methodology itself appears to be sound.’ Would like to further ‘discuss findings of rare</p>	Madeline Shanahan

				ochre deposits in the area that were not captured in other reports.'	
Walbunja	Hika Te Kowhai	Phone	2021-06-30	Hika left a message to discuss the project.	Madeline Shanahan
Walbunja	Hika Te Kowhai	Phone	2021-06-30	Madeline Shanahan (MS) returned Hika's call. Hika says he is ok with the methodology. MS told Hika that Extent had listened to the feedback, that the methodology was being revised and would be reissued soon.	Madeline Shanahan

The comments received focused around the placement of test pits. Extent amended the methodology to incorporate the feedback. During this period, Extent also found new information about historical disturbance within the site. The new methodology clarifies these disturbances.

Due to the substantial changes to the test excavation methodology, a revised methodology sent to all RAPS for their review over a period of 28 days on 20 August 2021. Table 3 summarises the responses to the revised test excavation methodology.

Table 3 RAP responses to the revised test excavation methodology.

Agency	Contact	Type	Date	Description	Contact
Wailan Aboriginal Group	Philip Boney	Email	2021-08-31	Wailan Aboriginal Group has no comments.	Hannah Morris
Arangung	James Eastwood	Email	2021-09-03	Arangung agrees with and supports the test excavation and methodology. Arangung would like to be up dating to all future development and would like to be considered for participation in the test excavation.	Hannah Morris
Yulay	Arika Jalomaki	Email	2021-09-11	Yulay Cultural has reviewed and agrees with the updated methodology.	Hannah Morris
Widescope	Steven Hickey	Email	2021-09-07	Widescope supports the recommendations outlined in the draft methodology.	Hannah Morris
KYWG	Kadibulla Khan	Email	2021-09-06	"The study area is highly significant to Aboriginal people, especially since there are water ways within the study area and around. Aboriginal people would have and still do utilise these water ways, many daily activities would have taken place as the whole of the area, is of significance to us. Once flora	Hannah Morris

Agency	Contact	Type	Date	Description	Contact
				<p>fauna was thriving in this area, resource rich for the Aboriginal peoples.”</p> <p>“We would like to recommend further testing of the whole study area. It is important to also include a [sic] Interpretation plan for the project, this can be achieved through design, art, native gardens, apps, signage and many other ways. Interpretation is important as it is a way in which Aboriginal people are being recognised for being the[sic] one of the oldest live [sic] cultures in the world.”</p> <p>“A keeping place also should be sort of any artefacts found, to ensure they are kept on country rather than in and [sic] office on a shelf. Both keeping place and interpretation educates the wider community about Aboriginal culture and is a part of the connecting to country framework.”</p> <p>“We would like to agree to your methodology, and we support you [sic] report.”</p>	
Didge Ngunawal Clan	Paul Boyd and Lilly Carroll	Email	2021-08-20	<p>“We are happy with the process in this job and hold no restraints.”</p>	Hannah Morris

3. Background

3.1 Landscape context

3.1.1 Geology

The study area is located on the Cumberland Plain, an extensive low-lying sub-region within the wider Sydney Basin bioregion (DAWE n.d.). The surface geology underlying the study area is largely characterised by sandstone, siltstone, and shale rocks of the Wianamatta Group (Geoscience Australia and Australian Stratigraphy Commission [GAASC] 2017).

With a maximum thickness of 300m, the Wianamatta Group was deposited during the Triassic period (c.251.9–201.3Mya) and includes three major geological units: Ashfield Shale (consisting of laminate and dark grey siltstones), Bringelly Shale (consisting of shale with occasional calcareous claystone, laminate and infrequent coal) and Minchinbury Sandstone (consisting of fine to medium-grained quartz lithic sandstone) (GAASC 2017; Office of Environment and Heritage [OEH] 2019).

Over the course of the Holocene epoch (c.11,650 cal. BP–present), channel and floodplain alluvium comprising of gravel, sand, silt and clay has also been deposited along the bank of Thompsons Creek, located along the eastern and western boundary of the study area (GAASC 2017). Arising from this geological background within the study area are two distinctive natural soil landscapes (OEH 2019): South Creek and Blacktown (Figure 3).

3.1.2 Geomorphology and soils

The South Creek soil landscape (Figure 3) is located along the channels and floodplains of Badgerys, Cosgroves, Kemps, South and Thompsons creeks, as well as that of a minor unnamed watercourse at the northern boundary of the study area (OEH 2019). This landscape comprises flat to gently sloping floodplains and valley flats, drainage depressions and incised channels, with occasional terraces or levees providing low, local reliefs (Figure 2). Its soil generally consists of shallow to deep sediment layers with an A horizon topsoil of brown loam over a B horizon of brown clay. The South Creek soil landscape is an active floodplain that is presently reworked by fluvial processes, resulting in streambank and gully erosion during periods of concentrated flows.

The Blacktown soil landscape (Figure 3) is located on higher elevations adjacent to the South Creek soil landscape and characterises most of the study area (OEH 2019). This landscape consists of gently undulating rises with broad crests and ridges that are rounded with convex upper slopes grading into concave lower slopes. Its soil generally consists of shallow to deep layered sediments with an A horizon topsoil of brownish black loam or clay loam over a B horizon subsoil of brown or grey mottled clay. In contrast to the South Creek soil landscape, the erosion hazard for the Blacktown soil landscape is generally slight to moderate which can increase to moderate or high during periods of concentrated flows.

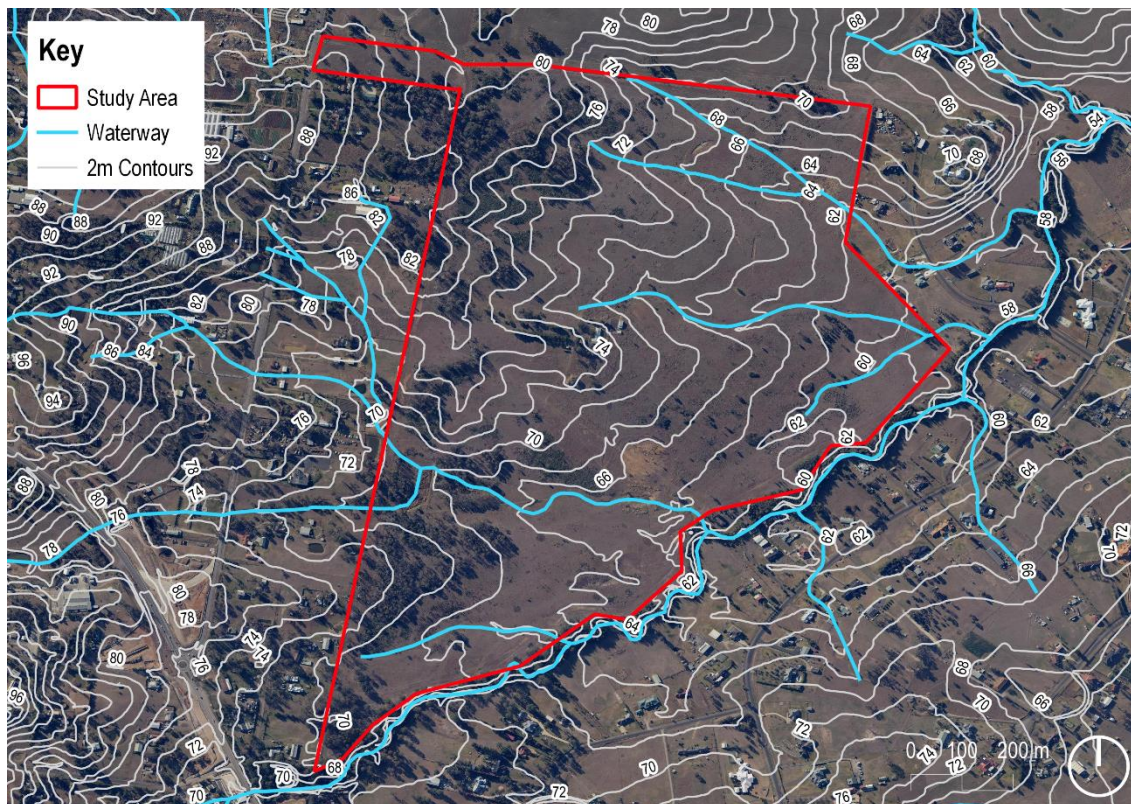


Figure 2 Contours (2m) of the landscape (source: NSW Planning and Environment)

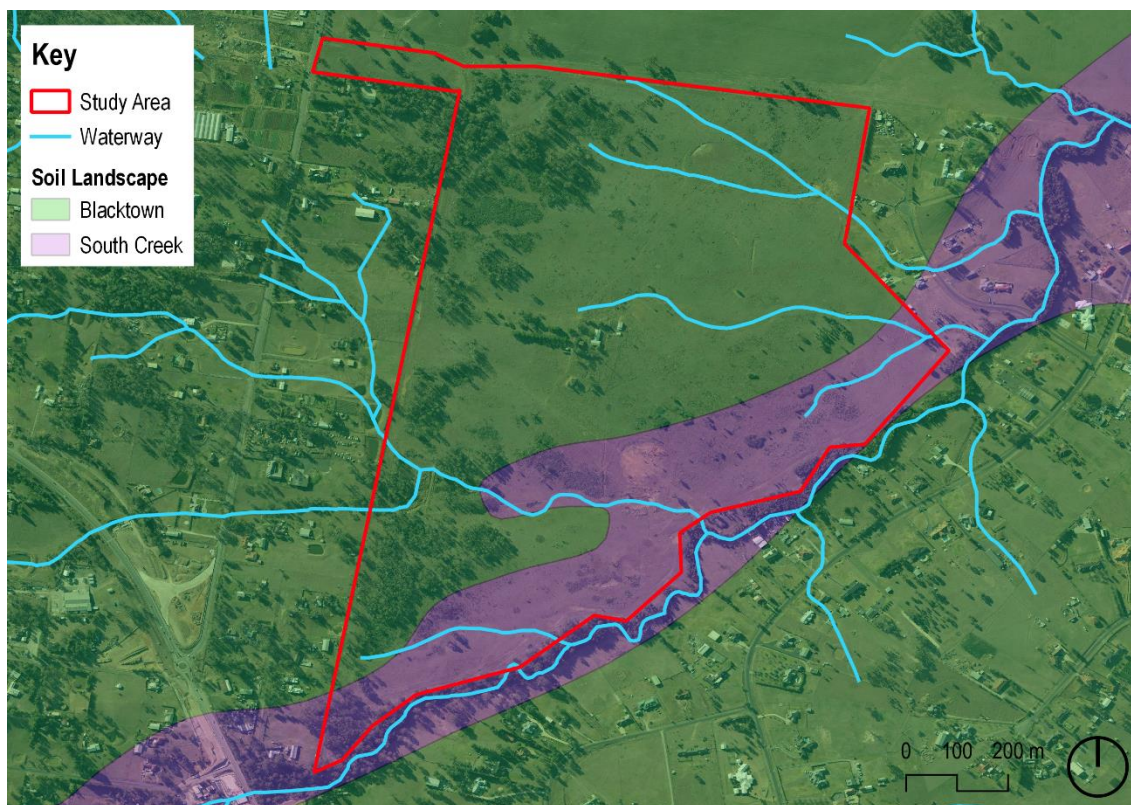


Figure 3 Soil landscapes within the study area (source: NSW Planning and Environment with Extent Heritage additions 2021).

3.1.3 Hydrology

The Hawkesbury-Nepean catchment consists of 30 sub-catchments, and the study area lies within the South Creek sub-catchment (HNCMA 2007a, 19; HNCMA 2007b, 7-102). The South Creek sub-catchment is presently the most degraded sub-catchment due to the dramatic alteration of hydrological and sediment regimes from historical vegetation clearance and increasing urbanisation (HNCMA 2007b, 69). Increasing impervious surfaces in the catchment are causing changes to the hydrology of the sub-catchment which has, in turn, greatly altered the geomorphology and ecology of its watercourses (HNCMA 2007b, 69).

Thompsons Creek, a fourth order creek, runs along the southern and eastern boundary of the study area, and five ephemeral tributaries of Thompson Creek run east-west across the study area (Figure 4). Thompsons Creek is a branch of the Wianamatta-South Creek precinct, which is largely defined by the courses of both the South and Kemps Creek. These run almost parallel to each other on a broadly north-south axis, with two smaller 'arms' of the precinct following the course of Badgerys and Thompsons Creek.

Moore Gully, a third order waterway, runs west to east in the southern portion of the site. It joins Thompsons Creek just outside the study area boundary. An associated swampy, waterlogged area sits in the low-lying land along Moore Gully.

The non-perennial waterway has been affected by modern agricultural activities including ploughing and the construction of dams along its route. The 1947, 1965, and 1986 aerials of the site show the waterway clearly, with a pool toward its western extent (Figure 6-Figure 9). This catchment was artificially modified to form a clearer dam feature after this point, as is clearly visible by the marking seen in the present aerials of the site.

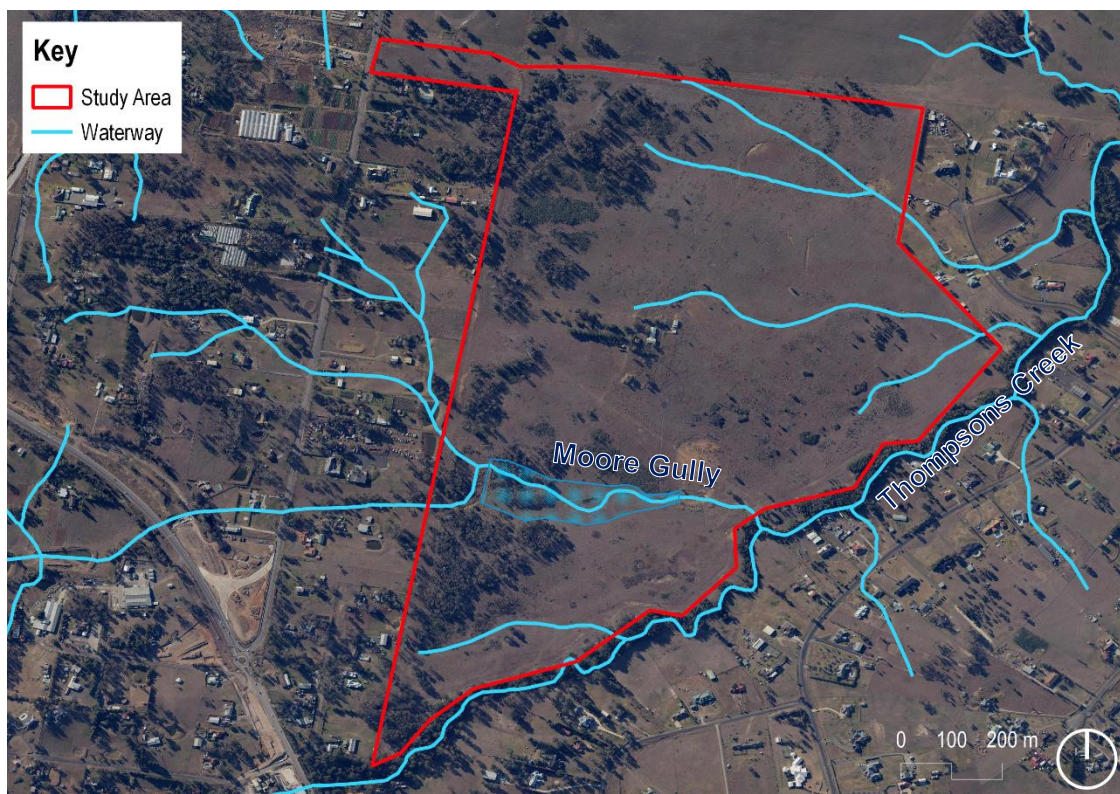


Figure 4 Waterways associated with the study area. A waterlogged area associated with Moore Gully is also indicated (source DPIE with Extent Heritage additions 2021).

3.2 Archaeological record

Although the Cumberland Plain has been the subject of hundreds of archaeological studies, the study area is in a portion of the plain where significantly less detail is available regarding the nature, distribution, and survival of archaeological materials. Recent investigations within the study area and its surrounding region indicate that Aboriginal archaeological materials will be present in those parts of the study area that have not been subject to major development impacts. It is likely that the materials present in the study area will be highly congruent with those found along other major waterbodies in the Cumberland Plain and mostly comprise stone artefact scatters.

The previously completed assessments (outlined below) have identified the presence of ‘open camp’ or ‘shelter’ and art sites, areas of rich natural resources for subsistence and raw material sources for stone tool manufacture. In general, the raw material utilized in the manufacture of stone tools appear to be predominantly silcrete, with lesser utilisation of chert, quartz, quartzite, sandstone, petrified wood, and mudstone or tuff. Edge-ground artefacts and grinding grooves were found along South Creek as it passes near Badgerys Creek (Haglund 1978), while another edge-ground axe was recently recovered with other stone flakes during another survey at Mamre Road near Kemps Creek (Artefact 2019). A fragment of a possible ‘microblade’ was also identified during a survey of a locality at Badgerys Creek by Kohen (1991, 14). Two ‘backed implements’ were also identified during another survey on a spur above South Creek near Ramsay Road (Brayshaw McDonald 1992, 9), whereas an indurated mudstone scraper was recovered during test excavations at the Twin Creeks Estate near South Creek (Dominic Steele 2007).

Liverpool Rural Lands Study. Aboriginal Archaeology: Prediction and Management (Brayshaw McDonald 1994)

As part of a wider rural lands study conducted by Liverpool Council, Brayshaw McDonald Pty Ltd (1994) was commissioned by Don Fox Planning Pty Limited to determine and predict the state of the Aboriginal archaeological resource in the rural lands west of Liverpool. In doing so, Brayshaw McDonald (1994) determined that ‘an extensive distribution of archaeological traces of their [Aboriginal] occupation still exists there’ despite the significant attrition of these traces from historical land clearance and agricultural activities.

Brayshaw McDonald (1994) predicted that ‘there will be some potential for the deeper portions of these [archaeological deposits] to have escaped disturbance, especially in alluvial areas where archaeological deposits may be relatively deep.’ Conversely, archaeological deposits on hillslopes and ridges are likely to be relatively ‘more shallow’ and hence, the impact to deposits at these locations are ‘likely to be severe since the artefact-bearing layer there is more likely to be wholly within the plough zone’. McDonald concluded that alluvial terraces in rural Liverpool (i.e. the southern portion of the present study area) are likely to have the best potential for containing intact open sites.

Archaeological Investigations at Twin Creeks Estate (Dominic Steele 1999; 2001; 2004; 2007)

Dominic Steele (1999) undertook a series of archaeological investigations of an approximately 350 ha parcel of land situated between Luddenham and Mamre Roads at South Creek, Luddenham (i.e. the north-eastern portion of the present study area) in preparation of proposed plans for the Twin Creeks Estate recreational and residential development in the area.

Based on the distribution of these sites in this locality, Dominic Steele (1991) observed that sites along Cosgroves Creek and its surrounding flats appeared to be ‘well dispersed along the watercourse and generally possess low artefact densities,’ and that it is ‘unlikely that archaeological deposits either substantial in extent, significant in composition or undisturbed in context will be encountered’ along this creek. Hence, Dominic Steele concluded that the confluence of various creek lines at the South Creek locality ‘represented an important focus of repeated Aboriginal use and occupation’ due to ‘the concentrations of archaeological material in this area.

Subsequent test excavations conducted in this locality did not recover any significant undisturbed archaeological remains as only low-density distributions of artefacts were recovered (Dominic Steele 2001; 2004). These results were interpreted to reflect ‘casual Aboriginal use of the local landscape and associated loss or discard of flaked stone items, whilst occasional knapping may also have been undertaken in the past’ (Dominic Steele 2001; 2004). This interpretation was confirmed by further test excavations conducted at a PAD (LEC 10/ TCE PAD 1) located within the estate (Zones F and G) in 2004 (Dominic Steele 2007).

Dominic Steele (2001) concluded that the principal focus of Aboriginal occupation and use of the landscape was at the confluence of South, Badgerys and Kemps Creeks, and the associated slopes that extend away from these watercourses (i.e., the north-eastern portion of the present study area). According to Dominic Steele (2001), this locality bears extensive evidence for Aboriginal silcrete extraction, utilisation (e.g., de-cortication and heat treatment), and flaked stone tool manufacture and maintenance.

South West Growth Centre. Preliminary Aboriginal and Historical Heritage – Gap Analysis (AHMS 2015)

In 2015, AHMS (presently Extent Heritage) was commissioned to undertake an Aboriginal and Historic Heritage Gap Analysis of the South West Growth Centre (SWGC) as part of an update to the SWGC structure plan. In doing so, AHMS (2015, 39) concluded that the archaeological record of the SWGC (incorporating the western portions of the present study area) is dominated by surface and sub-surface artefactual material generally found within 200 m of the larger river systems in the region. In particular, the distribution of these sites is more variable in areas where creek lines are in their upper reaches and the geomorphology is more undulating. Furthermore, elevated areas up to 500 m from major creek banks have been shown to bear archaeological materials as well.

In addition, the predictive modelling developed by AHMS concluded that there is high potential for Aboriginal objects/sites to occur along the banks of South, Kemps, Badgerys, Lowes, Thompson, and Rileys Creeks. In particular, the areas to the north of South and Kemps Creeks,

along the northern stretches of Thompson Creek and at the confluence of South, Rileys, and Lowes creeks, are all considered by the model to have the highest potential for significant cultural material. This is because these areas have a greater frequency of higher elevations (e.g., hills, ridgelines, terraces, etc) and there has been ‘a general absence of development’ (AHMS 2015, 39).

Mamre Road Precinct Aboriginal Heritage Study (EMM 2020)

EMM Consulting (2020) was engaged to undertake an Aboriginal Heritage Study of the Mamre Road Precinct (i.e., the north-eastern portion of the present study area adjacent to Twins Creek Estate) as part of a broader masterplan to guide the industrial development in this locality.

Desktop and field survey investigation of this precinct by EMM demonstrated that the area is comparable with the wider cultural landscape of the Cumberland Plain. Significantly, all the sites identified within the Mamre Road Precinct are observed to be mainly located on the edges of main creek systems and/or on a ridge line to its north. All of the sites are also characterised by isolated objects and/or low-density artefact scatters (usually consisting of <10 artefacts), and excavations at some of these sites indicate that they are primarily found in shallow duplex and/or fabric contrast soil profiles (c. <30 cm deep), with rare examples extending to depths of 60-80 cm.

EMM (2020) identified areas of archaeological potential in buffer zones along the banks of Kemps Creek (100 m buffer), South Creek (100 m buffer), and Ropes Creek (200 m buffer). Elevated areas within the buffer zones along these creeks (e.g., levees, terraces, and ridgelines) were considered in the study to have a greater potential for significant cultural material to be present.

Sydney Metro – Western Sydney Airport (AECOM 2021)

AECOM (2021) completed an archaeological report for the Western Sydney Airport, which extends into the current study area. The assessment included an archaeological survey of a portion of the current study area in February 2020. An objective of the survey was to re-identify an artefact scatter, AHIMS ID 45-5-2640 (B 22), previously identified within the study area. During the survey, however, no artefacts were detected. AECOM noted that the artefacts were likely obscured by dense vegetation and that the site was still likely to be valid. No additional surface artefacts were identified during the survey, but the land surrounding AHIMS ID 45-5-2640 was assessed as demonstrating potential to contain subsurface artefacts.

A total of 26 test pits (measuring 500 mm x 500 mm) were excavated by AECOM in the centre of the study area, surrounding the main house complex (Figure 5). No Aboriginal objects were recovered from the test excavation program. As result, the land surrounding AHIMS ID 45-5-2640 was assessed by AECOM as demonstrating low archaeological potential.

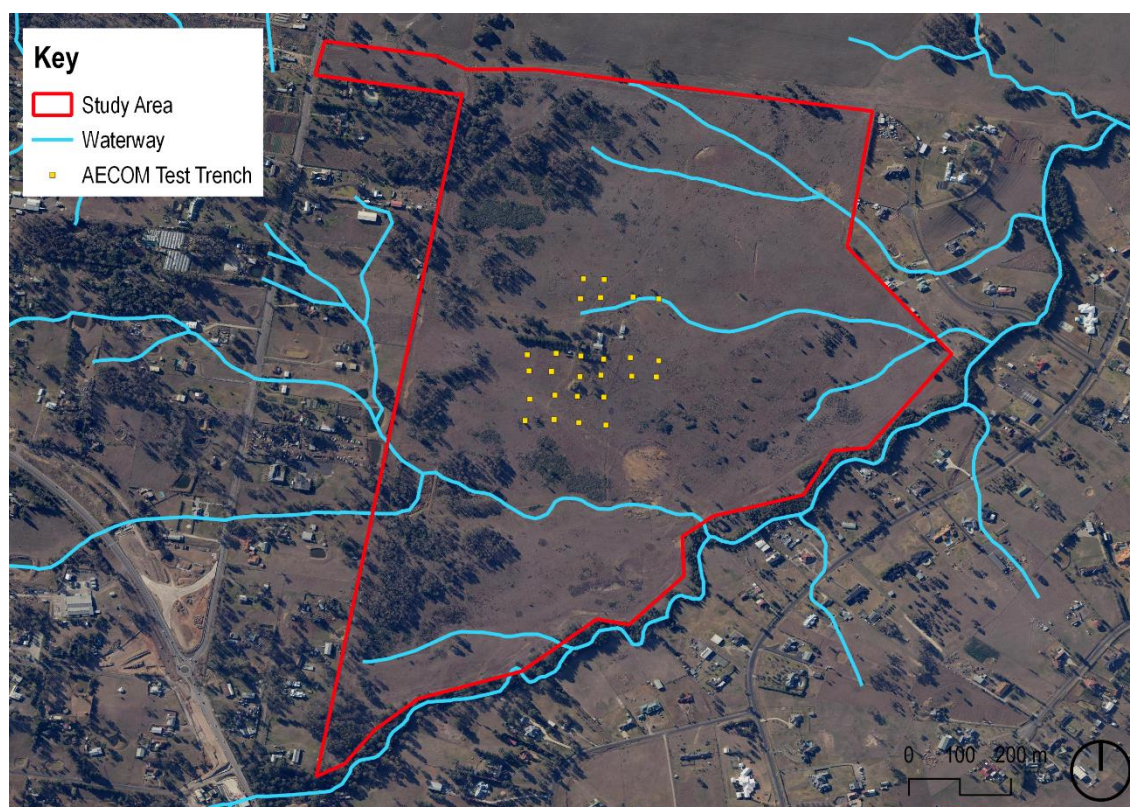


Figure 5 Location of study area where test excavations were undertaken by AECOM as part of the Sydney Metro – Western Sydney Airport project (source: AECOM 2021, figure 4-1d)

Summary

Previous archaeological investigations, summarised above, indicate that the archaeological resource of the study area is likely to be characterised by isolated finds and artefact scatters (both surface and sub-surface). These sites are likely to be present in a relatively continuous state at varying levels of concentration across the Liverpool area. In addition, these investigations have also identified the presence of ‘open camp’ or ‘shelter’ and art sites, areas of rich natural resources for subsistence and raw material sources for stone tool manufacture.

In general, the raw material utilized in the manufacture of stone tools appear to be predominantly silcrete, with lesser utilisation of chert, quartz, quartzite, sandstone, petrified wood, and mudstone/tuff. Edge-ground artefacts and grinding grooves were found along South Creek as it passes near Badgerys Creek (Haglund 1978), while another edge-ground axe was recently recovered with other stone flakes during another survey at Mamre Road near Kemps Creek (Artefact 2019). A fragment of a possible ‘microblade’ was also identified during a survey of a locality at Badgerys Creek by Kohen (1991, 14). Two ‘backed implements’ were also identified during another survey on a spur above South Creek near Ramsay Road (Brayshaw McDonald 1992, 9), whereas an indurated mudstone scraper was recovered during test excavations at the Twin Creeks Estate near South Creek (Dominic Steele 2007).

The results of the recent test excavation program completed by AECOM indicated that the central portion of the site has a low potential to contain Aboriginal objects.

3.3 Historical land use and disturbance

For the purposes of this assessment, this section relates to historic land use that may impact the survivability of Aboriginal objects.

3.3.1 Agricultural activities

Early land grants covering the study area were given to Thomas Laycock Junior, who was given a 600-acre lot known as Cottage Vale in 1818. The adjoining 600-acre lot to the south, originally granted to Charles Reid, was soon absorbed and the property became known as the Retreat, and later Kelvin Park. The homestead associated with Laycock Junior has been listed as a State Heritage landscape of farming and grazing (Item No. 00046) called the Kelvin Park Group. The SHR boundary for the site abuts the north-eastern edge of the study area.

The study area was utilised for agricultural activities undertaken by Laycock Junior and subsequent landowners including John Thomas Campbell and Alfred Kennerley. These activities most likely revolved around cattle breeding. For example, Campbell was a successful farmer and pastoralist who bred cattle and horses. The property was also leased by the Australian Agricultural Company from 1825, Australia's oldest agricultural and pastoral development company, established in 1824.

Across the twentieth century, the site remained in private hands and with limited developments. It continued to be utilised for agricultural pursuits. The 1947 aerial (Figure 6) reveals heavy ploughing across the eastern half of the study area.

3.3.2 Commonwealth and Overseas Telecommunications Commission

In the 1950s, Cottage Vale was chosen as the site of the Overseas Telecommunications Commission (Figure 7). At this point, the Laycock estate had never been subdivided. However, upon the purchase by the Commonwealth, a strip of land (now 970 acres) was established as the Kelvin Park Group.

The telecommunication commission station was constructed to the north of the present study area, in the adjacent lot. Between 1952 and 1955, the Royal Australian Air Force (RAAF) Radio Receiving Station was constructed within the study area. The site, also known as RAAF Bringelly, remained in use until the late 1990s.

The RAAF station comprised several structures. A main receiving tower and receiving station buildings were constructed in the centre of the site. Staff houses were built along the entryway into the complex (Figure 10). Additional structures built included lampposts, watertank and watertower, an incinerator, rain garage, vehicle garages, and two antennas with burial radial lines located within octagonal paddocks. In addition, an array of concrete pads that anchored light aeriels were set up across the entirety of the site (Figure 11). Each anchor possessed at least three underground guy-wires. Several of the pads have been mapped but not all (Figure 12). Finally, several roads and tracks through the study area, seen in the 1965, 1986 and present aeriels (Figure 6-Figure 9).



Figure 6 1947 aerial of the study area (source: Neapmaps with Extent Heritage additions 2021).



Figure 7 1965 aerial of the study area (source: Neapmaps with Extent Heritage additions 2021).

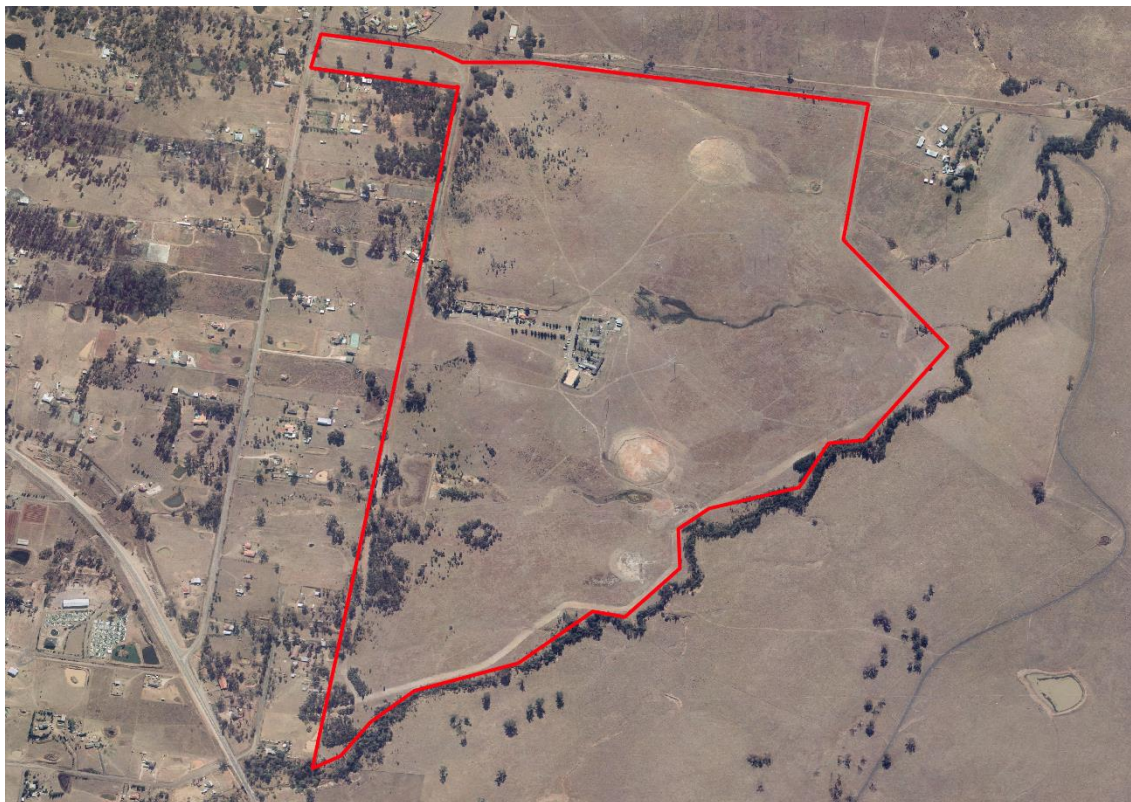


Figure 8 1986 aerial of the study area (source: Neapmaps with Extent Heritage additions 2021).

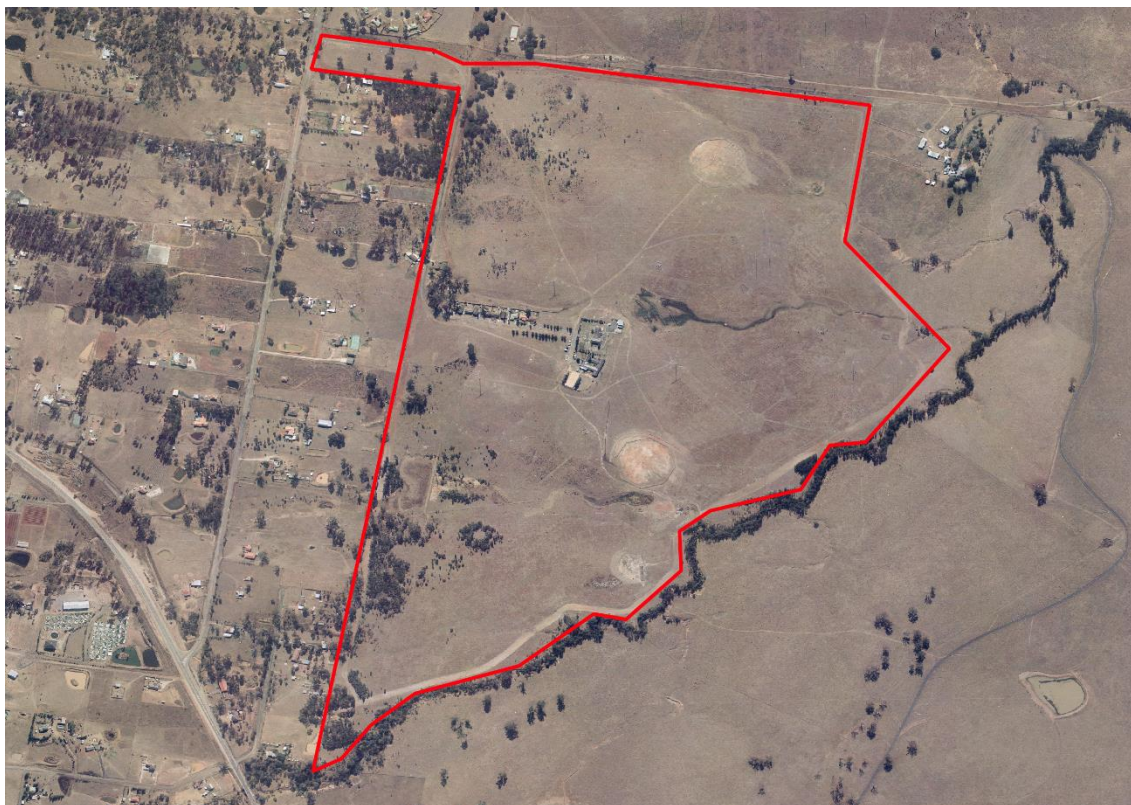


Figure 9 2021 aerial of the study area (source: Neapmaps with Extent Heritage additions 2021).

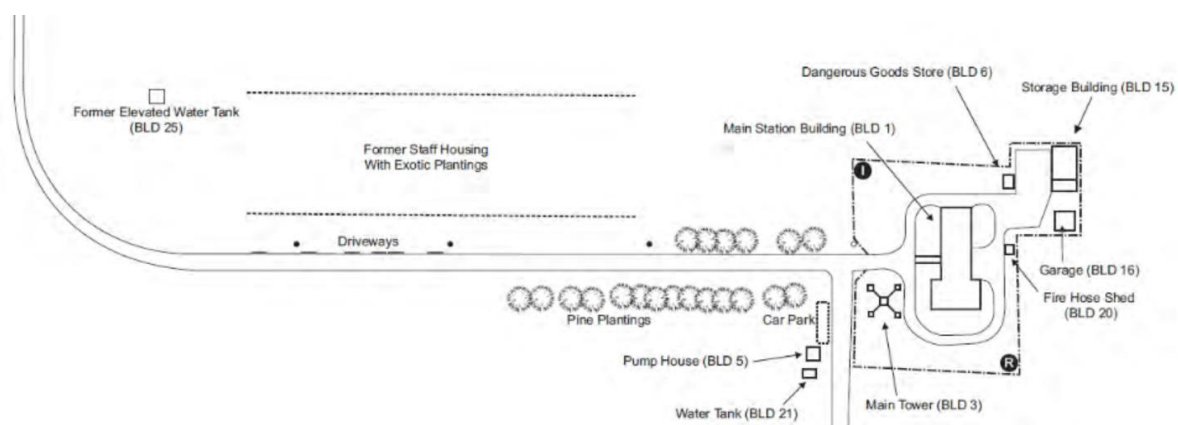


Figure 3.5 RAAF Bringelly Site Layout (ERM 2010)

Figure 10 Layout of structures built as part of the RAAF Bringelly site (source: ERM 2010, figure 3.5)



Figure 11 Example of some concrete pads as seen on the 1986 aerial, located to the east of the southern antenna (source: Nearmaps with Extent Heritage additions 2021).

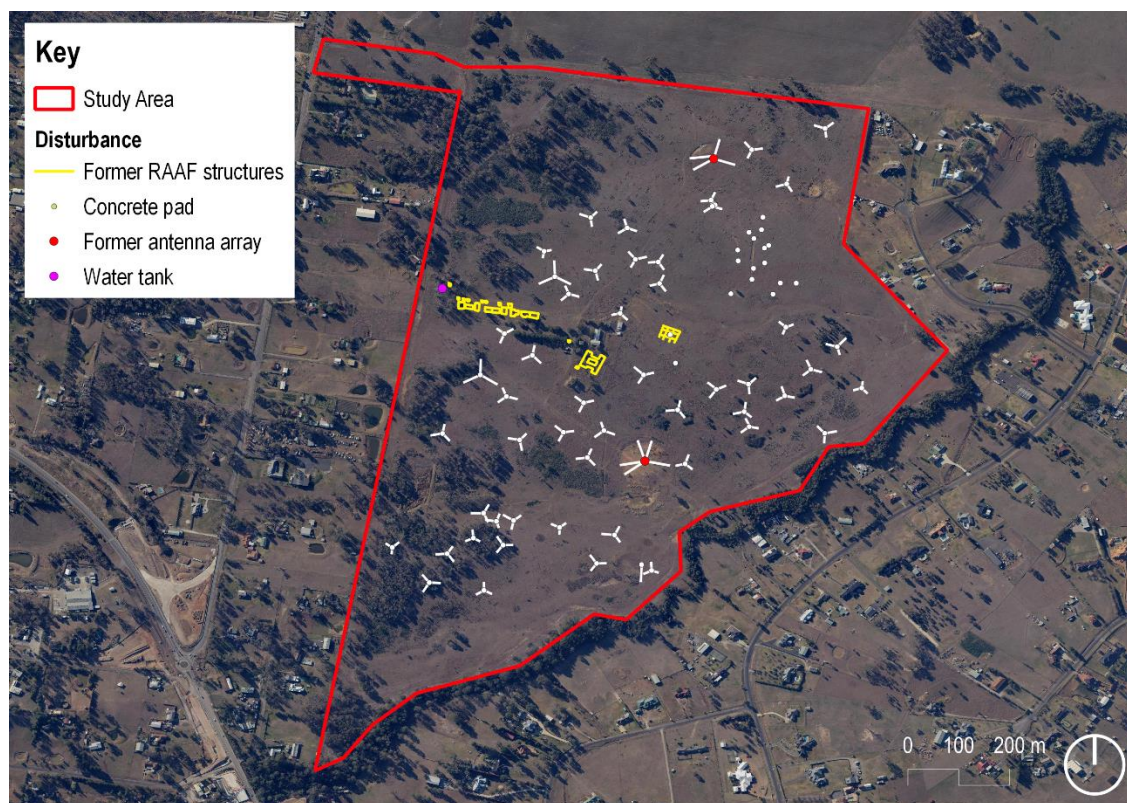


Figure 12 Location of structures built across the study area during its use as Bringelly RAAF base, including concrete pads for light aerials and associated guy-wires. Note that not all the concrete pads have been identified and marked on this map (source: Extent Heritage 2021).

3.3.3 Discussion

The study area has undergone ground disturbance during its function as agricultural and pastoral lands from the early nineteenth century to mid-twentieth century (Figure 13). Ploughing, especially noted in the eastern side of the site, earthworks, disturbance from sheep and/or cattle grazing, and the establishment of dams will have impacted surface and subsurface Aboriginal archaeological remains.

In particular, ploughing can disturb the soil to a depth of 20 to 30 cm below the surface. Despite this, the deeper soil profiles associated with the south creek soil landscape may be only partially affected by this disturbance and, as a result, still contain intact lower layers. Further archaeological investigation is required to fully appreciate the impact of this disturbance.

The establishment of the Bringelly RAAF station has caused significant impacts to the central portion of the site (Figure 12). The construction of the station, staff housing, and associated structures will have significant impact to surface and subsurface Aboriginal sites within their footprint. The location of additional auxiliary works across the study area, such as water pipes, electricity services, and the concrete pads, will have further significant impacts. There is a nil to low potential for archaeological evidence in these locations.

A majority of the concrete pads have been mapped in Figure 12 but additional sites are known to be located across the study area. The construction of these pads will have caused significant

impact to Aboriginal archaeology within the footprints of the structures. As the pads were primarily placed on flat ground, fewer pads have been identified along waterways and the southern boundary of the study area where the landscape drops downward to Thompsons Creek. This area is likely be less disturbed by the concrete pads and associated guy-wires.

Several roads and tracks established through the study area are likely to have displaced surface and shallow subsurface archaeological remains. While the visibility of Aboriginal objects in these areas is high due to the limited vegetation, it is unlikely that Aboriginal objects identified on the surface of accessways are in situ. However, intact subsurface archaeological remains may be undisturbed.

Figure 14 outlines the level of historical disturbance identified across the site. The full extent of disturbance associated with the RAAF base, in particular the footprints associated with the concrete pads, is unknown. As a result, only the concrete pads and guy-wires have been marked on the map. However, it should be noted that the disturbance likely covers a large extent of the centre of the site.

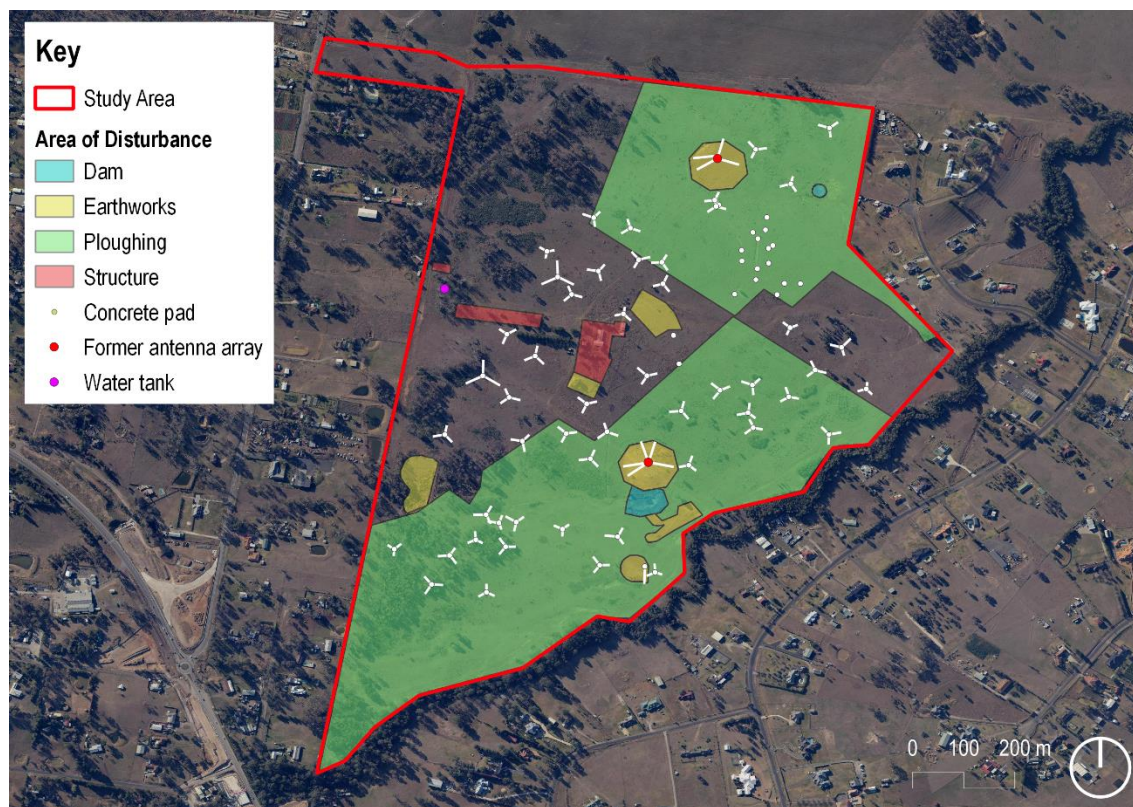


Figure 13 Disturbance mapping of historical impacts (source: Extent Heritage 2021).

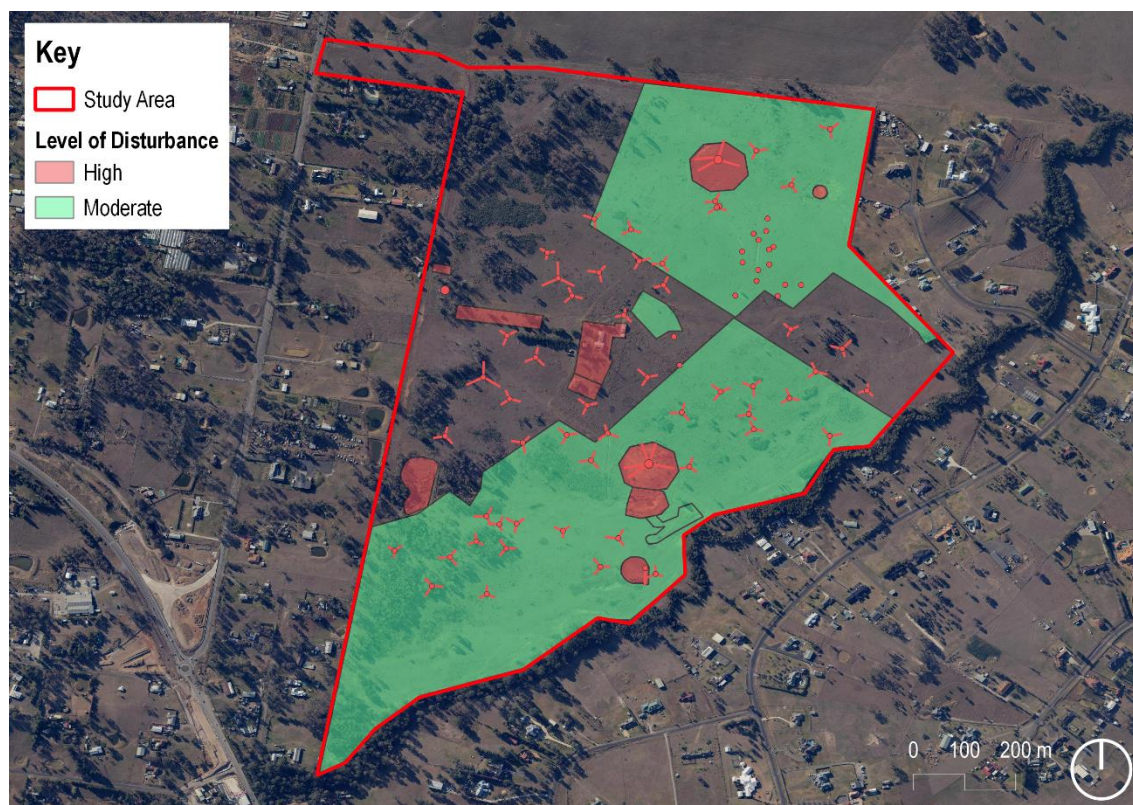


Figure 14 Level of historical disturbance (source: Extent Heritage 2021).

3.4 Predictive models

Jim Kohen (1986) demonstrated that water proximity was an important factor in site location patterning in the region. Kohen (1986, 229-275) argued that open artefact scatters in this region are larger, more complex, and more densely clustered along permanent creek and river lines. Kohen (1986, 280-281) also found that while silcrete (51%) and chert (34%) are the most common raw materials used to manufacture stone artefacts, other raw materials that were used include quartz, basalt and quartzite as well.

Although these occupation patterns above have been generally supported by subsequent investigations, Kohen's study was limited by its reliance on surface evidence. Extensive excavations across the Cumberland Plain have since demonstrated that areas with no surface evidence often contain sub-surface deposits buried beneath current ground surfaces. This is a critical factor in aggrading soil landscapes, which are commonly found across the Cumberland Plain. In another examination of the archaeological landscape on the Cumberland Plain, McDonald (1997) found that surface evidence (or the absence of surface evidence) does not necessarily indicate the potential, nature or density of sub-surface material. Hence, McDonald's study clearly highlights the limitations of surface surveys in identifying and classifying archaeological deposits and sites. The study also demonstrates the importance of test excavation in establishing the nature and density of archaeological material on the Cumberland Plain.

3.4.1 Cumberland Plain Predictive Model

The Cumberland Plain Predictive Model was developed by Jo McDonald Cultural Heritage Management (White and McDonald 2010) from evidence collected in several Aboriginal archaeological excavations undertaken across the Cumberland Plain, and in particular the Rouse Hill Development Area. The Cumberland Plain Predictive Model posits that the nature of Aboriginal sites across the Plain varies according to both landform and landscape. Stream order is also a significant factor as the model makes assumptions that Aboriginal people preferred to occupy areas with more permanent and predictable water supplies. Finally, the model also considered access to additional resource such as raw lithic material, but this factor did not appear to influence artefact distribution. Further development of this aspect of the model is required. The following summary outlines factors that may determine the density of Aboriginal sites within an area of the Cumberland Plains:

General

- In any landscape location within the Cumberland Plain there exists the possibility that a background scatter of Aboriginal artefacts will exist. This refers to objects deposited as part of one-off manufacturing and/or use and does not correlate with a landform or more permanent activity area. These areas are unlikely to contain associated subsurface archaeological deposits.

Landform

- Fewest artefacts are found on upper slopes (the upper third of a slope) and ridge tops (the top of a slope, forming watersheds). Artefacts tend to be presented as sparse, discontinuous scatters.
- Artefact densities increase toward lower positions in valleys—the mid slope and lower slope (the middle and bottom third of a slope). Lower slopes associated with higher order streams produce the highest artefact densities. The density of artefacts found on mid-slopes did not significantly vary with stream order.
- Elevated terraces, especially those overlooking higher order watercourses, tend to contain high artefact densities that indicate evidence of more permanent or repeated occupation in these areas.
- Creek flats tend to show low artefact densities. As creeks flats flood, artefacts may have been lost by erosion or not a preferred location for occupation.

Stream Order

- Small and/or ephemeral water supplies (namely first order creeks) may have been able to support only small numbers of people and/or transient occupation. Large and/or permanent water supplies may have supported large numbers of people and/or long periods of occupation indicated by continuous scatters.
- First order streams have low average artefact density and spare artefact distribution. Archaeological evidence will present as spare background scatters with densities of approximately one artefact per m² expected.

- Second order streams have a more continuous artefact distribution. Archaeological evidence will present as sparse but focused activities, including one-off camp locations or single event knapping, with artefact densities of approximately 6.5 per m² expected.
- Third order streams also present a more continuous artefact distribution as a result of more frequent and repeated occupation by small groups. Archaeological evidence of knapping floors that may be reused, and more concentrated activities will be present. Artefact densities of approximately 8 per m² will be expected.
- Fourth order streams have the highest density of artefacts. Sites will be complex and may be stratified. Artefacts associated with these sites may show less use of rationing strategies as people may have remained in the same location for several days, or even weeks. Evidence of the caching or raw materials may also be present. Artefact densities of approximately 14 per m² will be expected.
- Creek junctions may be a focal location for activities, with the confluence of higher order streams likely generating more dense sites.

Distance from water

- The highest artefact densities associated with fourth order landscapes were identified 51-100 m from the watercourse.
- The highest artefact densities associated with second order landscapes were identified within 50 m of the watercourse.
- First order watercourses show no significance in artefact distribution with distance from water.

Aspect

- On lower slopes associated with fourth order streams, artefact densities are higher on slopes facing north and northeast, than on slopes facing west.
- On upper slopes, aspect does not appear to significantly affect artefact distribution.

3.4.2 Discussion

Using the above predictive models, archaeological evidence of transient movement across the landscape is likely to be present across the site in the form of low-density background scatters and isolated artefacts.

Isolated artefacts and scatters identified during surface surveys across the site are likely more easily identified in areas with high visibility and limited vegetation overgrowth. These areas include roads/tracks and cleared areas. In areas of disturbance such as these, the presence of artefacts is not necessarily indicative of further subsurface archaeological sites.

Several waterways run through the study area. The waterways in the northern half of the site comprise non-perennial first and second order creeks. These waterways do not represent

permanent supplies of fresh water. Indeed, several of the channels are subtle and shallow. As a result, they are not likely to have supported permanent or repeat-occupation sites.

Two more significant waterways are associated with the study area. Moore Gully, running east to west across the southern portion of the study area, is a more significant third order waterway. However, modern development across the site, associated with agriculture, damming, and the RAAF site, may have significantly altered the natural watercourse. Secondly, Thompsons Creek, is a fourth order waterway that bounds the eastern edge of the study area although it is outside the project boundary.

Based on the stream order model within the Cumberland Plain Predictive Model, a focus on test excavations should revolve around Moore Gully and Thompsons Creek. Notably, the model suggests that lower slopes associated with higher order streams produce the highest artefact densities. The buffer around Moore Gully has been increased to capture the periphery of the waterlogged area. The alluvial nature of the south creek soil landscape provides further opportunity for recovering deep stratified deposits.

Moreover, the model suggests that the highest potential for artefacts associated with fourth order landscapes occur within 51 to 100 m from the watercourse. These flat terraces overlook the waterway and are not likely affected by flooding making them ideal site locations. As most of the eastern boundary of the study area is located at 50 m or less from the watercourse, the predictive model puts this high-density area within the project boundary. In addition, the confluence between Moore Gully and Thompsons Creek also falls just outside the study area and may present evidence of an occupation site (McDonald 1997, 56-57).

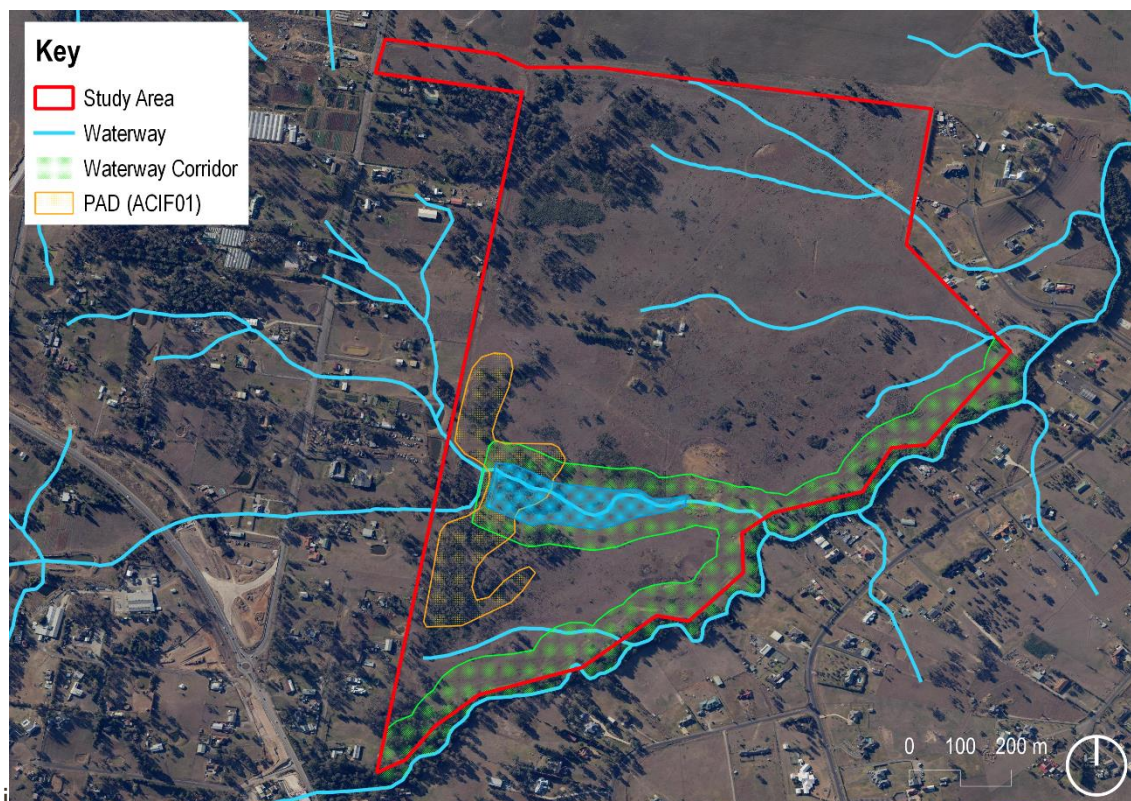


Figure 15 Area of archaeological potential in the vicinity of the third and fourth order waterways, and PAD ACIF01 (source: Extent Heritage 2021).

3.5 Archaeological survey: summary of results

An archaeological survey was completed as part of the ACHAR for the study area (Extent Heritage 2021) on 7 December 2020. This section provides a summary of the results (outlined in detail within the ACHAR) of this survey:

- A total of 10 Aboriginal sites were identified within the study area (Figure 16); eight of the sites had been previously registered on the AHIMS database and two sites were newly identified during the completion of the survey (see Table 4 below).
- A total of 14 Aboriginal objects were identified from three of these sites (B 23, ACIF01 and ACAS01). An additional seven Aboriginal sites are registered within the study area but could not be located during the completion of the archaeological survey.
- A full coverage survey of the study area was completed, which found that the majority of the study area was covered in dense vegetation which limited ground surface visibility. Bare ground was identified in discrete locations across the study area and it was identified that the study area had been subject to erosion which had removed the artefact bearing upper layers of the soil profile. Only land associated with ACIF01 (AHIMS ID 45-5-5480) was found to contain relatively intact upper soils. As a result, this location is considered to be area of PAD.
- The area surrounding B 23 (AHIMS ID 45-5-2641) was initially considered to be an additional area of PAD due to the moderate number of surface artefacts. However, upon interrogation of historical aerials, it is clear that the area was heavily disturbed by one of the antenna features installed as part of the Bringelly RAAF station. There is not likely to be any intact subsurface archaeological remains associated with the artefact scatter.

Table 4. Results summary.

Site number	Feature(s)	Survey unit	Landform	Artefacts located during survey
B 17 (AHIMS ID 45-5-2779)	Artefact	1	Slope	-
B 18 (AHIMS ID 45-5-2620)	Artefact	1	Slope	-
B 19 (AHIMS ID 45-5-2621)	Artefact	4	Slope	-
B 20 (AHIMS ID 45-5-2622)	Artefact	6	Saddle	-
B 21	Artefact	6	Saddle	-

Site number	Feature(s)	Survey unit	Landform	Artefacts located during survey
(AHIMS ID 45-5-2639)				
B 22 (AHIMS ID 45-5-2640)	Artefact	1	Slope	-
B 23 (AHIMS ID 45-5-2641)	Artefact	1	Slope	9
B 38 (AHIMS ID 45-5-2628)	Artefact	1	Slope	-
ACIF01 (AHIMS ID 45-5-5480)	Artefact, PAD	1 and 2	Slope	1
ACAS01 (AHIMS ID 45-5-5481)	Artefact	1	Slope	4

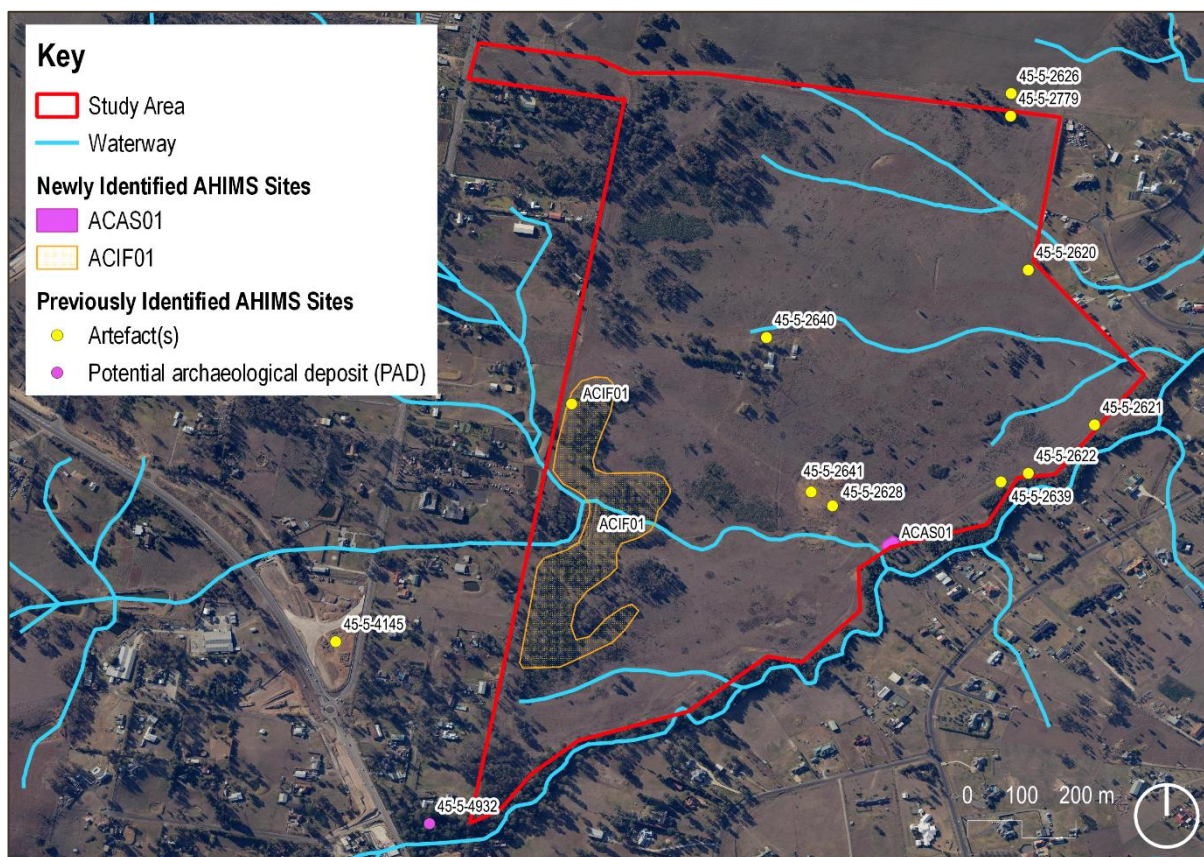


Figure 16 Results of archaeological survey conducted on 7 December 2020 (Extent Heritage 2020, 47-61).

4. Archaeological test excavation

4.1 Aims

The purpose of archaeological test excavations is to investigate the sub-surface nature and distribution of Aboriginal objects within an area of archaeological sensitivity. Controlled excavation in accordance with the *Code of Practice* will provide the opportunity to investigate the context of any retrieved Aboriginal objects, including whether there is evidence of stratification.

The key aims of archaeological test excavation are to:

- Characterise the sub-surface soil profile and identify evidence of stratification.
- Identify and determine the content, composition, and distribution of the potential sub-surface artefact assemblage.
- Collect data that may provide information on past ways of life of the Aboriginal people who created and occupied the landscape, including diet, functional use of spaces and landforms, resource exploitation, and chronology.

- Compare the study area to relevant available archaeological and ethnographic data, in order to contribute to a greater understanding of the Aboriginal history of the local area.
- Obtain necessary information to inform the final design of proposed works and to guide development of appropriate significance-based strategies for conservation and management of the study area.

4.2 Sample strategy and coverage

Based on background research, the survey results, and stakeholder feedback, the archaeological test excavation program will be conducted across the extent of the ACIF01 PAD (AHIMS ID 45-5-5480), along Moore Gully (AHIMS ID Pending), along the northern bank of Thompsons Creek (AHIMS ID Pending), and in the north-western corner of the site (Figure 17 **Error! Reference source not found.**). A total of 202 test trenches has been proposed. The areas chosen will enable the program to investigate the nature of any subsurface artefacts that may be present within the extent of these areas. The proposed test excavation methodology for each of the sites are as follows:

- **ACIF01 (AHIMS ID 45-5-5480):**

Extent Heritage proposes to excavate 65 test excavation units (TPs 1-64) within a test excavation area (Area 1) of PAD ACIF01. As the extent of ACIF01 (AHIMS ID 45-5-5480) occupies an irregularly shaped area dominated by dense seasonal grassland and regrown woodland, the proposed test excavation units are arranged along seven separate transects of varying lengths (instead of a systemic grid) to accommodate these physical landform constraints, while ensuring a representative coverage of the excavation area. Trenches will be placed at 20 m intervals.

- **Moore Gully (AHIMS ID 45-5-5492):**

Extent Heritage proposes to excavate 40 test excavation units (TPs 65-104) arranged in a transect along each bank of Moore Gully (Area 2). Trenches will be located within a 50m buffer of the Gully. The Cumberland Plains Predictive model indicates that this corridor has the highest potential for Aboriginal sites.

Moore Gully is part of a large area of swamp, the full extent of the which requires further investigation on site. Trenches have been placed to the periphery of the waterlogged area. However, trenches may be relocated closer to the main waterway once the soil landscape is better understood.

While the area has been disturbed by mid-twentieth century ploughing, the creek line appears to have avoided severe impacts caused by constructions as part of the Bringelly RAAF base. The trenches will be placed at intervals of 20 m.

- **Thompsons Creek (AHIMS ID 45-5-5491):**

Extent Heritage proposes to excavate 89 test excavation units (TPs 105-193) along the northern bank of Thompsons Creek (Area 3). The trenches will be arranged in two

transects, 40 m apart, within the 100 m corridor of Thompsons Creek. While the Cumberland Plains predictive model suggests that the highest likelihood of Aboriginal sites will occur between 51 and 100 m from the fourth order stream, the second transect enables the testing program to more fully explore the terraces along the waterway which are also considered by the models to be good locations for Aboriginal sites. Minimal historical disturbances associated with the Bringelly RAAF base have been identified along the transects (with the exception of a light antenna and concrete PAD to the northwest of AHIMS ID 45-5-2662). Ploughing will have impacted surface and shallow subsurface archaeological remains. However, the transects are located within the South Creek alluvial soil landscape, where lower sections of the deeper soil profile have a higher potential to remain intact. Trenches will be placed at 40 m intervals.

■ **Northern transect:**

Eight test trenches (TPs 194-202) are proposed to be placed in the north-western corner of the site (Area 4) where disturbance from ploughing and the Bringelly RAAF base has not been undertaken. The trenches will be laid in a north to west alignment, at 40 m intervals. The area likely contains a low potential for low-density background scatter known to be present across the Cumberland Plain. It is important to prove the predictive model and further understand the landscape across the study area.

No additional test excavation units have been placed in the centre of the study area. Based on predictive models, this area has low potential for Aboriginal sites and instead will likely only contain isolated artefacts and sparse, discontinuous background scatters. The results of previous AHIMS searches and the survey have identified some of these artefacts. In support, the results of the AECOM test excavation program around the RAAF station complex identified no archaeological remains.

Moreover, construction as part of the Bringelly RAAF base has caused significant ground disturbance across the entire site. This is especially visible with both the large radio towers and light antenna and associated concrete pads. Artefacts recovered from these areas of high disturbance are likely to possess little scientific value as they are no longer in situ. The chosen locations for the test pits have identified areas of comparative lower historical disturbance.

Should aspects of test pit placement become untenable due to information or conditions on the ground that only becomes clear once on site, the Excavation Director, may revise the shape and/or size of the area tested and/or alter the locations of test pits. In particular, test trenches may be relocated or abandoned if they are found to be inaccessible due to dense vegetation, located on roadways, in the vicinity of concrete pads or other clear evidence of ground disturbance/earthworks, or in areas where B horizon clay is present on the ground surface. The decision to either relocate or abandon the trench(es) will be based on the nature and extent of the disturbance. It is expected that several of the trenches will be affected by these constraints. This may provide an opportunity while on site to explore additional areas identified as containing higher archaeological potential or reduce the scale of the testing program. Changes to trench locations while on site will be clearly communicated and in consultation with the RAPs on site.

Under the *Code of Practice* guidelines for test excavation, no more than 0.5% of each investigated location can be excavated. In addition, each proposed test pit may be expanded to a maximum area of 3 m² to facilitate deep excavation or further investigate identified archaeological features identified during the testing program.

A summary of the areal total of each area and proposed total excavation area is outlined in Table 5 below.

Table 5: Summary of sample area

Site	Proposed excavation area (metres ²)	Total area of site (metres ²)	Proposed excavated percentage of total area (%)
ACIF01 (AHIMS ID 45-5-5480)	17 (65 Test Excavation Units)	86,705	0.02
Moore Gully (AHIMS ID Pending)	10 (40 Test Excavation Units)	56,102	0.02
Thompsons Creek (AHIMS ID Pending)	22.25 (89 Test Excavation Units)	128,653	0.02
Northern Transect	2 (8 Test Excavation Units)	11,281	0.02

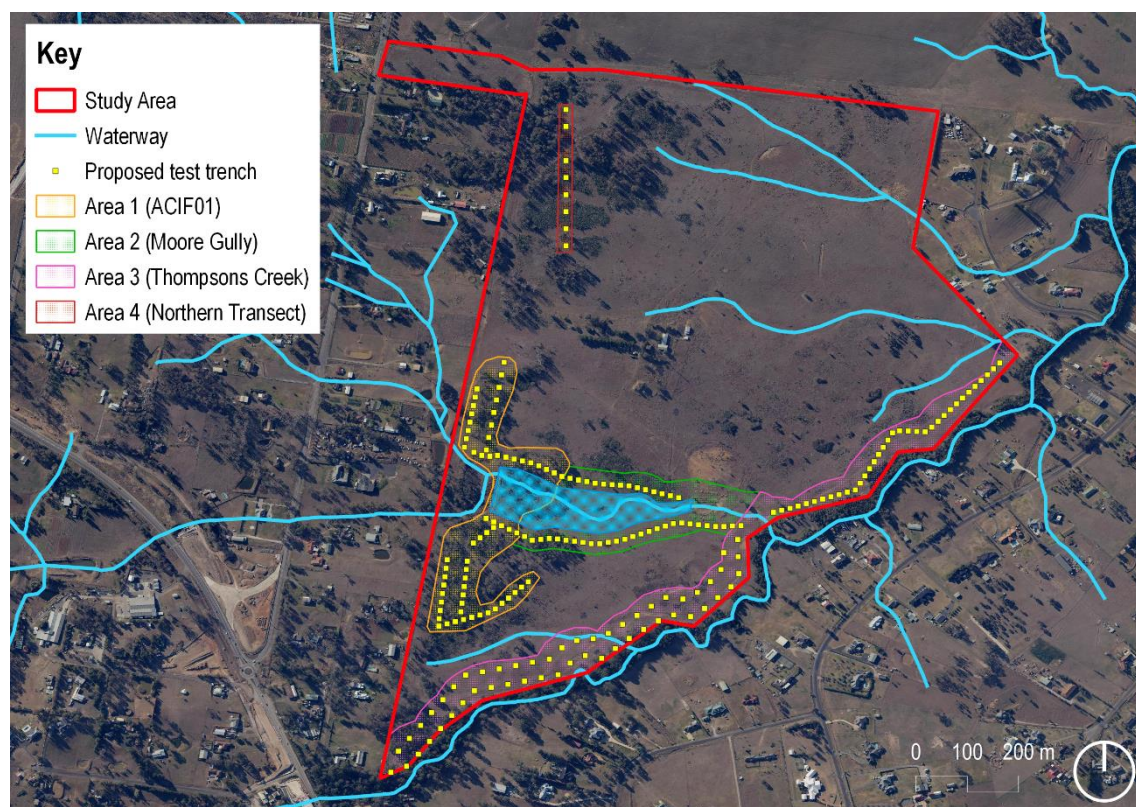


Figure 17 Location of proposed test pits across the southern portion of the site (source: Extent Heritage 2021)

The *Code of Practice* outlines requirements for when enough information has been retrieved and test excavation must cease. Test excavation at the area of sensitivity must cease when:

- Suspected human remains are encountered.
- Enough information has been recovered to adequately characterise the objects present with regard to their nature and significance.

To avoid doubt, 'enough information' means that the sample of excavated material clearly and self-evidently demonstrates the deposit's nature and significance, and 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, whether stratified or not.

At no point would excavation proceed below 1.5m depth due to Occupation Health and Safety requirements. Any requirements for excavation below 1.5m would be determined following test excavation and carried out at a later stage with an AHIP.

4.3 Excavation procedure

Test excavation units will measure 500 mm x 500 mm in size and may be combined and excavated as necessary to understand the site characteristics. Excavation of the first unit would occur in 50 mm spits, with subsequent excavation in 100 mm spits or according to stratigraphy if it is identified during excavation, depending on the results of the first unit. All excavations will be completed manually with hand tools.

All excavations would continue until basal clay or bedrock is exposed, or until culturally sterile units are identified. This will be defined as three consecutive spits without cultural material. Should significant cultural materials be identified, and time permits, additional excavation will be undertaken. This may consist of excavation of additional test pits in gaps in the grids, and/or expanding test pits in order to further characterise the deposit.

All excavated material would be wet sieved through a 3 mm sieve. Excavations would be recorded in accordance with the Code, including scale drawings, photographs, and written descriptions of the trench locations and soil profiles.

4.4 Procedure for the discovery of human remains

Aboriginal burials which occur outside of designated cemeteries are protected under the *National Parks and Wildlife Act 1974* and should not be disturbed. If any suspected human remains are identified during the completion of the excavation program, the following actions will be followed:

- Cease all excavation activity.
- Notify NSW Police.
- Notify Heritage NSW (DPC) via the Environment Line on 131 555 to provide details of the remains and their location.
- Excavation activity will not recommence unless authorised in writing by Heritage NSW (DPC).

5. Post excavation tasks

5.1 Test excavation report

A report detailing the results of the archaeological test excavation program would be prepared once excavation and artefact recording activities are concluded. The excavation report would be completed to the requirements outlined in Requirement 11 of the *Code of Practice*.

5.2 Site Recording Form

Following the completion of the test excavation program, artefact analysis and reporting, an update to the AHIMS database will be lodged where necessary.

5.3 Management of recovered Aboriginal objects

All Aboriginal objects recovered from the test excavation program would be placed in labelled, resealable bags. Once test excavation has been completed, all recovered Aboriginal objects recovered will be stored temporarily in a locked room in the Extent Heritage office (3/73 Union St, Pyrmont NSW 2009).

Options for long-term management of retrieved Aboriginal objects will be discussed with registered Aboriginal stakeholders during the preparation of an ACHAR. However, it is anticipated that all Aboriginal objects retrieved from the test excavation program will be reburied within the study area in accordance with the requirements of the *Code of Practice*. The exact location of reburial would be decided following the completion of the test excavation report and assessment of site extent and scientific value.

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Appendix A. Information on legislation

A.1. Commonwealth Legislation

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSHP Act) was enacted at a Federal level to preserve and protect areas (particularly sacred sites) and objects of particular significance to Aboriginal Australians from damage or desecration. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (Sections 9 and 10). This can include the preclusion of development.

As well as providing protection to areas, it can also protect objects by Declaration, in particular Aboriginal skeletal remains (Section 12). Although this is a Federal Act, it can be invoked on a State level if the State is unwilling or unable to provide protection for such sites or objects.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for the protection of natural and cultural heritage places. The Act establishes (amongst other things) a National Heritage List (NHL) and a Commonwealth Heritage List (CHL). Places on the NHL are of natural or cultural significance at a national level and can be in public or private ownership. The CHL is limited to places owned or occupied by the Commonwealth which are of heritage significance for certain specified reasons.

The heritage values of places on the NHL or the CHL are protected under the terms of the EPBC Act. The Act requires that the Minister administering the EPBC Act assess any action which has, will have, or is likely to have, a significant impact on the heritage values of a listed place. The approval (or rejection) follows the referral of the matter by the relevant agency's Minister. The decision to refer is in the hands of the proponent and, if in doubt, a referral is highly advisable.

Native Title Act 1993

The *Native Title Act 1993* provides recognition and protection for native title. The Act established the National Native Title Tribunal to administer native title claims to rights and interests over lands and waters by Aboriginal people. The Tribunal also administers the future act processes that attract the right to negotiate under the *Native Title Act 1993*.

The Act also provides for Indigenous Land Use Agreements (ILUA). An ILUA is an agreement between a native title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the Native Title Act in 1998. They allow people to negotiate flexible, pragmatic agreements to suit their particular circumstances.

An ILUA can be negotiated over areas where native title has, or has not yet, been determined. They can be part of a native title determination, or settled separately from a native title claim. An ILUA can be negotiated and registered whether there is a native title claim over the area or not.

A.2. NSW state legislation

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals. The relevant sections of the EP&A Act are:

- Part 4: Development that requires consent under consideration of environmental planning instruments.
- Part 5: An assessment process for activities undertaken by Public Authorities and for developments that do not require development consent but an approval under another mechanism.

Where Project Approval is to be determined under Part 4 (Division 4.1) of the Act, further approvals under the *National Parks and Wildlife Act 1974*, are not required. In those instances, management of Aboriginal heritage follows the applicable Aboriginal assessment guidelines (the Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation, July 2005) and any relevant statement of commitments included in the Development Approval.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides blanket protection for Aboriginal objects (material evidence of Indigenous occupation) and Aboriginal places (areas of cultural significance to the Aboriginal community) across New South Wales. An Aboriginal object is 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.

An Aboriginal place is any place declared to be an Aboriginal place by the Minister for the Environment, under section 84 of the Act.

It is an offence to disturb Aboriginal objects or places without a permit authorised by Heritage NSW – Department of Premier and Cabinet (DPC). In addition, anyone who discovers an Aboriginal object is obliged to report the discovery to Heritage NSW (DPC).

The operation of the NPW Act is administered by Heritage NSW (DPC). With regard to the assessment of Aboriginal cultural heritage, Heritage NSW (DPC) has endorsed the following guidelines:

- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010b),
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010a),

- Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010); and
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (2011).

Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* allows for the transfer of ownership to a Local Aboriginal Land Council (LALC) of vacant Crown land not required for an essential purpose or for residential land. These lands are then managed and maintained by the LALC.

Appendix 6 – Bradfield City Centre First Building Statement of Heritage Impact

Bradfield City Centre First Building

Statement of Heritage Impact

Prepared for Western Parkland Authority

November 2021 - FINAL 01



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DRAFT 01	E. Banaag M. North	22.10.2021	Technical
FINAL 01	G. Harrington	11.11.2021	Minor edits

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List of abbreviations

Abbreviation	Meaning
CMP	Conservation Management Plan
DA	Development application
DP&E	Department of Planning and Environment
EP&A Act	Environmental Planning and Assessment Act 1979
Growth Centres SEPP	State Environmental Planning Policy (Sydney Region Growth Centres) 2006
HCA	Heritage Conservation Area
Heritage Act	Heritage Act 1977 (NSW)
SEMPI	State Environmental Planning Policy (Infrastructure) 2007
LEP	Local Environmental Plan
NSW	New South Wales
S170 Register	Section 170 State Agency Heritage and Conservation Register
SEPP	State Environmental Planning Policies
SHI	State Heritage Inventory, NSW
SHR	State Heritage Register
SoHI	Statement of Heritage Impact

1. Introduction

1.1 Project description

Extent Heritage Pty Ltd (Extent Heritage) has been commissioned by Western Parkland City Authority (WPCA) to prepare a Statement of Heritage Impact for the Advanced Manufacturing Research Facility (AMRF)– the Bradfield City Centre First Building (the study area, also known herein as “the First Building”). The building is intended to be operational by 2023, and it will be an advanced manufacturing research, development and training facility.

The project has been declared State Significant Development (SSD) and is being assessed under Part 4.1 of the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act). The Planning Secretary’s Environmental Assessment Requirements (SEARs) have been issued for the Project (SSD-25452459) and include requirements for Non-Aboriginal Heritage. Heritage News South Wales (HNSW) has responded to the SEARs and has recommended that a Statement of Heritage Impact (SOHI) be prepared to assess the impacts of the proposal on the non-Aboriginal archaeology and on the heritage significance of the following SHR items in the vicinity of the study area..

- Kelvin (Item #00046), 30 The Retreat, Bringelly
- Church of the Holy Innocent (Item #02005), 130 Rossmore Avenue West, Rossmore

This SOHI has been prepared in accordance with the SEARs. The purpose of the report is to analyse the proposed construction of the AMRF First Building and the potential impacts on the significance of heritage items in the vicinity and non-Aboriginal archaeology.

1.2 Approach and methodology

The methodology used in the preparation of this Statement of Heritage Impact (SOHI) is in accordance with the principles and definitions as set out in the guidelines to *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (the *Burra Charter*) (Australia ICOMOS 2013) and the latest version of the *Statement of Heritage Impact Guidelines* (Heritage Office and Department of Urban Affairs and Planning 2002), produced by the former NSW Office of Environment and Heritage (now the Department of Planning, Industry and Environment).

This SOHI will review the relevant statutory heritage controls, assess the impact of the proposal on the subject property and make recommendations as to the level of impact.

1.3 Limitations

The site was inspected and photographed by Hannah Morris on 18 October 2021. The inspection was undertaken as a visual study only.

The historical overview provides sufficient historical background to provide an understanding of the place in order to assess the significance and provide relevant recommendations, however, it is not intended as an exhaustive history of the site.

This assessment does not include an assessment of Aboriginal heritage. For information on Aboriginal cultural heritage, please refer to the separate report:

Bradfield City Centre – First Building Aboriginal Due Diligence Assessment in preparation by Extent Heritage (October 2021).

1.4 Authorship

The following staff members at Extent Heritage have prepared this statement of heritage impact:

- Graham Wilson, Principal Heritage Advisor, and
- Gabrielle Harrington, Heritage Advisor.

This report was reviewed by Eleanor Banaag (Senior Associate, Heritage Places Team Leader) and Dr MacLaren North (Managing Director).

1.5 Ownership

The site is owned and managed by Western Parkland City Authority.

1.6 Terminology

The terminology in this report follows definitions presented in the *Burra Charter* (Australia ICOMOS 2013). Article 1 provides the following definitions:

Place means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the *place* itself, its *fabric*, *setting*, *use*, *associations*, *meanings*, records, *related places* and *related objects*. Places may have a range of values for different individuals or groups.

Fabric means all the physical material of the *place* including elements, fixtures, contents and objects.

Conservation means all the processes of looking after a *place* so as to retain its *cultural significance*.

Maintenance means the continuous protective care of a *place*, and its *setting*. Maintenance is to be distinguished from repair which involves *restoration* or *reconstruction*.

Preservation means maintaining a *place* in its existing state and retarding deterioration.

Restoration means returning a *place* to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.

Reconstruction means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material.

Adaptation means changing a *place* to suit the existing *use* or a proposed use.

Use means the functions of a *place*, including the activities and traditional and customary practices that may occur at the place or are dependent on the place.

Compatible use means a *use* which respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.

Setting means the immediate and extended environment of a *place* that is part of or contributes to its *cultural significance* and distinctive character.

Related place means a *place* that contributes to the *cultural significance* of another place.

Related object means an object that contributes to the cultural significance of a place but is not at the place.

Associations mean the connections that exist between people and a place.

Meanings denote what a place signifies, indicates, evokes or expresses to people.

Interpretation means all the ways of presenting the cultural significance of a place.

2. Site identification

The study area is located at 215 Badgerys Creek Road, Bringelly within the Bradfield City Centre of the Western Parkland City. It is legally defined as part of Lot 10, DP 1235662. The First Building is located in the north-western corner of the Bradfield City Centre and has an approximate area of 3 hectares including vehicular connection to Badgerys Creek Road.

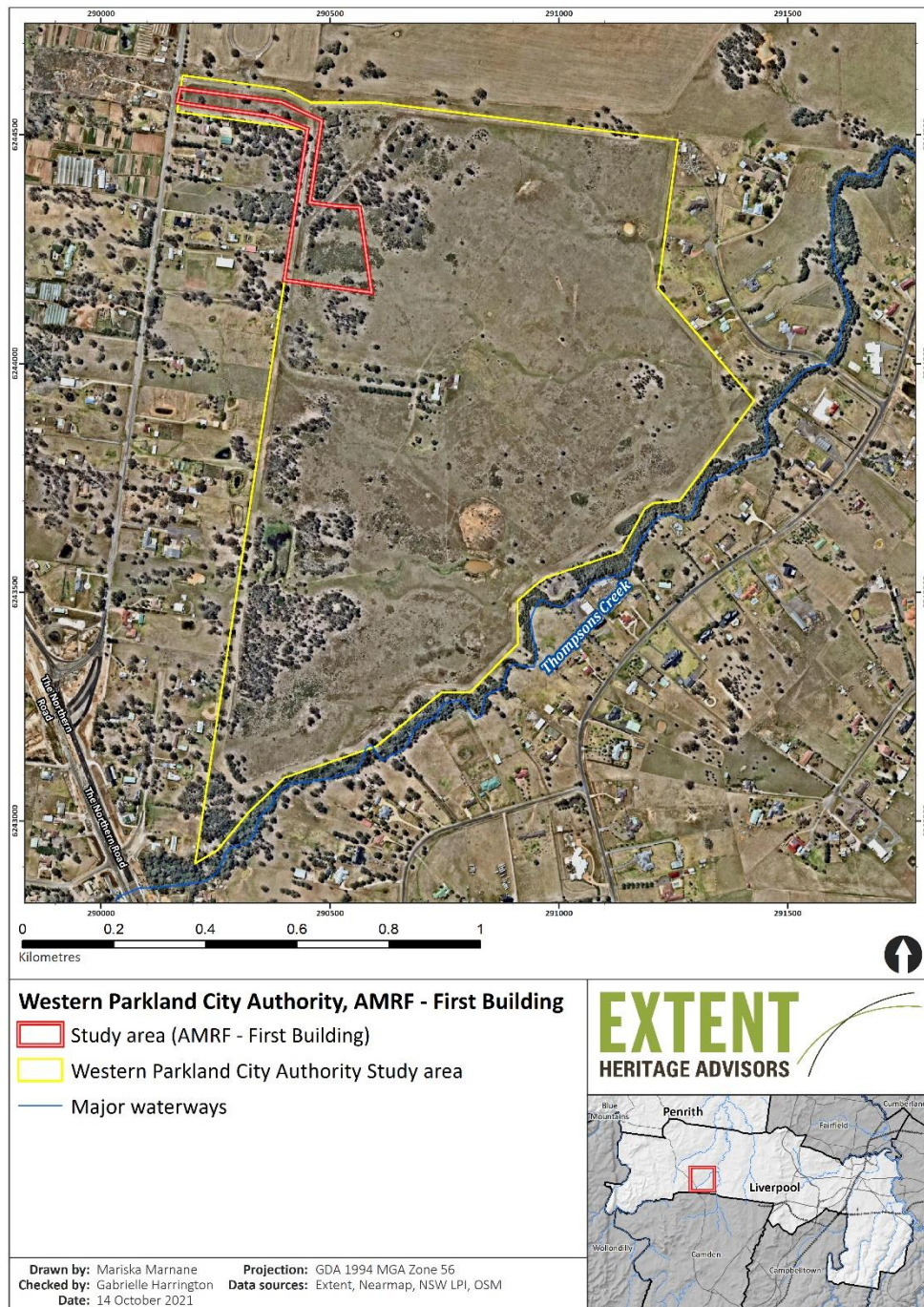


Figure 1. Map indicating location of Bradfield City Centre First Building within the Bradfield City Centre.
Source: NearMaps

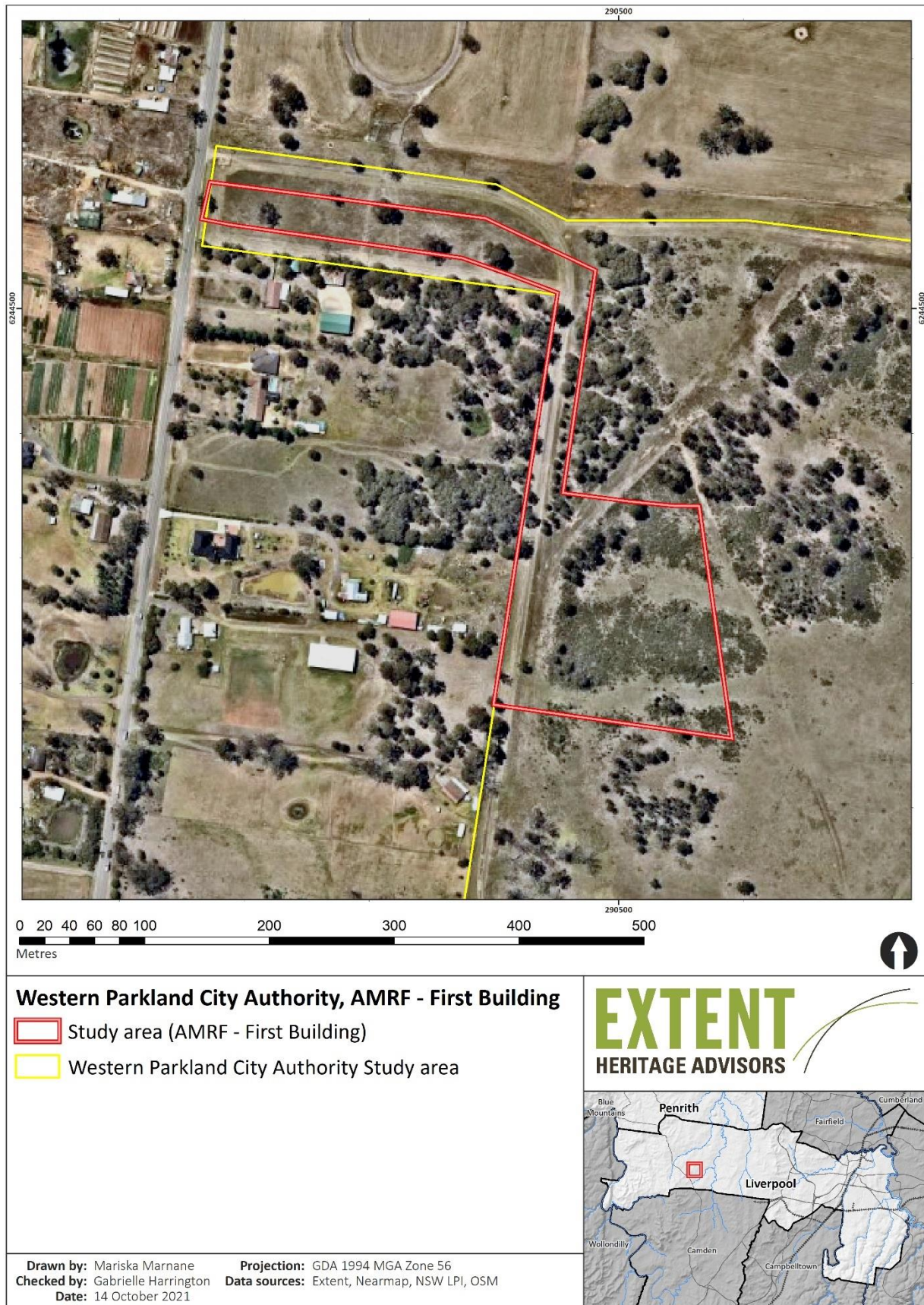


Figure 2. Close up map indicating location of Bradfield City First Building within the Bradfield City Centre.
Source: NearMaps.

3. Planning context

3.1 Heritage status

The study area is not listed on any statutory or non-statutory heritage registers. The following table outlines the heritage status of the study area.

Table 1. Summary of heritage status.

Register/listing	Item listed (Y/N)	Item name	Item number
Statutory listings			
World Heritage List	N	-	-
National Heritage List	N	-	-
Commonwealth Heritage List	N	-	-
State Heritage Register	N	-	-
State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	N	-	-
Non-statutory listings			
Register of the National Trust (NSW)	N	-	-

3.2 Heritage items in the vicinity

There are no local heritage items in the immediate vicinity of the study area that will be impacted as a part of the proposed works. There are two heritage items listed on State Heritage Register and the State Environmental Planning Policy (Western Sydney Aerotropolis) 2020 that are located in the immediate vicinity of the study area.

- Kelvin (Item #00046), 30 The Retreat, Bringelly
- Church of the Holy Innocent (Item #02005), 130 Rossmore Avenue West, Rossmore



Figure 3. Map showing heritage in the vicinity of the study area (outlined in red). State heritage items are hatched in blue and local heritage items are shaded in brown. Source: NSW Planning Portal, accessed October 2021.

4. Historical context

4.1 Introduction

This historical context relies largely on the compilation of primary and secondary historical resources, as well as detailed analysis of historical plans and aerial images.

4.2 Aboriginal occupation pre-1788

Aboriginal people have lived in the area known as NSW for at least 45,000 years (NPWS 2003, 14). To date, more than thirty-eight Aboriginal language groups (previously referred to as ‘tribes’) have been identified within NSW (NPWS 2003, 14). Examples of these broader cultural-linguistic groups in NSW include the Darug (alternative spellings include ‘Dharug,’ ‘Dharuk’ and ‘Dharook’), Darkinjung, Gandangara (also spelled as ‘Gundungarra’), Tharawal (also referred to as ‘Dharawal’), Kuringai and Awabakal (Attenbrow 2010, 23, 32). Since the 1970s, archaeologists and anthropologists working in the Sydney region have largely adopted the nomenclature for cultural-linguistic groups compiled by Capell (1970) and amended by Eades (1976) (Attenbrow 2010). On the basis of this research, the study area is considered to have been occupied by Darug-speaking clans.

The Darug people are generally thought to have lived in clan-based bands of around fifty members each. Each clan retained its own hunting district and moved through Country seasonally (Murray and White 1988). The inland clans, in particular, are also thought to have moved more often according to the season, with summer attracting large numbers of clans to the land around the Nepean and Hawkesbury Rivers, and winter dispersing these clans over the plain and into the mountains (Kohen and Lampert 1987, 357).

4.3 British exploration 1788-1804

Life changed irreversibly for the Darug after the invasion of their lands following the arrival of the First Fleet in 1788. Theft of Country, dispossession, alienation from resources, disease and violence became a reality of life for Aboriginal people in the Sydney Region, shaping this next chapter of history profoundly.

The Aboriginal people of the broader Sydney basin who survived the disease and violence wrought by colonisation were increasingly forced to live on the fringes of colonial society. With access to resources limited, they also became necessarily dependent on the state (see NSW Legislative Council 1845), and thus subjected to increasing levels of government control. Government allocations of blankets and slop clothing, and the bartering of fish and game for sugar, flour and alcohol also reflect the changes that occurred in Aboriginal economies and lifeways at this time.

Notwithstanding the devastation caused in this period, it is critical to note that while many of their kin had either perished or been forced away from their traditional lands, there are records of Aboriginal people who remained on Country throughout the nineteenth century. Campaigns

of resistance were central to this survival and records of them across the broader Western Sydney region illustrate Aboriginal people's experiences of this period.

The rapid expansion of British settlement in the Cumberland Plains from the early nineteenth century, led to increasing violence between colonists and Aboriginal people in the region. Between 1814 and 1816, tensions rose dramatically as a result of drought and the increasing numbers of Europeans moving to the area. This encroachment restricted Aboriginal people's access to Country and resources. The violence escalated during this period, culminating on 17 April 1816 in what is referred to as the Appin Massacre (35 km south of the study area). Although these events of conflict did not occur within the study area, they are important in demonstrating the Aboriginal experience of European settlement in Australia.

4.4 Early settlement of the Bringelly district 1805-1850

Europeans first explored the Nepean district approximately a decade before they returned to settle permanently in the area. During 1788, Governor Arthur Phillip led parties to explore the outlying regions of Sydney. From a rise near the present Pennant Hills, Phillip first observed the Blue Mountains and the southern portion of the Lansdowne Hills. From the rising of these mountains he had no doubt a large river would be found although at the time this search proved unsuccessful (Murray and White, 1988). In June 1789, Captain Watkin Tench (marine in charge of the new outpost at Rose Hill) led an expeditionary party to the banks of the Nepean River 'through a country untrodden before by a European foot' (Power, 1983 in RMS 2016, 21). In 1791 Tench undertook a second exploratory journey through the study area travelling from Prospect Hill in a south-southwest direction towards the upper Nepean. The course of his outward journey took him through the lowland near the junction of South Creek and Kemps Creek and then through Bringelly. His return route was east through what is now Leppington and Hoxton Park.

In 1795 Henry Hacking investigated the region of the Upper Nepean to confirm reports of the presence of the cattle that had escaped from Sydney Cove in 1788. His journey south took his party along the line of Tench's return route.

Former convict John Warby received 50 acres at Prospect and in 1803 was appointed stockman of the wild cattle at the Cowpastures. Warby appears to have created a track from Prospect to the Cowpastures. The track passed through country described as the Devil's Back and established the main route for the movement of Europeans between Parramatta and the Camden district, later formalised as the Cowpasture Road.

The study area remained relatively undisturbed until 1805 and 1806 at which time James Meehan undertook initial surveys for land grants along South Creek. The district was named Bringelly. The first grants of 1805 included 680 acres to Nicholas Bayly, 300 acres to Richard Fitzgerald and 300 acres to Ezekiel Wood. All were located near the junction of South Creek and Badgerys Creek. During the next five years Meehan would lay out grants for Anthony Fenn Kemp (Mt Vernon) and John Driver (200 acres) adjacent to Kemps Creek. All these early grants were within 5 km of the only road in the district (Cowpasture Road).

During the interregnum between Bligh's and Macquarie's administration Colonel Paterson, the interim Governor may have granted a considerable quantity of land since Macquarie affirmed grants in excess of 2,200 acres backdated to the first day of his administration (1 January 1810). These grants were in the Badgerys Creek Precinct and the Wianamatta-South Creek Precinct with frontages to South Creek, Kemps Creek and Badgerys Creek.

It was not until 1818 that land was first granted within the present-day suburb of Bringelly. Charles Reid, Thomas Laycock, Penelope Lucas were granted land on 26 November 1818 and William Hutchinson on 30 June 1823.

By 1821 The Northern Road ('Bringelly' road) had been formed connecting the Camden district with Richmond (Sydney Gazette 15 September 1821, 1). This road also crossed the great Western Road in the north providing access to Penrith and St Marys.

During the mid-to-late 1820s several grants were absorbed and consolidated to create large estates, held in the main by absentee landholders. Darcy Wentworth increased his 2,500-acre holdings by absorbing the adjoining properties of Ellis Bent, William Gore, John Piper, John Palmer (Jr) and Mary Birch such that at the time of his death in 1827 his Bringelly holdings consisted of 8,515 acres. Similarly, Captain Philip Parker King purchased or obtained 999-year leases on properties totalling 2,465 acres between 1820 and 1836.

One of the most important, and only surviving example of building complex associated with a large pastoral estate within the study area is the property now known as Kelvin Park (Figure 5). This was originally a 600-acre grant made to Thomas Laycock (Jr) on 26 November 1818 and known initially as 'Cottage Vale'. The adjoining 600-acre grant to the south was made out to Charles Reid on the same date and referred to as 'Cottage Grove'. Laycock absorbed the Reid property and the consolidated estate was known as 'The Retreat'. In 1824 the estate was sold to Edward Riley and acquired by Provost Marshal John Thomas Campbell one month later. Campbell subsequently leased the property to the Australian Agricultural Company in 1825. Campbell died in 1830 and in 1837 the property was purchased by Alfred Kennerley from Campbell's heir. The estate remained in the hands of the Kennerley family until 1853 at which time Kennerley returned briefly to England. The main farm complex and homestead survive substantially intact to the north east of the study area.

The early land grants are shown in Figure 4 and described in Table 2 below.

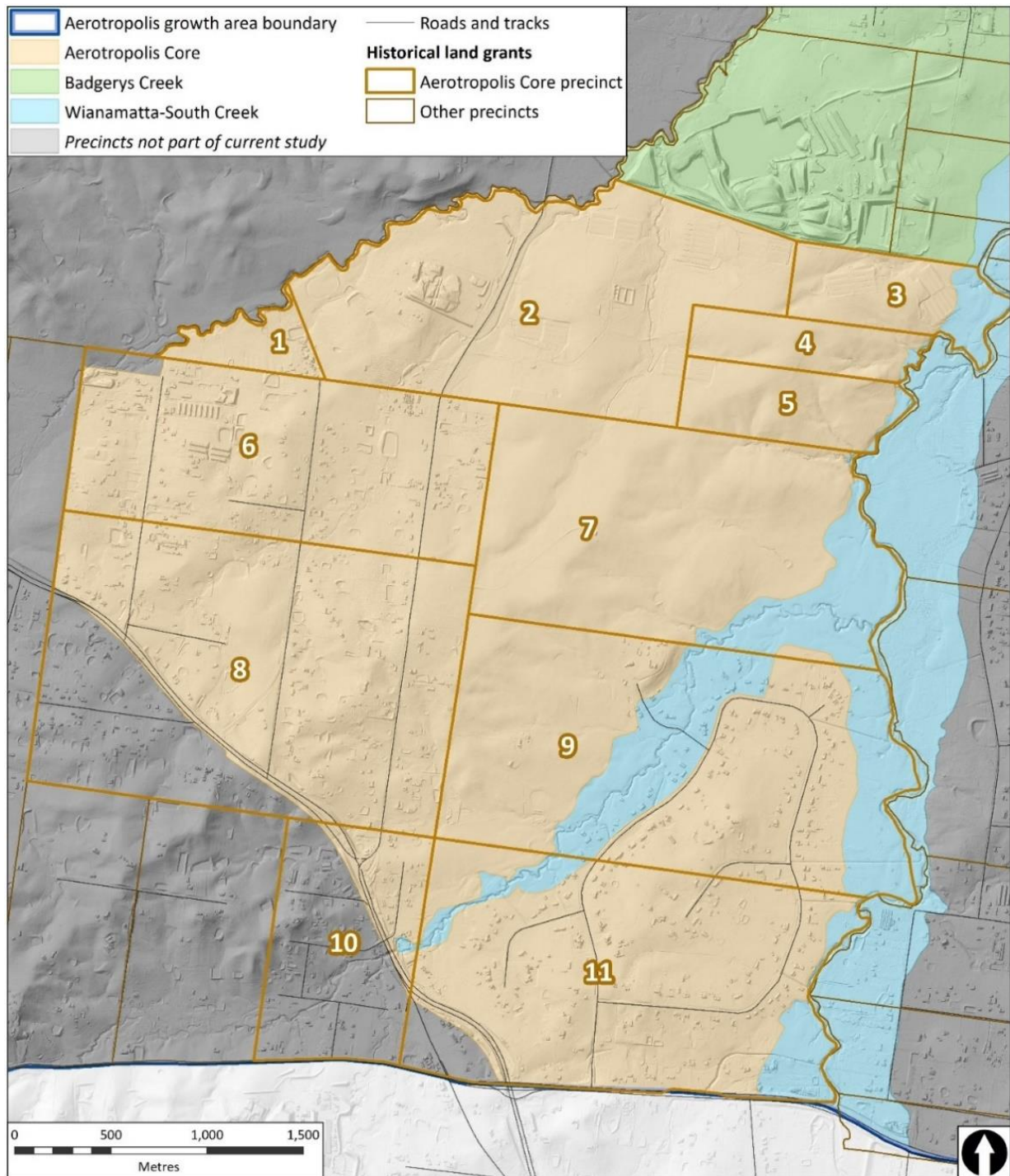


Figure 4 Early land grants within the Aerotropolis Core Precinct. Source Extent Heritage 2021.

Table 2. Description of early land grants within the Aerotropolis Core Precinct

No	Grantee	Area (acres)	Parish	Portion	Date of grant	Estate name
1	William White	40	Bringelly	36	11 Sep 1817	
2	Michael Robinson	500	Bringelly	35	11 Sep 1817	<i>St Aubyns</i>
3	Gustavus A Low	100	Bringelly	26	11 Sep 1817	<i>Low Brook</i>
4	Matthew Hughes	65	Bringelly	25	8 Oct 1816	
5	William Hayes	100	Bringelly	24	12 Mar 1818	<i>Bally-hayes</i>
6	Edward Wright	350	Bringelly	16	5 Apr 1821	
7	Penelope Lucas	500	Bringelly	23	26 Nov 1818	<i>Lucas Farm</i>
8	William Hutchinson	700	Bringelly	17	30 Jun 1823	
9	Thomas Laycock	600	Bringelly	22	26 Nov 1818	<i>Cottage Vale</i>
10	William Hutchinson	220	Bringelly	20	13 Nov 1818	
11	Charles Reid	600	Bringelly	21	26 Nov 1818	<i>Cottage Grove</i>



Figure 5. Kelvin Park, main homestead with outbuildings visible in the rear, looking north. Source: *Extent Heritage* 2020

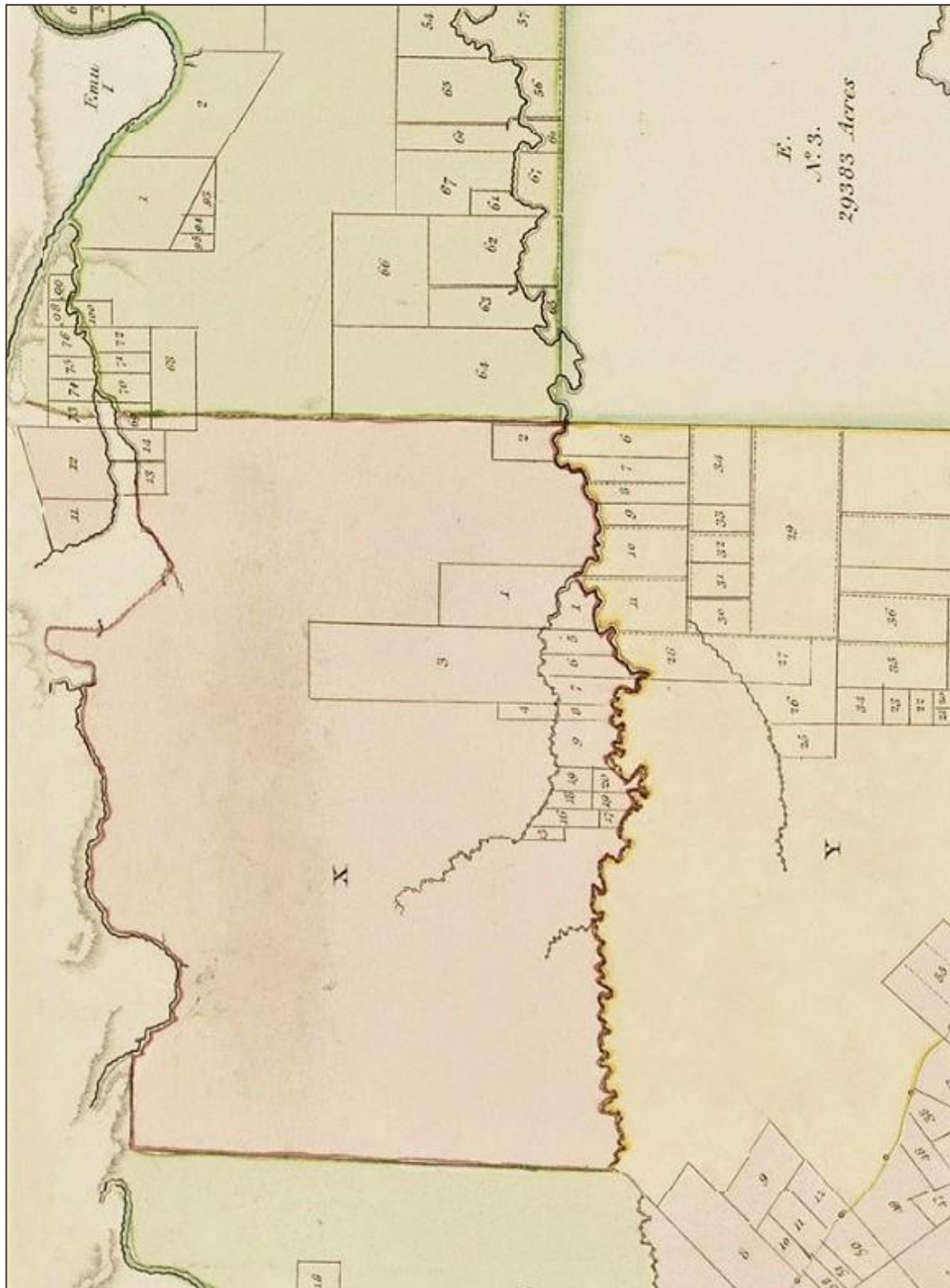


Figure 6. Detail of Plan of the allotments of ground, granted from the Crown in New South Wales. Note: The Bringelly land district is pink (marked 'X'), north at top. *Source:* J. Burr & G. Ballisat. Burr, J.: London, 1814 SLNSW Z/Cb 81/6

The late 1830s and early 1840s saw a convergence of factors that resulted in a decline in the viability of many large estates. The end of transportation with the resulting loss of cheap labour and severe drought between 1838 and 1840 resulted in extensive crop failures. Falling wool prices contributed to an economic depression during the 1840s that saw capitalists that had borrowed heavily in the 1830s in order to purchase land were unable to service their debts. Some owners of the larger estates sought relief by providing tenancies. The configuration of the tenancies was generally ad hoc in nature.

Most of the large holdings in the Bringelly district survived intact into the second half of the nineteenth century. These included William Hutchinson's 'Hutchinsonian Farm' that was noted for bloodstock breeding. There was no village of Bringelly during this period.

During the second half of the nineteenth century many of the large landholders within the study area struggled to maintain their properties as viable concerns. Most grazing properties ceased sheep breeding and moved to agistment and fattening of cattle. There were a number of attempts to promote the district for dairying, but this form of agricultural pursuit required good pasture and a reliable water supply, both of which were absent. The only form of stock-raising that held any promise was horse breeding. The larger estates that did survive the economic

difficulties of the 1840s relied in great part on tenancies. The tenancies were usually small family farms that relied primarily on stock raising.

Bringelly had the potential to develop as a regional service town. It was located at the intersection of The Northern Road and Bringelly Road. It was however encircled by the 'Hutchinsonian Estate' that remained in private hands until the 1880s. For much of the later nineteenth century the estate lay fallow resulting in significant regrowth. Portions of the estate were cleared, and the property was subdivided and put up for sale. The initial sale failed, and the property was resurveyed and subdivided and placed on the market in 1892. By this stage Bringelly had a post office (on The Northern Road north of Bringelly Road) and a public school. This subdivision was only partially successful, and few lots were taken up. The village of Bringelly failed to develop.

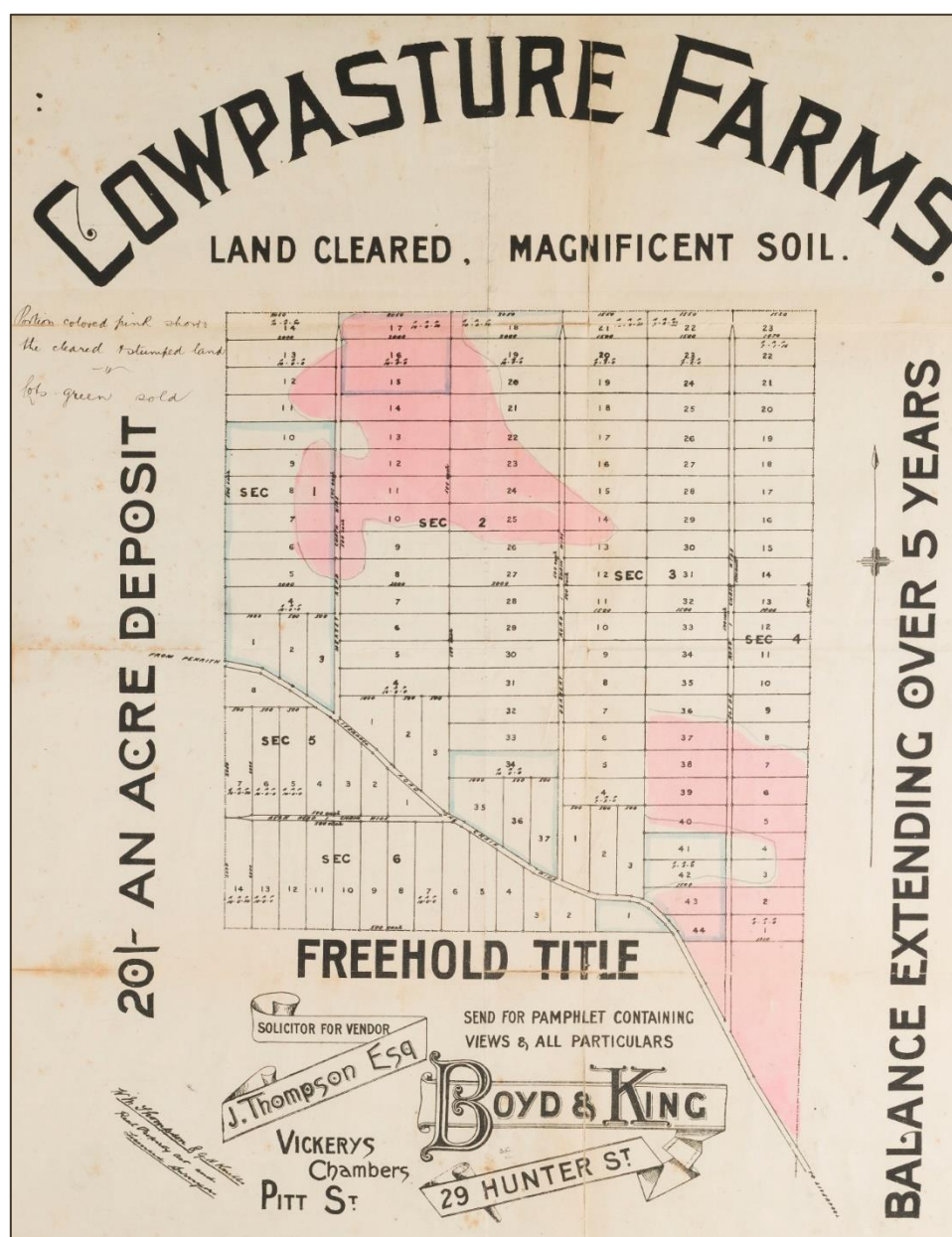


Figure 8. Cowpasture Farms, in 7 and 10-acre blocks, 1892. Source: SLNSW DSM/Q981.2/B



Figure 9. Cowpasture Farms, in 7 and 10-acre blocks, view of property from main road, 1892. Note: Bringelly Road looking west. Source: SLNSW DSM/Q981.2/B

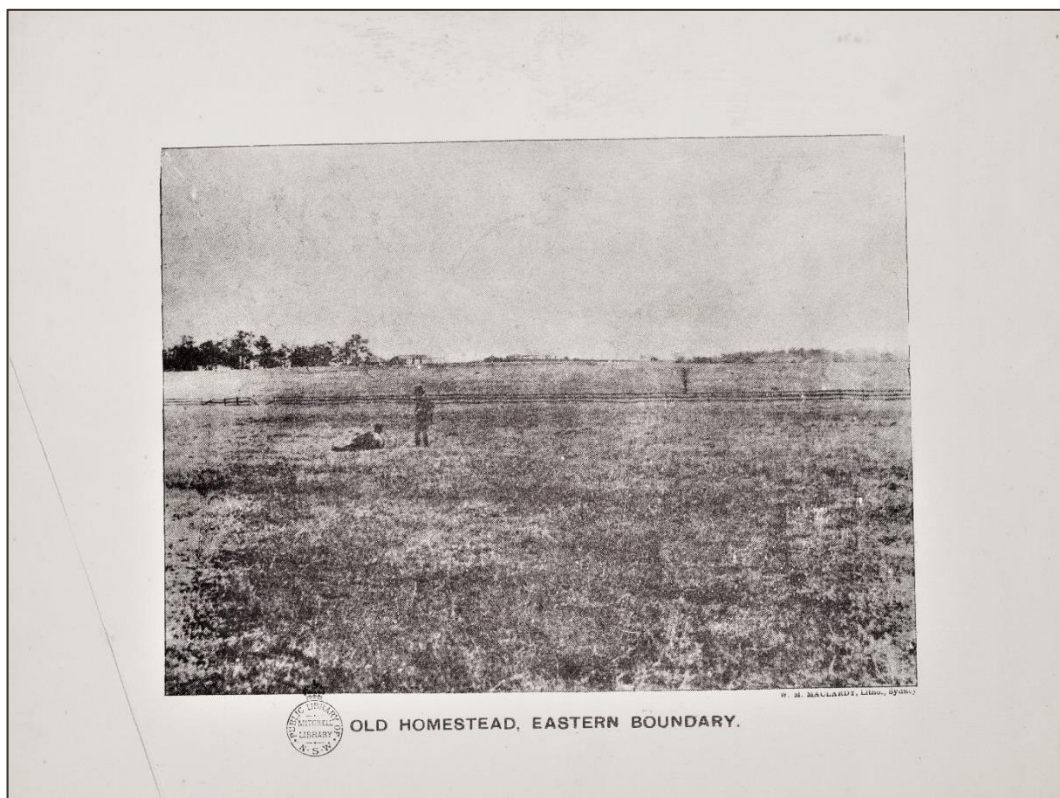


Figure 10. Cowpasture Farms, in 7 and 10-acre blocks, 1892. Note: Old homestead [Kelvin Park?] eastern boundary. Source: SLNSW DSM/Q981.2/B

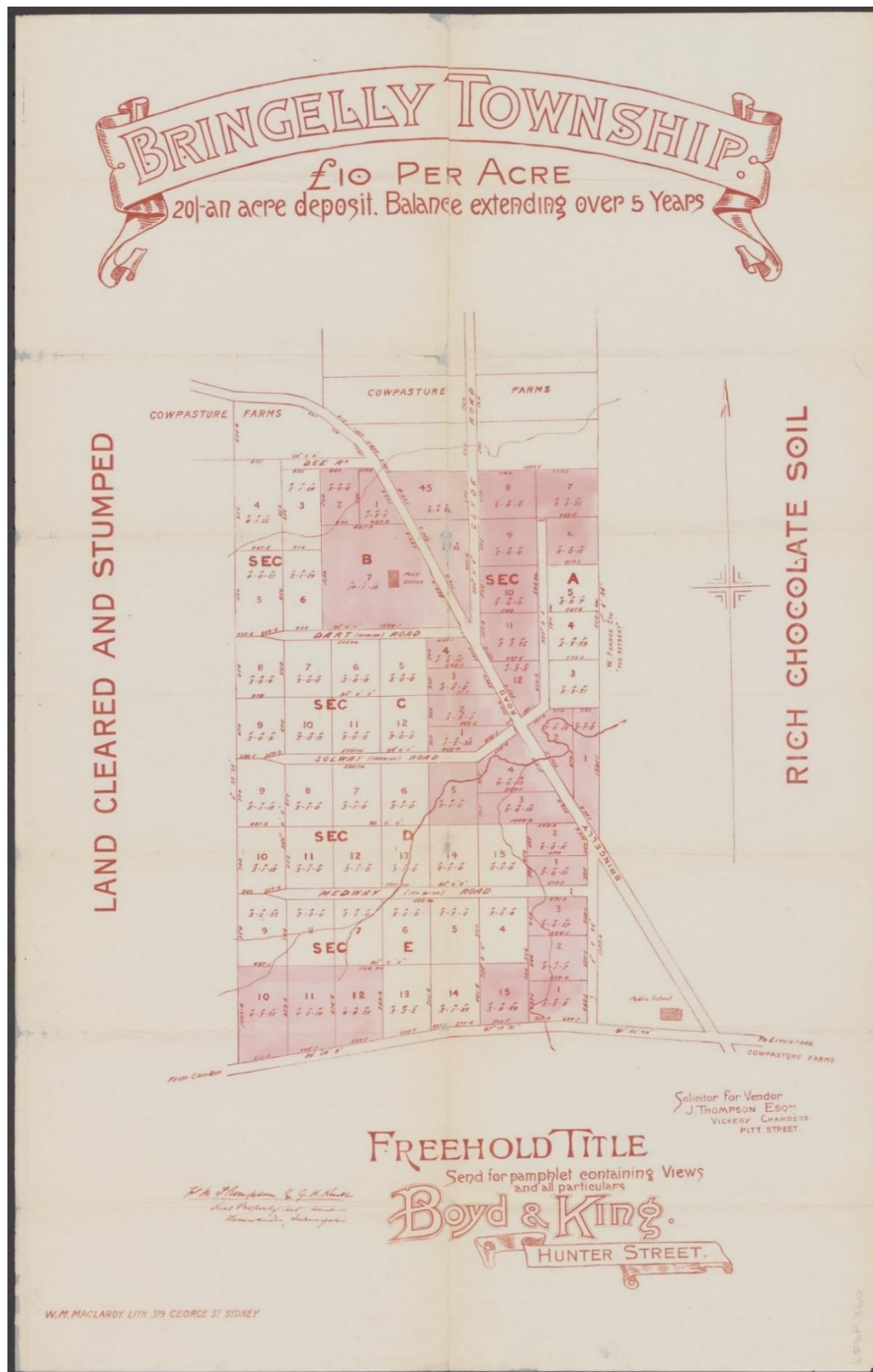


Figure 11. Bringelly Township, 1892. Source: NLA MAP LFSP 360, Folder 28

4.6 Early twentieth century development 1900-1945

By 1900 the second generation of large landowners had subdivided most of their properties. Many of the smaller lots had been purchased by local families that had been former tenants. During this period these holdings were consolidated and expanded with the names Braithwaite, Adams, Nobbs, McKaughan, Sales, and Hughes.

The principal agricultural activities undertaken within the district included dairying, orcharding, pig-raising, potato-growing, grazing and grain production. Industrial activities were mainly associated with the processing of agricultural products. A small abattoir was located at Luddenham and a butter factory at Rossmore. Bacon-curing was also undertaken on a number of larger properties including Fleurs. One of the principal activities undertaken in the first two decades of the twentieth century was wood-cutting. The dereliction of many of the larger grazing properties during the latter part of the nineteenth century saw regrowth of native timbers suitable for use as firewood. These activities formed the main stay of the local economy until the Second World War.

The presence of large tracts of cleared land close to the main settled district in New South Wales also saw the Commonwealth take notice. From 19 March 1942 to 28 February 1945 the Commonwealth leased a large portion of Kelvin Park (known then as 'Kelvin') from Lorna MacDonald. This would form the RAAF Bringelly Dispersal Area attached to the parent airfield at Fleurs. The land between Thompsons Creek and South Creek was developed as an Emergency Landing Ground and included new fencing, drainage, aircraft hide-outs and other infrastructure. Figure 14 illustrates the location dispersal area, landing strip and fence lines. The area to the west of Thompsons Creek (including the study area) remained substantially unchanged since all infrastructure associated with the strip was concealed in the stands of trees immediately surrounding the strip. The main house at Kelvin was leased as officer accommodation.



Figure 12. Map of the manoeuvre area Liverpool NSW, 1906. *Source:* NLA, NLA.OBJ-232733847

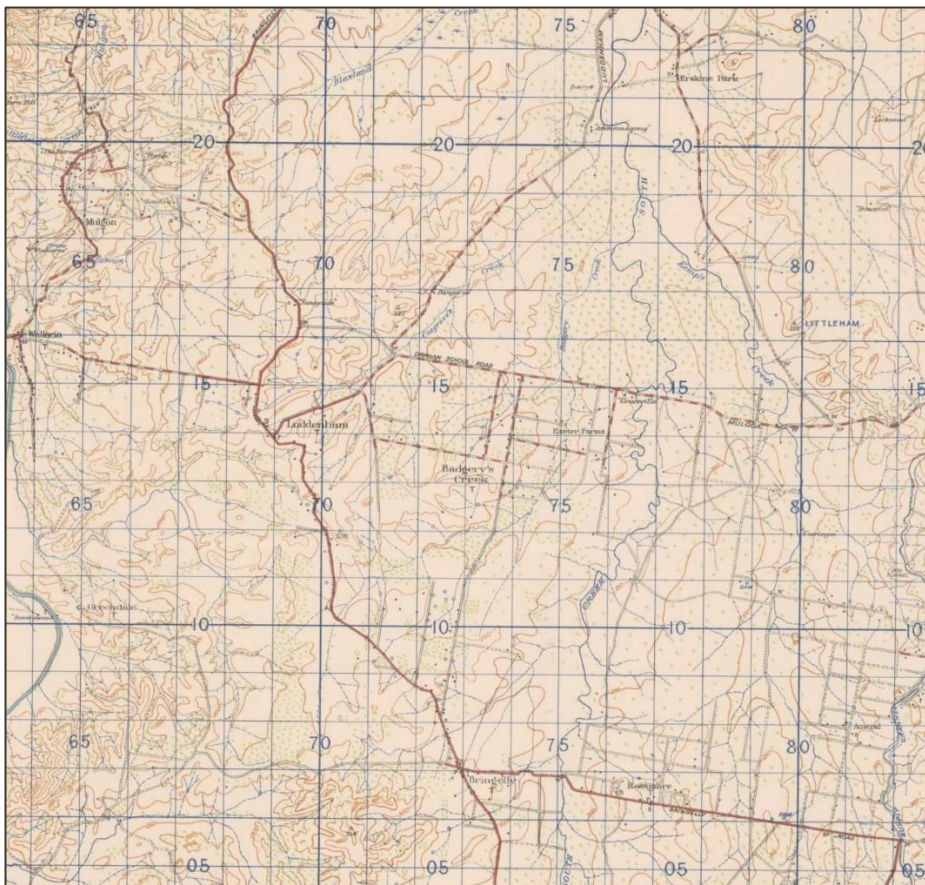


Figure 13. Liverpool NSW, 1935 (Information to 1927) detail. *Source:* NLA, NLA.OBJ-446266912

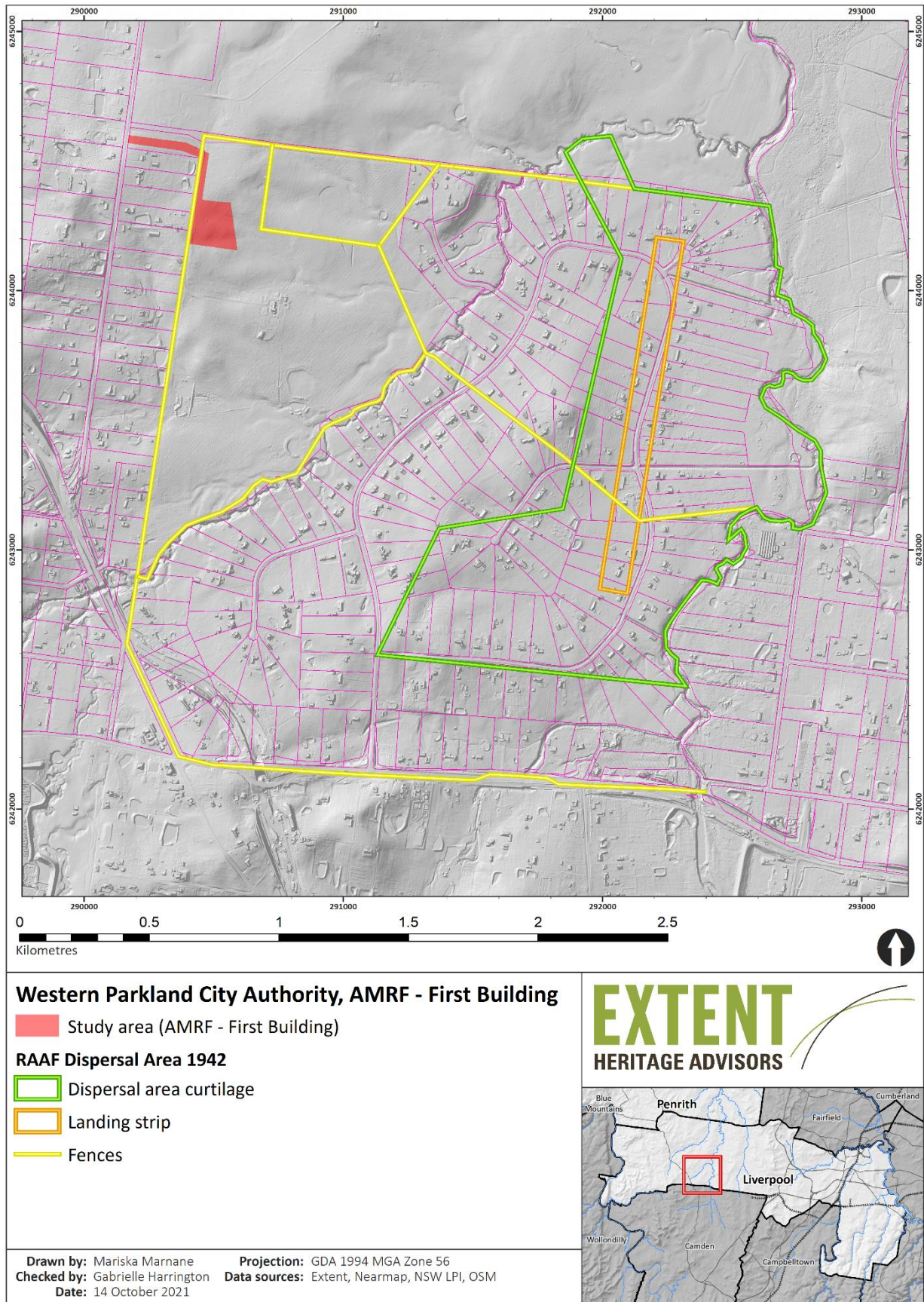


Figure 14. RAAF Bringelly Dispersal Area 1942. Source: NAA SP16/4 1892

4.7 Late twentieth century development 1945-2000

Following the Second World War the region returned to primarily agricultural activities. The introduction of the County of Cumberland Planning Scheme placed the study area within the rural zone adjacent to the green belt that was to encircle Sydney. The County of Cumberland Council, tasked with implementing the scheme, sought to address the problems associated with the rapid development of the County within an unplanned framework. The key problems identified were over-centralisation and congestion of industry, congested traffic, slum housing, conflicting land uses, unregulated residential sprawl, the provision of basic infrastructure and the destruction of the natural beauty of the County (Abercrombie 2008, 25). The Scheme meant that subdivisions within the study area could not be smaller than 5-acres. This resulted in a spate of 5-acre subdivisions during the early 1950s, many of these lots were taken up by migrant families with poultry production and market-gardening being the main agricultural enterprises.

RAAF Bringelly Receiving Station

During the Second World War the Royal Australian Air Force (RAAF) developed an area as an Emergency Landing Ground, this was essentially a grass strip with little or no associated infrastructure. In 1954 the Commonwealth commenced purchasing of land for the construction of a RAAF Radio Receiving Station immediately adjacent to the OTC station. Delays in purchasing the properties resulted in construction commencing in 1959 (Godden Mackay 1997, 5–8). The radio receiving station was designed to receive international radio telegrams and telephone calls and from ships at sea. The station replaced an earlier station at La Perouse and featured thirty-two rhombic aerials on masts from 70 to 120 feet high. The station was to operate in concert with RAAF Londonderry Transmitting Station and subordinate to RAAF Glenbrook (Godden Mackay 1997, 5–8). The historical aerial photograph shown in Figure 15 and Figure 16 show the development of the RAAF Bringelly site between 1947 and 1965 and confirm the lack of development within the study area.

Advances in technology rendered the radio receiving station obsolete and was downgraded in the late 1980s (AMC 2014, 28). During the 1990s and into the 2000s buildings and infrastructure were progressively removed leaving only the core structures and the main aerial intact.

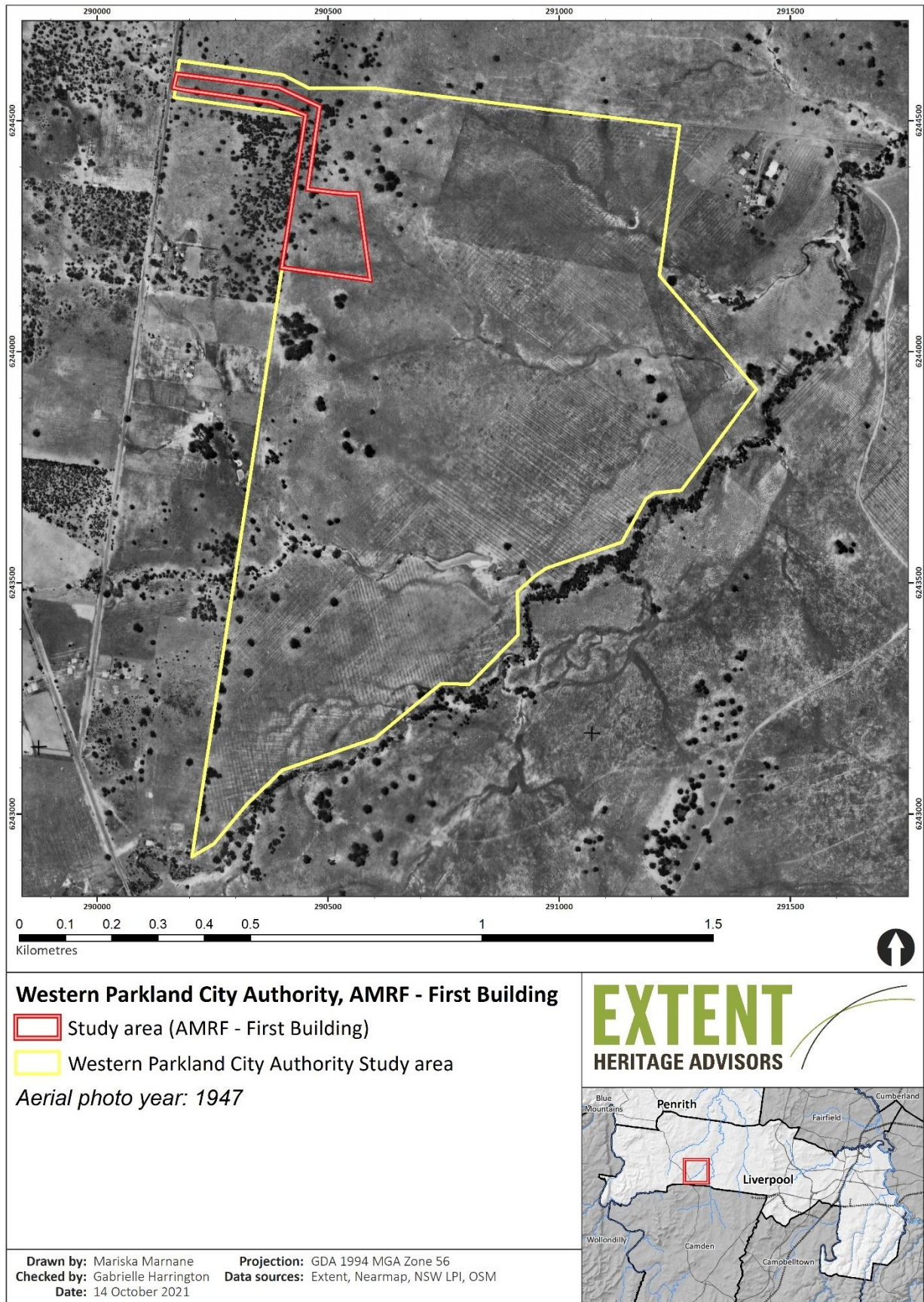


Figure 15. Aerial image of site 1947. Source: NSW LPI.

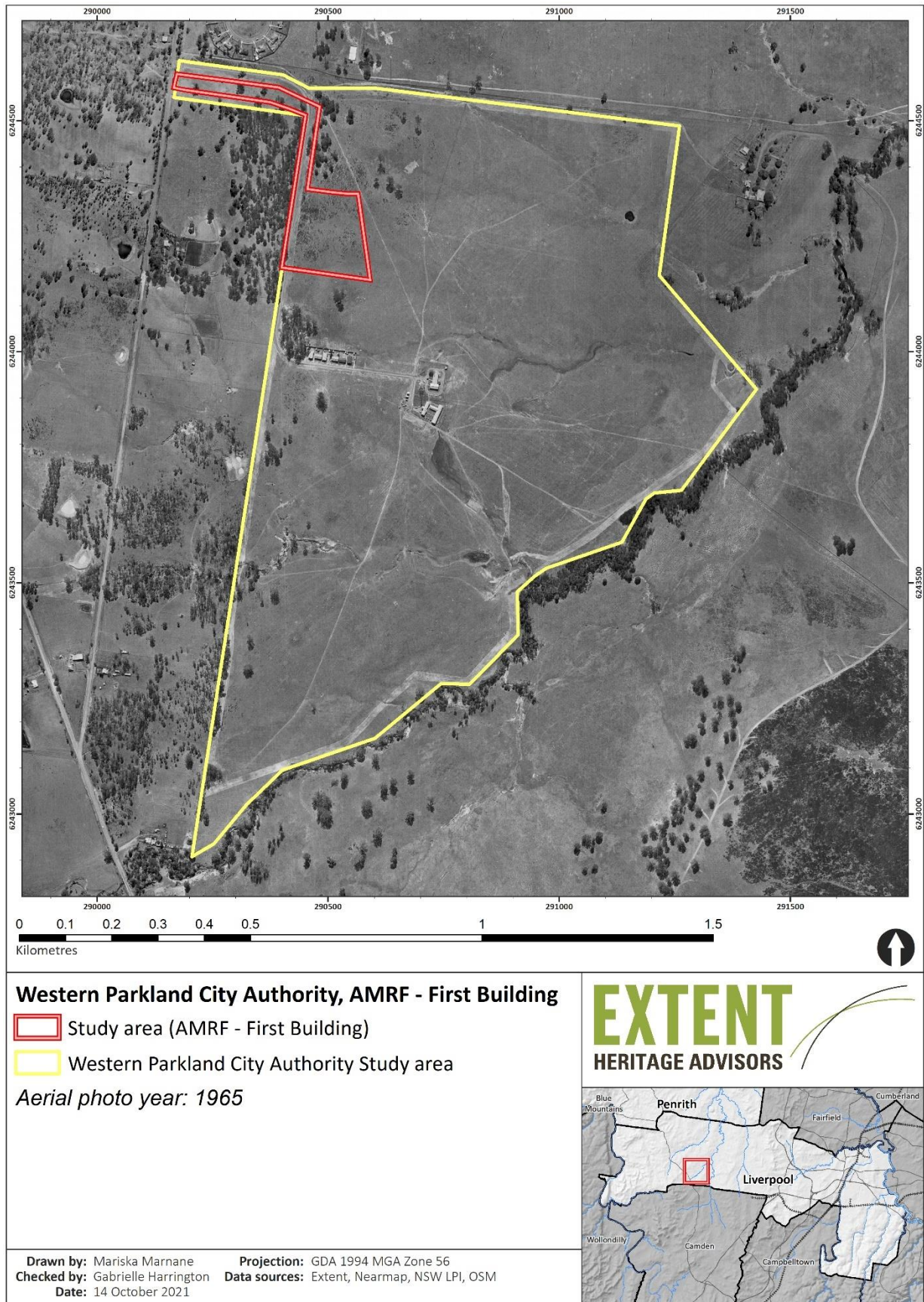


Figure 16. Aerial image of site 1965. Source: NSW LPI.

4.8 Post-2000 intensive development

In the period after 2000 the area surrounding the study area has undergone significant changes in select areas. Regarding agriculture there has been a significant growth in market-gardening along South Creek, and a general decline in grazing. Similarly, there has been an increase in the use of glasshouses and a general intensification of cultivation where soils and water permit.

There has also been significant upgrading of existing main roads, particularly The Northern Road. Access to main roads has also seen the development of warehousing and transport facilities on former rural properties.

The area is in the process of being transformed significantly over the coming decades with the development in the initial Aerotropolis precincts, including the new Bradfield City Centre, at the Aerotropolis Core Precinct at Bringelly. This study area is the proposed location of the AMRF First Building to be constructed within the Bradfield City Centre. The Western Sydney International Airport acts as a catalyst for this development and is currently under construction with the first runway set to open in 2026. The region will also gain its first rail link with the construction of the Sydney Metro-Western Sydney Airport line, from St Marys to the Aerotropolis Core. Further major road links are proposed with the construction of the M12 and Outer Sydney Orbital.

5. Physical description

Extent Heritage carried out a physical assessment of the study area on 18 October 2021. The analysis involved an investigation into the built form and landscape setting. It does not provide a detailed investigation of all fabric but an overview of the elements of the place to assist in determining significance.

5.1 The site of the First Building

The study area is located at 215 Badgerys Creek Road, Bringelly within the Bradfield City Centre of the Western Parkland City. The study area is located in the north-western corner of the Bradfield City Centre and covers an approximate area of 3 hectares. The area is accessed off Badgerys Creek Road via an unsealed road to Badgerys Creek Road.

The study area consists of an entirely rural area, located to the west of Thompsons Creek. The area is set on a hill and slopes down towards the east. had been largely cleared of vegetation and consists predominately of low-lying dense scrub with several established mature trees. There are no built features within the study area.



Figure 17. View east along southern boundary of study area.



Figure 18. View south along western boundary of study area.



Figure 19. View north along western boundary of study area.



Figure 20. Overview of study area from the south-western boundary of the site.



Figure 21. Western boundary of the study area facing east.



Figure 22. Northeast corner of study area looking south.



Figure 23. View west along northern boundary of study area from north-east corner.



Figure 24. View south-east from north-eastern corner of site. Note the low-lying scrub covering the majority of the site.



Figure 25. View west from centre of study area showing rural landscape.



Figure 26. View north west from southern boundary of the study area showing Kelvin at 30 The Retreat.

5.2 Settings and views

The study area is set within an expansive rural setting with low lying scrub and mature trees. The majority of the area to the north, south and east of the study area has been cleared, although there are a number of structures associated with the historical use of the site by the RAAF. This is centred around the main building and transmission tower located to the south of the study area. To the west of the study area are rural residential allotments set along Badgerys Creek Road. Views west, however, are not visible from the study area as there are a line of mature trees along the western boundary of the site.

The significant views from the study area are directly east towards the SHR item 'Kelvin' at 30 The Retreat, Bringelly. The rural setting of the study area contributes to the significant rural views and setting of this SHR item. There are no views from the study area towards the SHR item 'Church of the Holy Innocents' at 130 Rossmore Avenue West, Rossmore. Figures 27 to 29 illustrates the key views to and from the study area. Figure 30 maps the location of these photos using arrows to indicate the direction each photograph was taken.



Figure 27. Northeast corner of study area looking southeast. Note view towards the RAAF transmission tower (shown by pink arrow).



Figure 28. Southern boundary of study area showing view north - east towards Kelvin homestead (shown by orange arrow).



Figure 29. View from Kelvin looking west towards the study area (shown by green arrow).

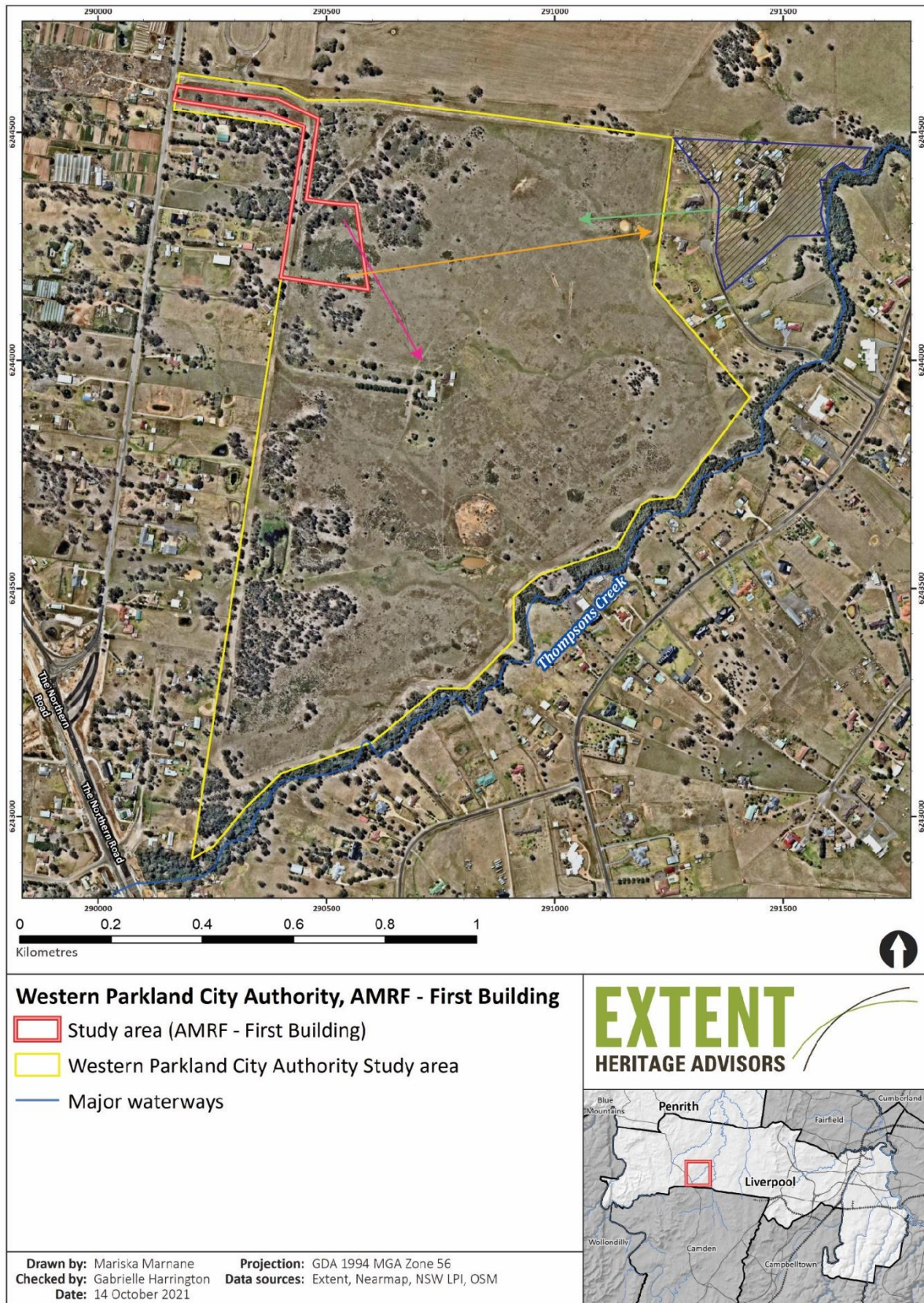


Figure 30. Map showing key views relating to the study area and heritage in the vicinity. Kelvin (SHR item) hatched in blue.

6. Historical archaeological potential

6.1 Introduction

Archaeological potential refers to the likelihood of a site to contain evidence of previous phases of historical occupation. Archaeological features and deposits in the form of structural remains and artefact bearing deposits are tangible evidence of previous occupation and human activities. The study area's archaeological potential is usually presented in accordance with (1) the types of potential archaeological remains associated with features or activities that may survive at the site, (2) a date indicating the year by which the resource is known to have been constructed, (3) the likely extent and integrity of relics, i.e. the predicted level of survival, which is expressed in accordance with the following rankings:

- High: it is likely that archaeological relics associated with a particular historical phase or features survive intact.
- Moderate: it is possible that some archaeological relics associated with a particular historical phase or features survive, but they may have been subject to some disturbance.
- Low: it is unlikely that archaeological relics associated with a particular historical phase or features survive.
- Nil: the degree of ground disturbance indicates that there is no potential for any significant archaeological relics to be preserved.

This section identifies where archaeological evidence is likely to be found at the site, and to what extent it may be preserved.

6.2 Phases of development and historical archaeological

Phase 1: Aboriginal occupation pre-1788

The archaeological evidence associated with the pre-1788 Aboriginal occupation of the study area has been examined in the Bradfield City Centre – First Building Aboriginal Due Diligence Assessment in preparation by Extent Heritage (October 2021).

Phase 2: British exploration and survey, 1788-1804

Activities undertaken during this phase include exploration and first surveys. These activities are unlikely to have left physical traces ('relics') on the site. Survey marks, such as blazed trees have not been located despite an investigation of the site and an examination of mature trees in particular.

Phase 3: Early settlement, 1805-1850

Activities undertaken during this phase of development are primarily associated with the formation and operation of 'The Retreat' ('Kelvin'). The study area was cleared of trees and converted to grazing land. Most developments were concentrated around the homestead itself

(outside the study area). Archaeological remains are likely to be restricted to the remains of former fence lines and tracks.

Phase 4: Nineteenth century subdivision 1850-1900

As for Phase 3.

Phase 5: Early twentieth century development 1900-1945

As for Phase 3. Although part of the property west of Thompsons Creek was occupied by the RAAF as part of the Bringelly Dispersal Area all infrastructure appears to have been located east of Thompsons Creek.

Phase 6: Late twentieth century development 1945-2000

The main activity associated with this phase of the site's development was the operation of the RAAF Bringelly Receiving Station. Subsurface remains associated with the phase may include footings associated with staff housing, remains of the aerial array, remains of the water tank and roads and tracks.

Phase 7: Post-2000 Intensive Development

Activities associated with this phase of development do not fall within the scope of archaeological investigation.

6.3 Summary of historical archaeological potential

Based on the information presented in the historical context and an analysis of historical aerial photographs and maps, the extent and integrity of relics associated with archaeological sites identified within the Aerocore precinct varies from Low to Moderate, depending on the phase of development. Within the study area the archaeological potential for all phases is assessed as being Low.

Table 3 Summary of historical archaeological potential

Phase	Site feature or site activities	Potential remains	Level [or likelihood] of survival within Aerocore	Level [or likelihood] of survival within study area	Research potential
1: Aboriginal occupation pre-1788	n/a	n/a	n/a	n/a	n/a
2: British exploration and survey 1788-1804	Survey	Survey marks	Low	Low	Moderate
3: Early settlement, 1805-1850	Grazing	Postholes, fence lines, tracks	Low	Low	Low
4: Nineteenth century subdivision 1850-1900	Grazing	Postholes, fence lines, tracks	Low	Low	Low

5: Early twentieth century development 1900-1945	Grazing	Postholes, fence lines, tracks	Low	Low	Low
6: Late twentieth century development 1945-2000	RAAF Bringelly	Subsurface remains of staff housing, bases for aerial array, roads, water tank site	Moderate	Low	Moderate
7: Post-2000 Intensive Development	n/a	n/a	n/a	n/a	n/a
All Phases	Lost or discarded artefacts	Isolated artefacts	Low	Low	Low

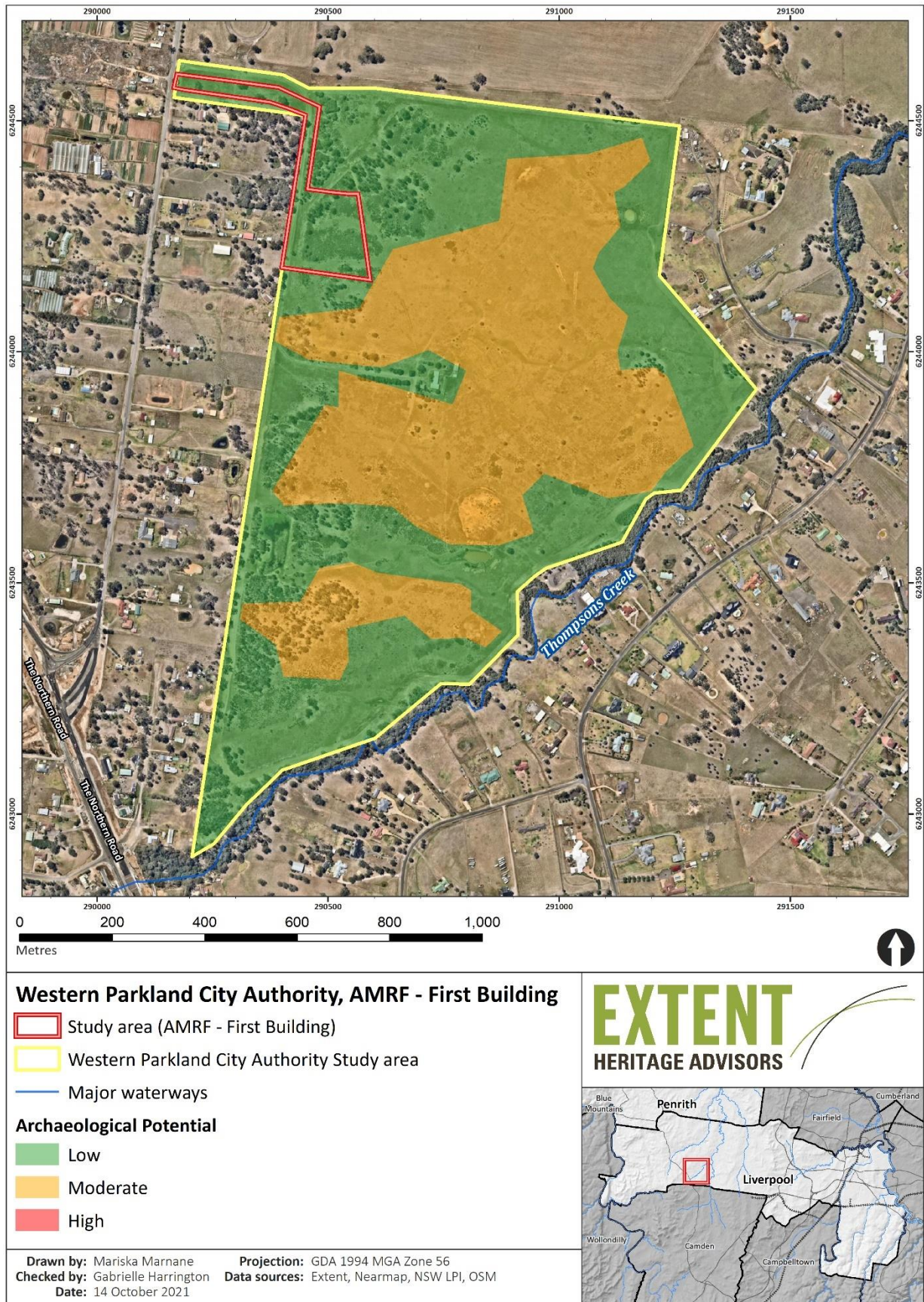


Figure 31. Historical archaeological potential

7. Assessment of heritage significance

The NSW Heritage Manual was developed by the Heritage Office and the former NSW Department of Urban Affairs and Planning to provide the basis for an assessment of heritage significance of an item or place. This is achieved by evaluating the place or items significance in reference to specific criteria, which can be applied at a national, state, or local level (Heritage Office 2001). The NSW Assessing Heritage Significance details these specific criteria which are quoted in Section 6.1.1 below. (Heritage Office 2001, 9). The significance of the study area is assessed against these criteria below.

7.1.1 Assessment against criteria

Criterion (a) An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (b) An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (c) An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Criterion (d) An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

Criterion (e) An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (g) An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments. (or a class of the local area's cultural or natural places; or cultural or natural environments.)

7.1.2 Gradings of significance

Graded levels of significance are a management tool used to assess the relative significance of elements within an item, place or site and to assist in decision-making regarding elements of a place. The gradings of significance that have been used for elements within the study area are based on guidelines established in the NSW Heritage Division publication, *Assessing Heritage Significance* (2001).

Table 4. Gradings of significance definitions. *Source:* NSW Heritage Office (2001).

Grading	Justification	Status
Exceptional	Rare or outstanding element directly contributing to an item's local and State significance.	Fulfil criteria for local and State listing.
High	High degree of original fabric. Demonstrates a key element of	Fulfil criteria for local or State listing.

Grading	Justification	Status
	the item's significance. Alterations do not detract from significance.	
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfils criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item's heritage significance	Does not fulfil criteria for local or State listing.

7.2 The Site of the First Building

Criteria Assessment	
Historic	<p>The study area is of some local historical significance forming a part of 600 acres of land granted to Thomas Laycock on 26 November 1818, initially known as 'Cottage Vale'. This grant was later absorbed with the Charles Reid's adjoining 600-acre grant to the south and the consolidated estate was known as 'The Retreat'. The main farm complex and homestead 'Kelvin' survive substantially intact to the north-east of the study area.</p> <p>The study area is also of some local historical significance as a part of the RAAF Bringelly Dispersal Area which developed between 1942 and 1945 and was attached to the parent airfield at Fleurs. The area between South Creek and Thompson's Creek were developed as an Emergency Landing Ground. Although the study area was a formed a part of this property, it remained substantially unchanged since all infrastructure associated with dispersal area were concealed in the stands of trees immediately surrounding the landing ground.</p> <p>In 1954 the Commonwealth commenced purchasing of land for the construction of a RAAF Radio Receiving Station which included the study area. The radio receiving station was designed to receive international radio telegrams and telephone calls and from ships at sea. Advances in technology rendered the radio receiving station obsolete and was downgraded in the late 1980s (AMC 2014, 28). During the 1990s and into the 2000s buildings and infrastructure were progressively removed leaving only the core structures and the main aerial intact.</p> <p>Whilst the study area has some local historical significance as one of Thomas Laycock's early land grants and as a part of RAAF Bringelly, there are no built elements or landscape features on the site that are associated with any of these periods. The study area does not meet the threshold for this criterion.</p>

Criteria Assessment	
Associative	The study area has some associations with the RAAF Bringelly although these are no longer visible within the built environment and landscape.
Aesthetic/Technical	The study area does not meet this criterion. There are no built or landscape values within this landscape.
Social	The item does not meet this criterion.
Scientific	The item does not meet this criterion.
Rarity	The item does not meet this criterion.
Representativeness	The item does not meet this criterion.

Summary of Significance Assessment

The site of the Bradfield City Centre First building is of some local historical significance forming a part of 600 acres of land granted to Thomas Laycock on 26 November 1818, initially known as 'Cottage Vale'. This grant was later absorbed with the Charles Reid's adjoining 600-acre grant to the south and the consolidated estate was known as 'The Retreat'. The main farm complex and homestead 'Kelvin' survive substantially intact to the north-east of the study area.

The study area is also of some local historical significance as a part of the RAAF Bringelly Dispersal Area which developed between 1942 and 1945 and was attached to the parent airfield at Fleurs. The area between South Creek and Thompson's Creek were developed as an Emergency Landing Ground. Although the study area was a formed a part of this property, it remained substantially unchanged since all infrastructure associated with dispersal area were concealed in the stands of trees immediately surrounding the landing ground.

In 1954 the Commonwealth commenced purchasing of land for the construction of a RAAF Radio Receiving Station which included the study area. The radio receiving station was designed to receive international radio telegrams and telephone calls and from ships at sea. Advances in technology rendered the radio receiving station obsolete and was downgraded in the late 1980s (AMC 2014, 28). During the 1990s and into the 2000s buildings and infrastructure were progressively removed leaving only the core structures and the main aerial intact.

Whilst the study area has some local historical significance as one of Thomas Laycock's early land grants and as a part of RAAF Bringelly, there are no built elements or landscape features on the site that are associated with any of these periods. Archaeological research potential is low.

Although the study area has some association with the RAAF Bringelly, these are not evident within the built environment and landscape. There are no significant built or landscape features within the study area.

The site of the Bradfield City Centre First Building does not meet the threshold as a site of local or state heritage significance.

7.3 Heritage in the vicinity

7.3.1 Kelvin – Statement of Significance

The following statement of significance has been quoted from the State Heritage Inventory form for 'Kelvin' (Heritage NSW, last updated 2005).

Kelvin Park, formerly known as Cottage-ville or Retreat Farm, is able to demonstrate the pastoral development of Bringelly from 1818. Although there is only a remnant (9.784 ha) of the original 1200 acre site (486ha), the homestead and farm buildings in their current setting with extensive views over rural land, is still able to demonstrate the principles of 19th century farm estate architecture, planning and design.

Kelvin Park is significant for its association with a number of people and organisations of importance in NSW's cultural history, including Thomas Laycock Junior who established the farm at Bringelly, and later owners, John Thomas Campbell and Alfred Kennerley. The lease of the property by the Australian Agricultural Company, the country's oldest agricultural and pastoral development company established in 1824, is of particular significance.

The homestead at Kelvin Park retains its colonial Georgian single-storey form and planning and is representative of a gentleman's rural residence of the 1820s. Despite some modifications it retains the architectural elements and character that make it a good example of its type. The kitchen wing and servants' quarters are modest examples of early colonial Georgian style architecture but similarly retain their original form and planning. All of these buildings are evidence of the establishment of a home and farm by Thomas Laycock.

The brick coach house at Kelvin Park retains its picturesque, early Victorian form, planning and much of its original detailing. It is evidence of the development of the property in the 1850s by Alfred Kennerley, who later became Premier of Tasmania.

The two slab barns are evidence of Kelvin Park as a working farm from 1818 until, at least, the mid-20th century. The structures demonstrate 19th century building methods and farm practice.

The buildings at Kelvin Park belong to an important and rare group of colonial Georgian and early Victorian farm buildings that contribute to the historic rural landscape. They are evidence of continuity of land use for farming for 187 years (to 2005).

The form of, and elements within, the garden, courtyard areas and entry to the property are evidence of the planning of the homestead complex by Laycock and subsequent owners and express the status they hoped to convey.

The homestead of Kelvin Park retains important historic views to the east to Thompson's Creek and beyond to South Creek. The site also retains views of other historically related rural landscapes beyond the current boundaries such as the pasture and stands of trees to the north. Both views contribute to the site's significance and maintain the context of the homestead group.

Kelvin Park group, including the homestead complex and remnant of farmland is significant at local, regional, state and national levels. All areas of the site are considered equally significant. (FORM Architects, 12/2006, slightly modified, Read, S., 12/2006)

NB: neither the above nor below statements address the archaeological potential of the site).

The Kelvin Park site landscaping is a significant component of the Kelvin Park group. The early numerous tree plantings contribute to making the site a notable landmark in the area. The remaining details of driveways, fencing and entrances also contribute to the historic and social

evidence provided by the site of its original patterns of occupation and use. The site is part of an intact early 19th century farm complex that is now rare within the wider urbanised environs of Liverpool. There is the potential to gain more information on the site from further archaeological and documentary research. (LEP listing/landscape).

The setting of the house on a knoll above a creek, its remnant layout of early buildings and garden, and its fine, mature trees, particularly its variety of old pines, add greatly to the character and significance of the property. The garden and setting are considered to have regional significance (Perumal Murphy Wu, 1990)

Built by Thomas Laycock junior, 1820, having received the Bringelly grant in 1818. He returned to Australia in 1817 after fighting for England in the American War of 1812. An early house of quality and rich historical associations being one of the charming country houses of the 1820s. It is well-sited above Thompson's Creek and is surrounded by a beautifully landscaped garden. (AHC, 1998)

7.3.2 The Church of the Holy Innocents – Statement of Significance

The following statement of significance has been quoted from the State Heritage Inventory form for 'The Church of the Holy Innocents' (Heritage NSW, last updated 2018).

The Church of the Holy Innocents, churchyard, and cemetery is of state heritage significance because of its historical, associative, technical, aesthetic, research, rarity, and representative values. The church is the result of an unusual partnership of two prominent ecclesiastical architects: Richard Cromwell Carpenter, one of the leading English architects of the Cambridge Camden Society, and Edmund Blacket, the most prominent Australian ecclesiastical architect of the nineteenth century. It is the only church in NSW based on a design by Richard Cromwell Carpenter and only one of three in Australia. This church is one of the earliest Gothic Revival churches in NSW recognised as being correct in its medieval detail and thus, an important, rare and representative example of this new wave of church architecture. Its highly detailed, Gothic Revival design renders it remarkable in a state context as a small rural church. The church is also designed according to the principles of the Tractarian Movement, facilitating a change in liturgical emphasis from the pulpit and the spoken word, to the altar and the sacraments associated with a separate choir. The application of a Tractarian design in this small rural church embodies wider debates within the Church of England under Bishop Broughton. The church is also strongly associated with the main group of proponents of the Gothic Revival and Tractarian Movements operating in, or in association with, the Church of England during the 1840s in NSW: Bishop Broughton, Edmund Blacket, Reverend Horatio Walsh, and Reverend George Vidal.

The church, churchyard, cemetery, and archaeological site are associated with several important pieces of legislation relating to the governance and position of religion, and specifically the Church of England, in colonial society during the early nineteenth century. As such, these original features and the church land is able to tell a story about the changing nature of religion and the position of the Church of England in the early colony. The retention of the semi-rural nature of the church, churchyard, and cemetery into the twenty-first century also demonstrates the historic rural landscape and isolation that made the finely designed Gothic Revival Church of the Holy Innocents a remarkable and rare place of worship.

7.4 Assessment of historical archaeological significance

Archaeological significance refers to the heritage significance of known or potential archaeological remains. While they remain an integral component of the overall significance of a place, it is necessary to assess the archaeological resources of a site independently from aboveground and other heritage elements. Assessment of archaeological significance is more challenging, as the extent and nature of the archaeological features is often unknown and judgment is usually formulated on the basis of expected or potential attributes.

The following significance assessment of the subject area's archaeological resource is carried out by following guidelines expressed in *Assessing Significance for Historical Archaeological Sites and 'Relics'* (Heritage Branch, Department of Planning, December 2009, now Heritage NSW, Department of Premier and Cabinet).

7.4.1 NSW Heritage Criteria

The NSW heritage criteria are assembled into the following four groups:

- Archaeological research potential (NSW Heritage Criterion E)
- Association with individuals, events, or groups of historical importance (NSW Heritage Criteria A, B & D)
- Aesthetic or technical significance (NSW Heritage Criterion C)
- Ability to demonstrate the past through archaeological remains (NSW Heritage Criteria A, C, F & G)

The above assessment criteria are supplemented by the established assessment framework that has been developed by Anne Bickford and Sharon Sullivan (1984), who set three fundamental questions to assist in determining the research potential of an archaeological site. These questions are as follows:

- Can the site contribute knowledge that no other resource can?
- Can the site contribute knowledge that no other site can?
- Is this knowledge relevant to general questions about human history or other substantive questions relating to Australian history, or does it contribute to other major research questions?
- As part of this preliminary assessment, a synthesised evaluation of significance is expressed in the statement below.

7.5 Assessment of historical archaeological significance

The study area has the potential to contain sub-surface remains associated with a number of phases of site occupation. The most significant of these are remains associated with the

RAAF Bringelly Receiving Station. In regard to the assessment criteria these potential remains have been assessed as follows:

- Archaeological research potential (NSW Heritage Criterion E)

The physical remains associated with the receiving station have some limited capacity to provide information that would provide a substantive understanding of the operation of the station. These have a moderate level of significance in regard to research potential. These remains are however located outside the footprint of the first building study area.

- Association with individuals, events, or groups of historical importance (NSW Heritage Criteria A, B & D)

The site has associations with the Laycock family and the development of The Retreat as a significant pastoral property. Any remains associated with the pre-1850 development of the Aerocore site would be potentially of State significance. However, there is no evidence to indicate the presence or survival of such remains outside the central core of buildings associated with The Retreat (Kelvin) located outside the Aerocore site.

- Aesthetic or technical significance (NSW Heritage Criterion C)

In regard to significance the aerial array associated with the receiving station, the complex was of considerable importance during its period of operation. This significance is not necessarily reflected in the survival physical remains. Such remains would have a moderate level of research potential but their retention is not warranted. The remains associated with the receiving station are located outside the first building curtilage.

- Ability to demonstrate the past through archaeological remains (NSW Heritage Criteria A, C, F & G)

Surviving remains have some moderate research value in demonstrating activities in the site during its function as a receiving station. The array of aerals and other infrastructure may demonstrate the operation of the receiving station but their significance lies in their arrangement rather than in the physical remains themselves. As stated earlier the aerial array and other receiving station infrastructure are located outside the first building curtilage.

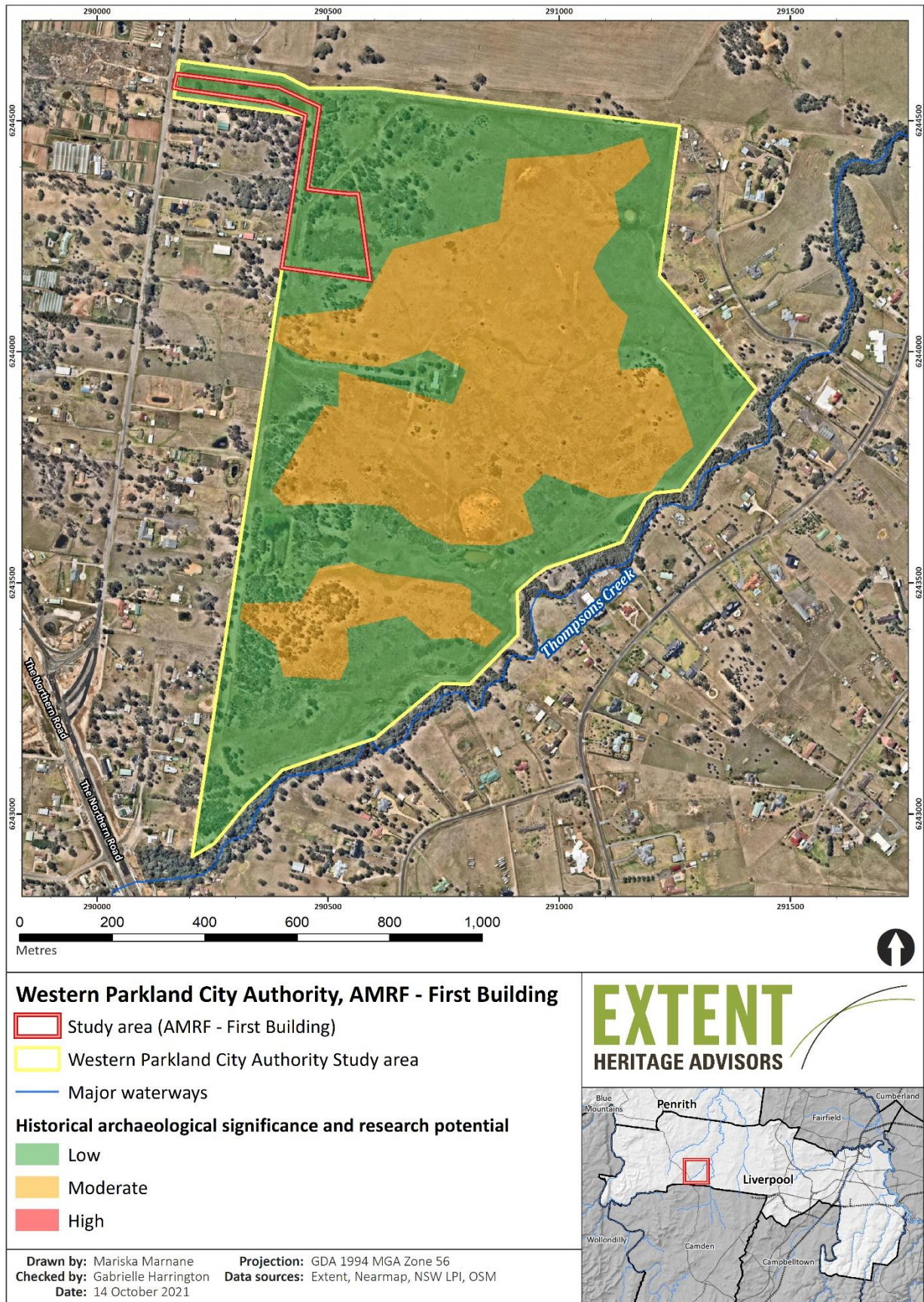


Figure 32 Historical archaeological significance and research potential.

8. Proposed works

8.1 Rationale

The Western Sydney Airport is the catalyst for much of Western Sydney's future urbanisation. The Western Sydney Aerotropolis is an 11,000-hectare region set to become Sydney's third city, and the gateway and economic powerhouse of Western Sydney.

The Aerotropolis is comprised of the new international airport surrounded by ten precincts which focus on advanced manufacturing, technology, research, training, education, freight and logistics, agribusiness, and mixed-use development.

The 1,382-hectare Aerotropolis Core Precinct is one of six precincts identified for early activation. The first stage of city building, and the focus of this Master Plan, is the Bradfield City Centre – a new city centre planned on 115 hectares of government-owned land off Badgerys Creek Road, Bringelly located within the Aerotropolis Core.

The first phase of the Western Sydney Aerotropolis Planning Package was finalised in September 2020, and includes the Western Sydney Aerotropolis Plan (WSAP), Western Sydney Aerotropolis (Aerotropolis) State Environmental Planning Policy (SEPP) and the Western Sydney Aerotropolis Development Control Plan (DCP) Phase 1. Draft Precinct Plans for the initial precincts, including the Aerotropolis Core were released for consultation in November 2020 and are expected to be finalised in late-2021. The Aerotropolis SEPP permits development that meets certain criteria, such as the First Building, to occur ahead of the finalisation of precinct planning.

The Aerotropolis SEPP rezones the land and provides for development to occur prior to the finalisation of precinct planning provided that development is consistent with the objectives of the SEPP and makes suitable arrangements (where necessary) in relation to designated State public infrastructure (WPCA 2021, 4)

8.2 Outline

The State Significant Application for the AMRF First Building will seek consent for construction, fit out and use of the proposed First Building as an advanced manufacturing research and development facility, including site preparation works, site access and parking, utilities infrastructure, landscaping/public domain, signage and other ancillary works. The proposed building will have an approximate building footprint of approximately 2,500m, an internal area of approximately 2,000 m² (GFA), a building height of approximately 18 metres above finished ground level, and will include approximately 51 at-grade parking spaces. The total site area that the study area covers including the access road, is approximately 3 hectares (WPCA 2021, 12)

The proposal, as shown on drawings prepared by Hassell, and dated 2021 is shown below.



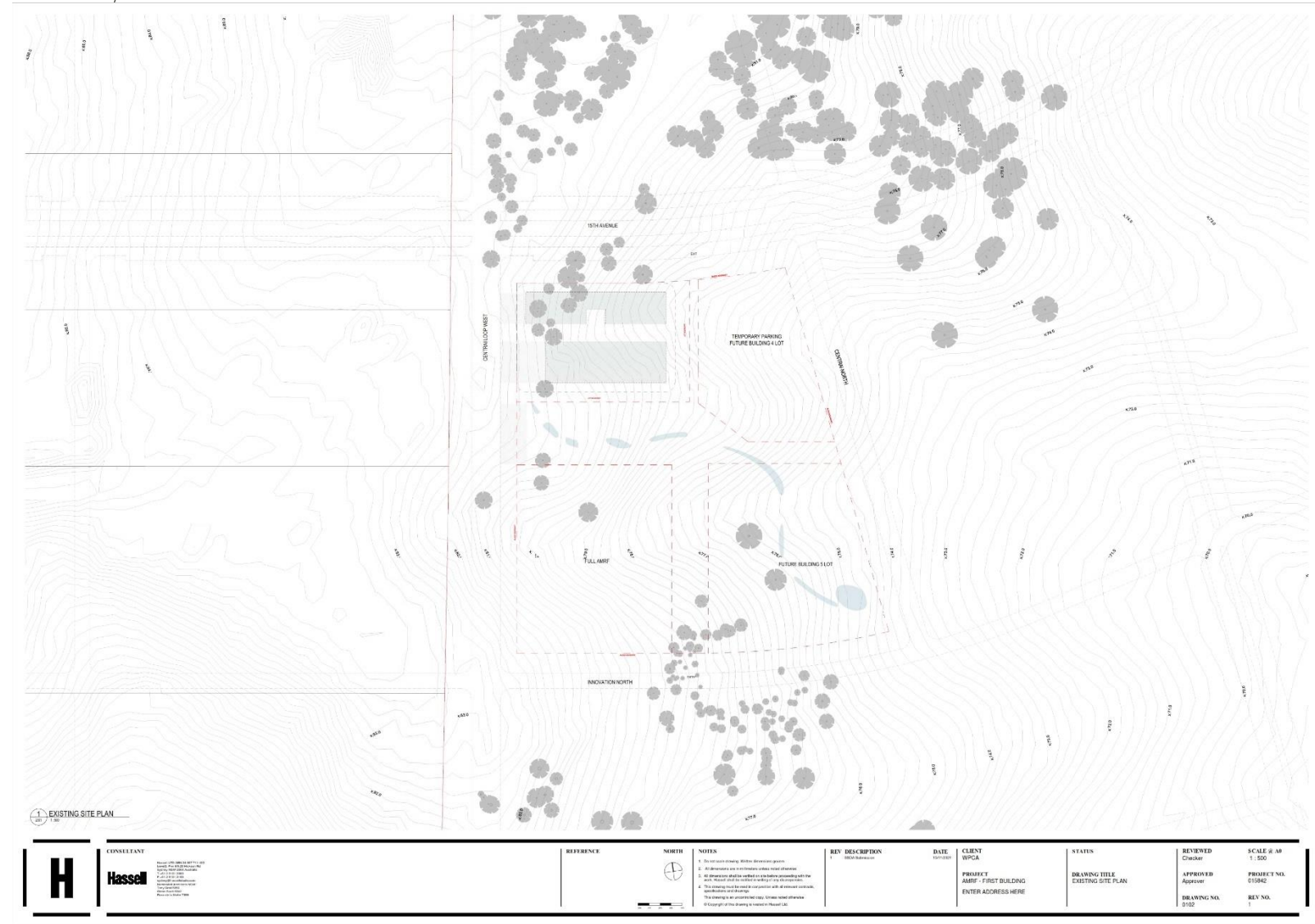


Figure 35. AMRF – existing site plan (Architectural drawings prepared by Hassell, 2021).

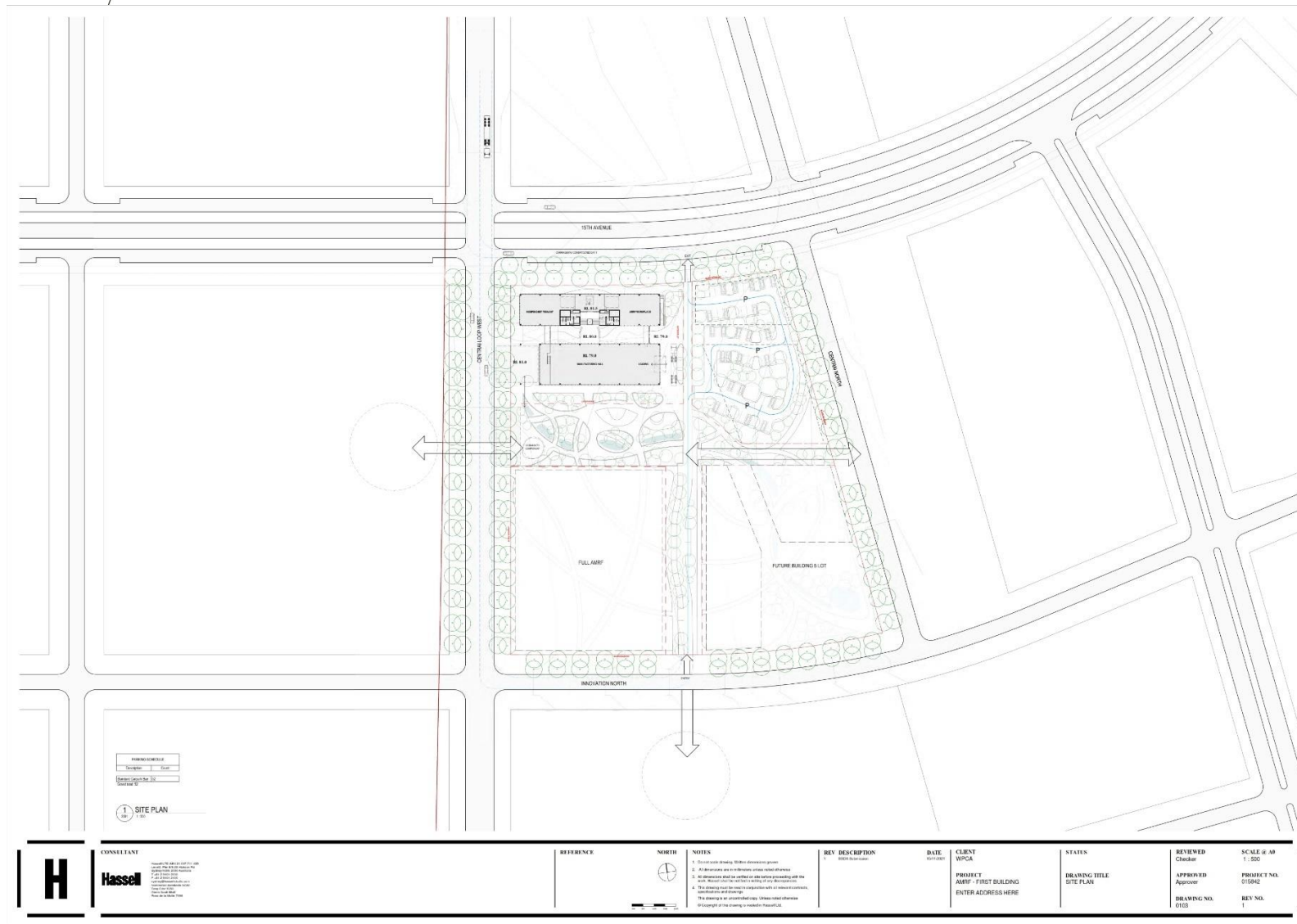


Figure 36. AMRF – First Building site plan (Architectural drawings prepared by Hassell, 2021).

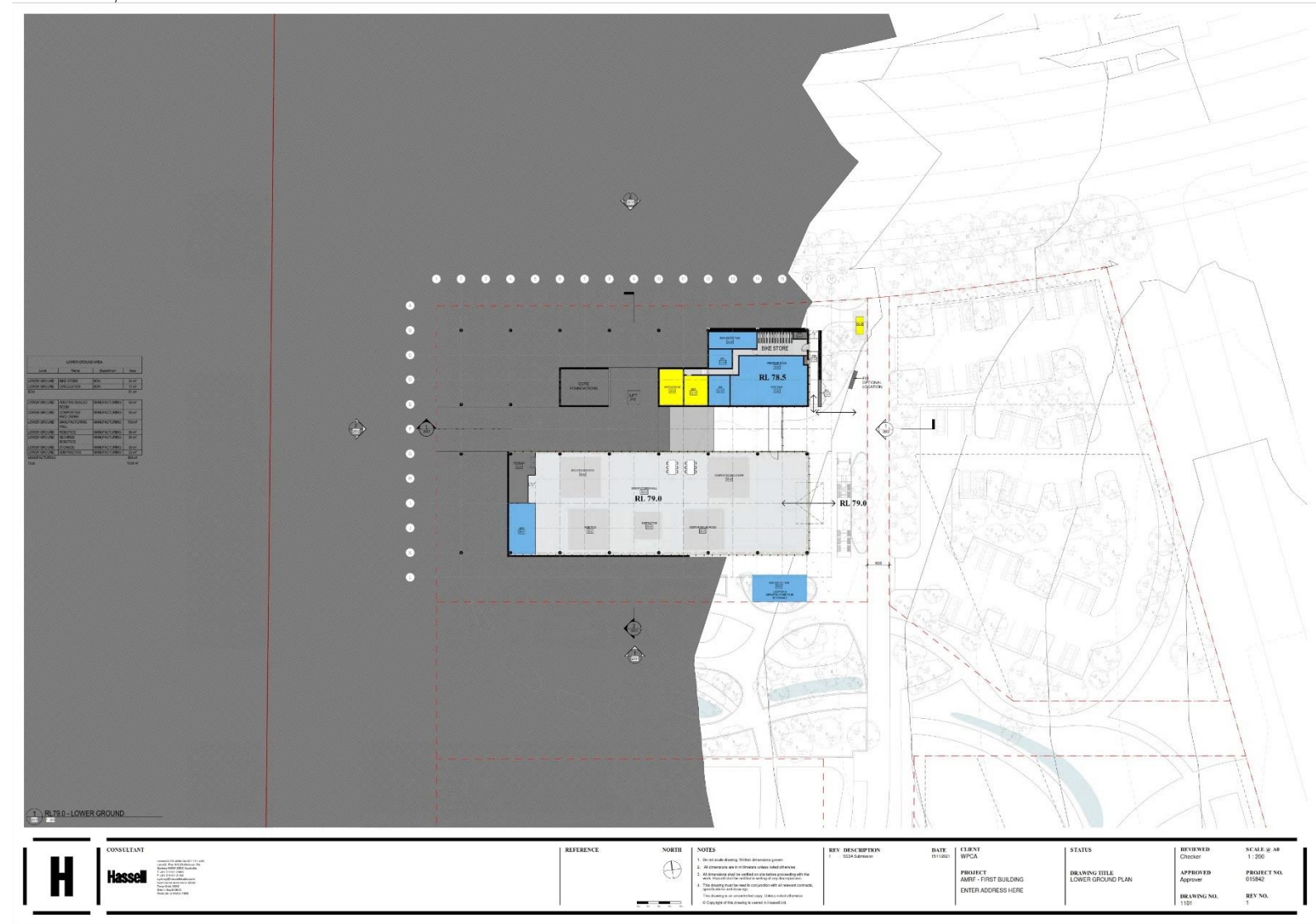


Figure 37. AMRF – First Building site explorations (Architectural drawings prepared by Hassell, 2021).

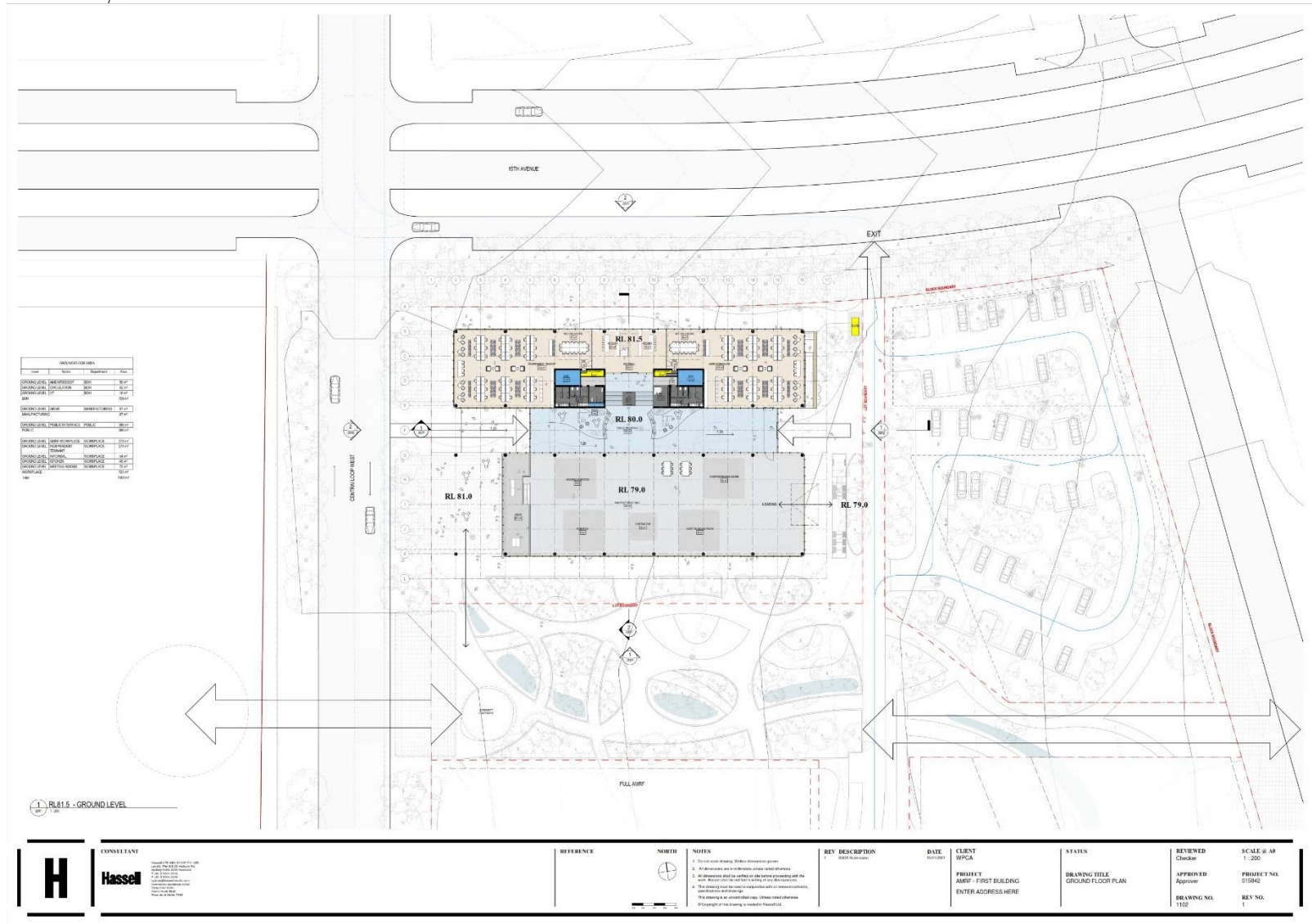


Figure 38. AMRF – First Building ground floor plan (Architectural drawings prepared by Hassell, 2021).

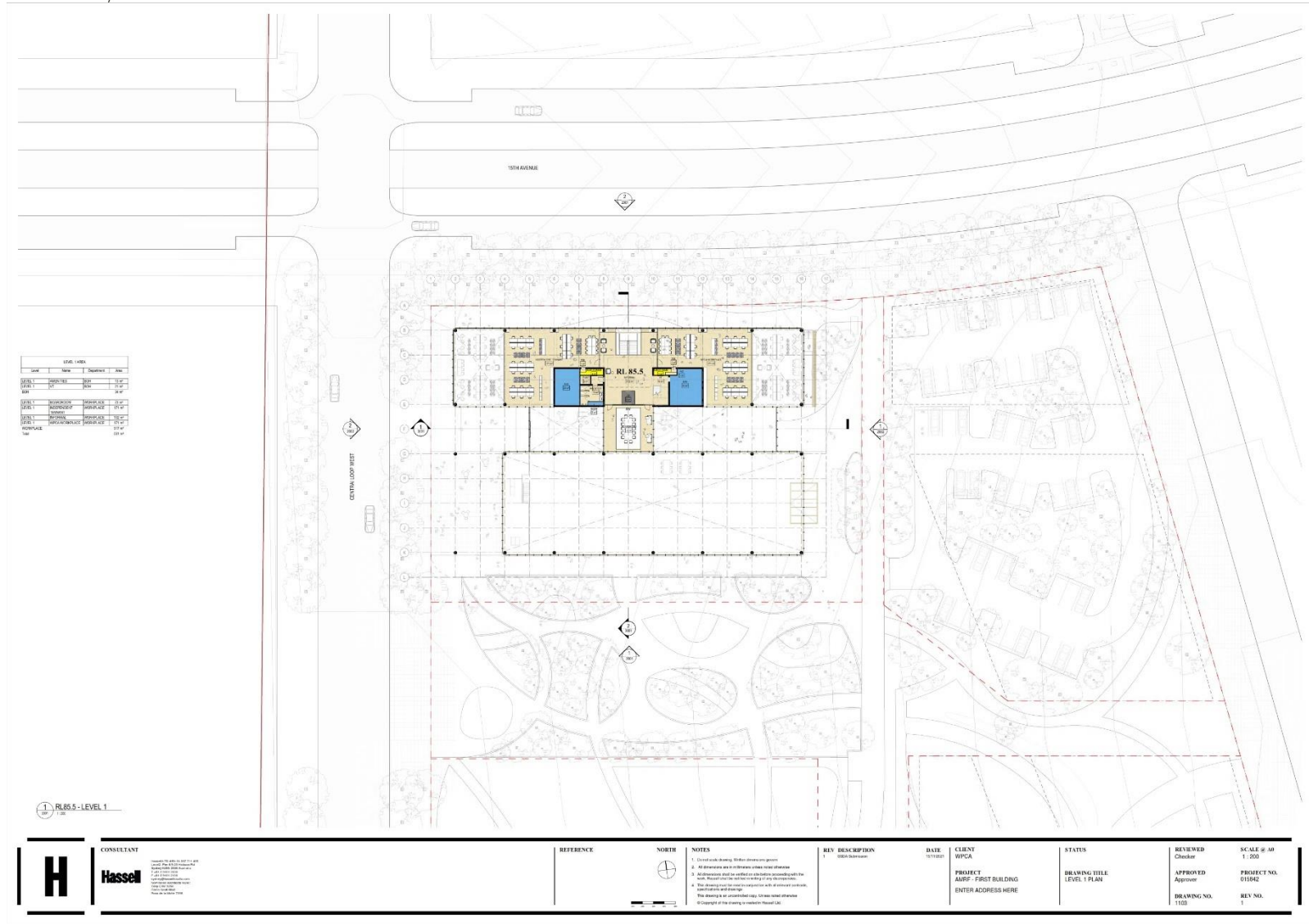


Figure 39. AMRF – First Building level 1 plan (Architectural drawings prepared by Hassell, 2021).

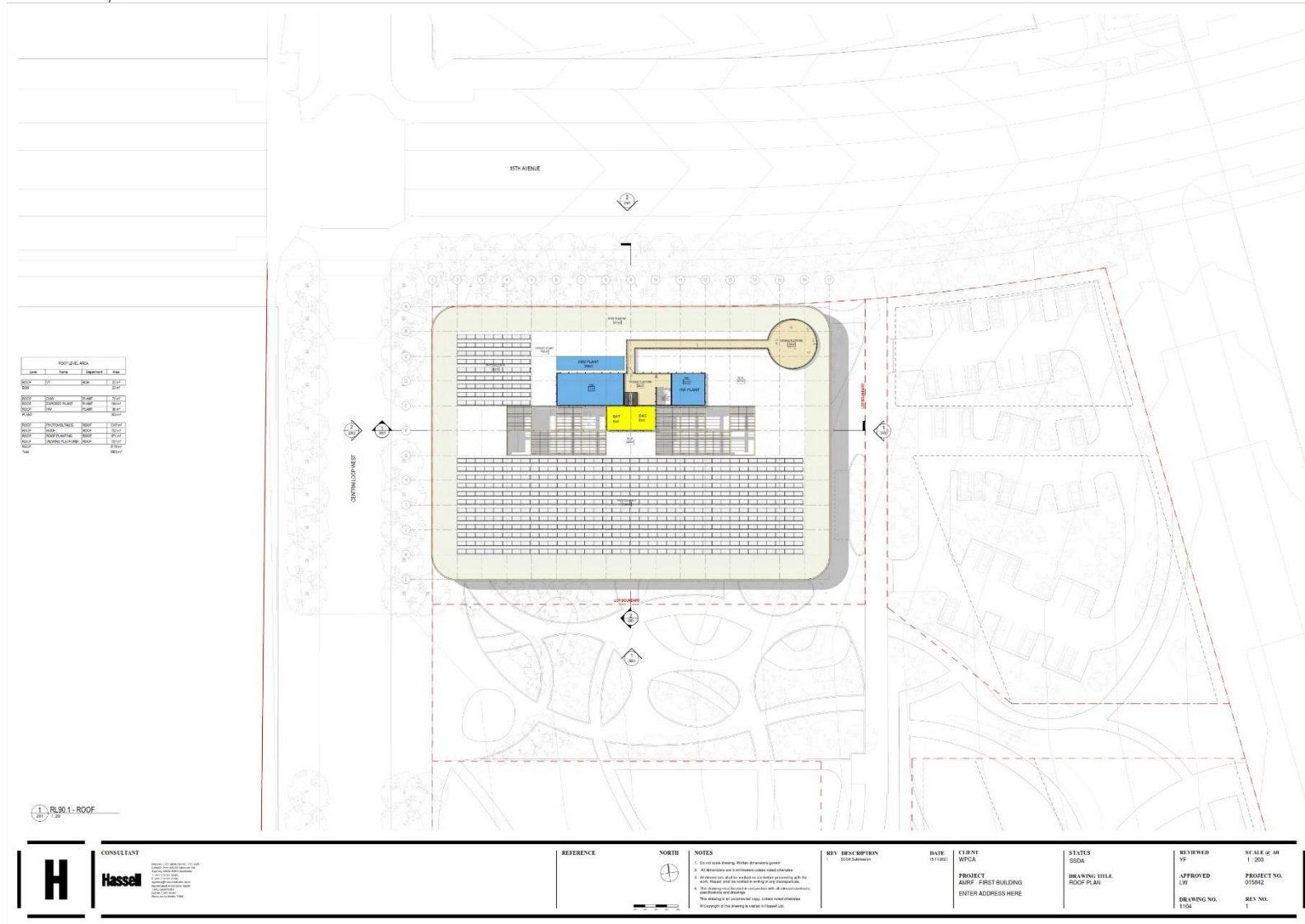


Figure 40. AMRF – First Building roof plan (Architectural drawings prepared by Hassell, 2021).

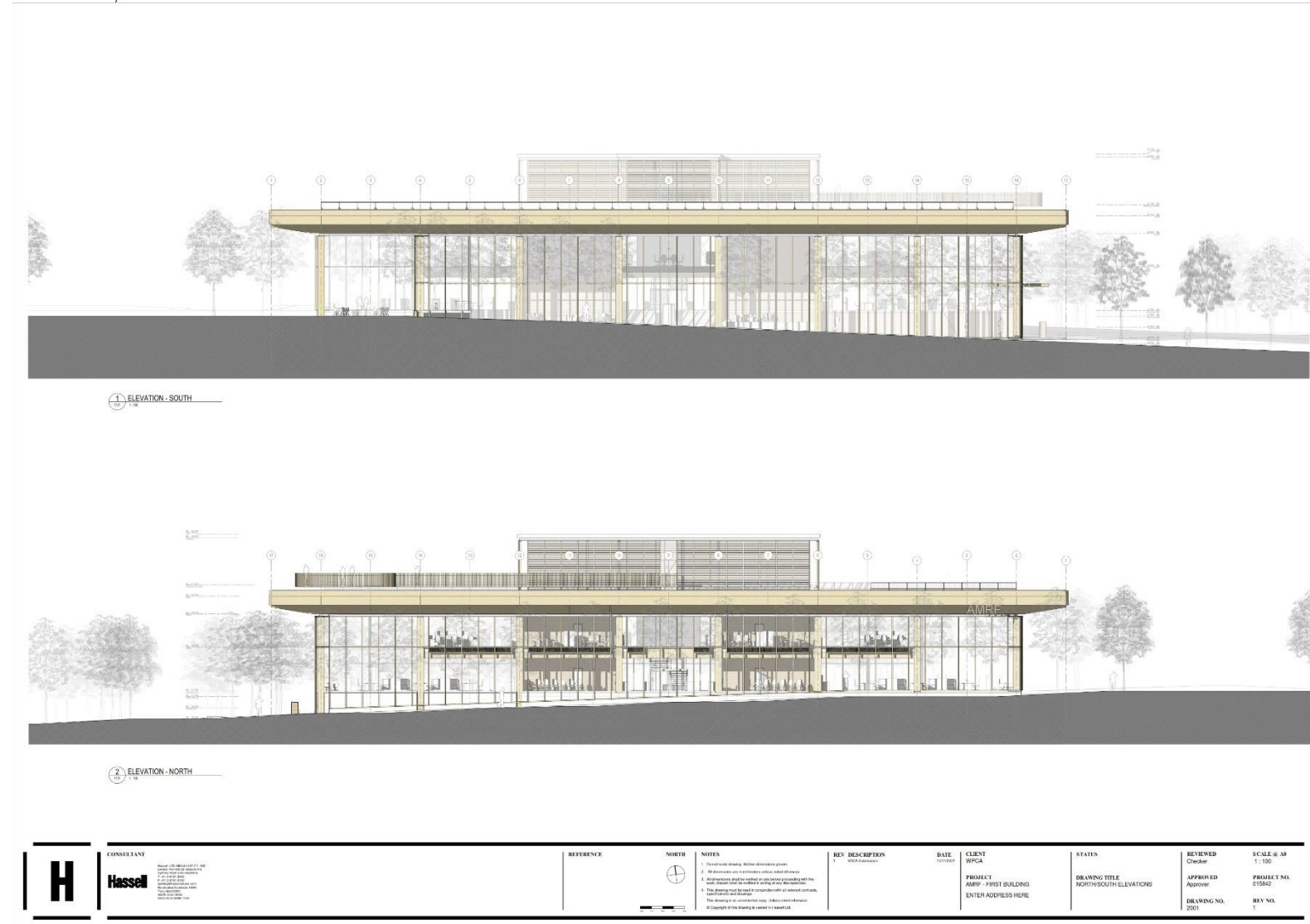


Figure 41. AMRF – First Building north-south elevations (Architectural drawings prepared by Hassell, 2021).

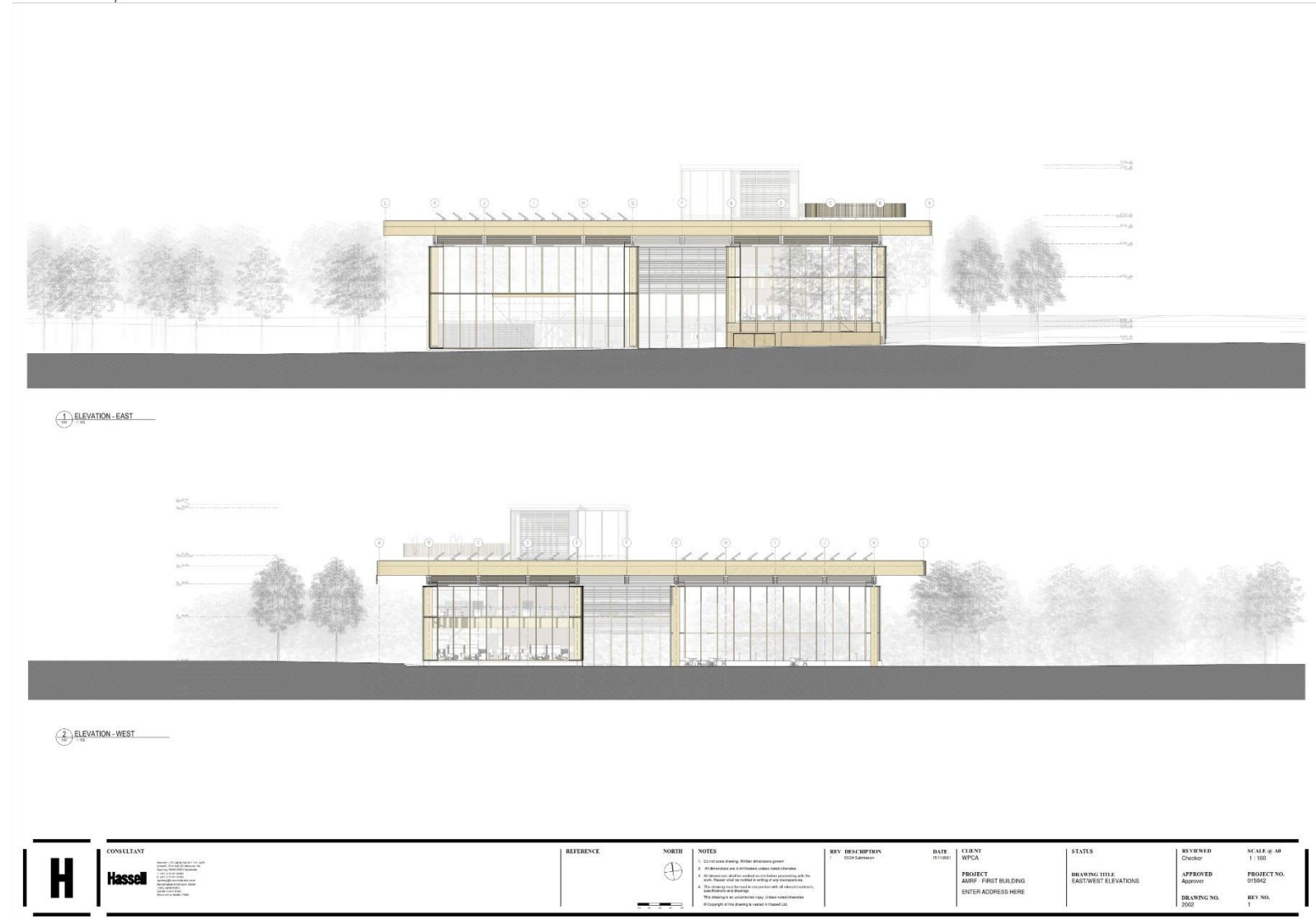


Figure 42. AMRF – First Building east-west elevations (Architectural drawings prepared by Hassell, 2021).

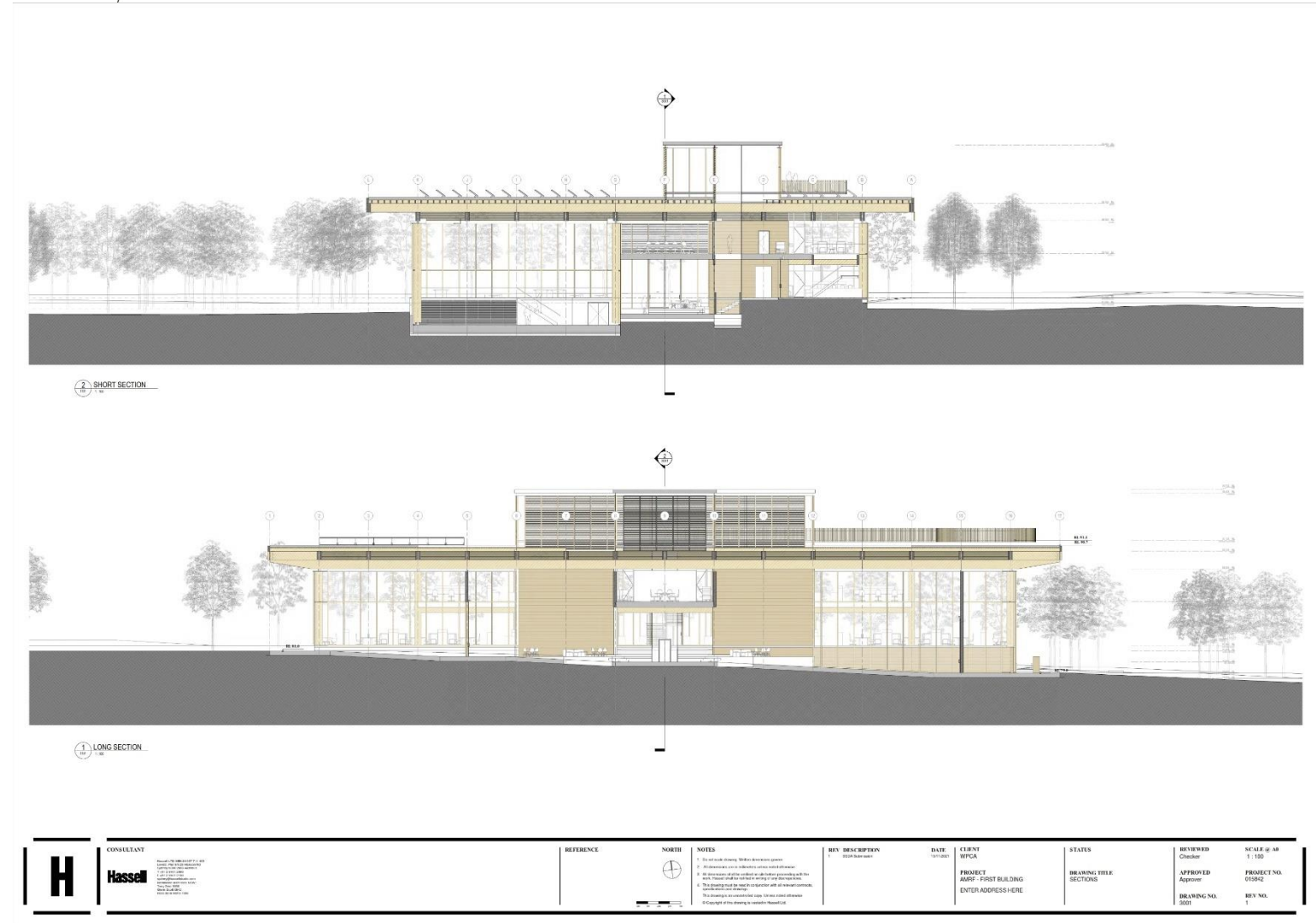


Figure 43. AMRF – First Building section plan Architectural drawings prepared by Hassell, 2021).

9. Assessment of heritage impact

The assessment of the degree of impacts made in this report has been based on the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (2011). While the guideline was prepared for the Heritage Impact Assessment to evaluate the impact of developments on the outstanding universal value (OUV) of World Heritage properties, the definitions and evaluation matrix can be applied to the values of any heritage significant place. Appendix 3B of the ICOMOS guideline provides an example guide for assessing magnitude of impact to built heritage and historic urban landscapes. The definitions for gradings of impact specific to this project and the study area are taken from this guideline and are outlined in the below table.

Table 5. Impact gradings (ICOMOS 2011).

Impact grading	Built heritage or Historic Urban Landscape attributes
Major	Changes to key historic building elements that contribute to OUV, such that the resource is totally altered. Comprehensive changes to the setting.
Moderate	Changes to many key historic building elements, such that the resource is significantly modified. Changes to the setting of an historic building, such that it is significantly modified.
Minor	Change to key historic building elements, such that the asset is slightly different. Change to setting of an historic building, such that it is noticeably changed.
Negligible	Slight changes to historic building elements or setting that hardly affect it.
No change	No change to fabric or setting.

9.1 Built heritage

The proposed works will have no impact on any items of built heritage significance. There are no built structures within the study area and any of the natural environment that will be cleared as a part of the proposed development are not of any heritage significance.

9.2 Curtilage and subdivision

The proposed works will have no impact on the study area's curtilage or subdivision.

9.3 Views and settings

The proposed development will be set within an expansive rural setting which currently contains low lying scrub and mature trees. The majority of the area to the north, south and east of the study area has been cleared, although there are a number of structures associated with the historical use of the site by the Royal Australian Air Force (RAAF). This is centred around the main building and transmission tower located to the south of the study area. To the west of the study area are rural residential allotments set along Badgerys Creek Road. Views west,

however, are not visible from the study area as there are a line of mature trees along the western boundary of the site.

The only significant views from the study area are directly east towards the SHR item 'Kelvin' which sits atop an elevated rise above the study area. The rural setting of the study area contributes to the significant rural views and setting of this SHR item.

The proposed new development has been designed as a low-scale, two-storey building. The design has sensitively considered the surrounding natural, rural and built environment through the use of muted and natural colours in the woven modular structure and through the low-scale of the development. The use of glass walls on all elevations provide a sense of continuity and transparency through the expansive rural landscape. Given the sensitive design, form, scale and choice of materials proposed for the AMRF, the overall impact to views and settings of the First Building is considered a minor impact.

9.4 Heritage items in the vicinity

There are two heritage items listed on the State Heritage Register and the State Environmental Planning Policy (Western Sydney Aerotropolis) 2020 that is located in the immediate vicinity of the study area.

- Kelvin (Item #00046), 30 The Retreat, Bringelly
- Church of the Holy Innocents (Item #02005), 130 Rossmore Avenue West, Rossmore

Kelvin is located approximately 500 metres from the study area. Although there will be no physical impact to the site there is a minor impact to the settings and views from this heritage item. Shown in Figures 28 and 29 are the key views to Kelvin from the study area and from Kelvin towards the study area. Figure 30 in Section 5.2 illustrates the directions of these key views. The rural setting of the study area contributes to the significant rural views and setting of this SHR item.

As the study area is located on the top of a rise that slopes east, the proposed new development will be visible from the SHR item. The proposed design has shown consideration to the heritage in the vicinity. The design has sensitively considered the surrounding natural, rural and built environment through the use of muted and natural colours in the woven modular structure and through the low-scale of the development. Further, the use of glass walls on all elevations of the proposed development provide a sense of continuity and transparency to the significance views from Kelvin.

Given the sensitive design, and appropriate use of form, scale and choice of materials proposed for the AMRF building, the overall visual impact of the First Building, to or from the SHR item, Kelvin, is considered a minor impact.

The Church of the Holy Innocents is located approximately 4 kilometres southeast of the study area. Due to the large distance between the study area and this item there will be no physical impact to the site and no visual impact to the settings and views of this heritage item. The proposed works present no change to the Church of the Holy Innocents.



Figure 44. View from the study area towards Kelvin.



Figure 45. View from Kelvin (30 The Retreat Bringelly) looking west towards the study area.

9.5 Historical archaeology

The proposed works are within a portion of the former estate referred to as The Retreat and subsequently Kelvin and then Kelvin Grove. The estate operated primarily as a grazing property until the early 1950s at which time it was purchased by the Commonwealth and functioned as the RAAF Bringelly Receiving Station. The assessed potential for the presence of archaeological material associated with all post 1788 occupational phases of the site are low within the works footprint. Any surviving remains are likely to have a low archaeological significance since the works area is located outside the main areas of activity.

The proposed works will have no impact on the potential archaeological resources present within the Aerocore precinct.

10. Statutory controls

The study area is subject to several legislative acts and statutory controls that govern the management of environmental heritage. An overview of the legislation relevant to heritage matters is provided below.

10.1 Environmental Planning and Assessment Act 1979 (NSW)

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 development requiring local council consent, are usually undertaken under part 4. In limited circumstances, projects may require the minister's consent.
- 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 Environmental Plans (LEPs) and State Environmental Planning Policies (SEPPs). LEPs commonly identify, and have provisions for the protection of, local heritage items and heritage conservation areas.

Extent Comment:

This report fulfils the assessment requirements under Section 4.12(8) of the EP&A Act and its recommendations should form part of the Environmental Impact Statement.

The project has been declared State Significant Development and is being assessed under Part 4.1 of the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act). The Planning Secretary's Environmental Assessment Requirements (SEARs) have been issued for the Project (SSD-25452459) and include requirements for Non-Aboriginal Heritage.

10.2 Heritage Act 1977 (NSW)

The *Heritage Act 1977* (NSW) (Heritage Act) was enacted to conserve the environmental heritage of NSW. Under section 32, places, buildings, works, relics, moveable objects, and precincts of heritage significance are protected by means of either Interim Heritage Orders (IHO) or by listing on the State Heritage Register (SHR), the statutory register under part 3A of the Heritage Act. Items that are assessed as having State heritage significance can be listed on the SHR by the Minister on the recommendation of the NSW Heritage Council.

The Relics Provisions

Archaeological features and deposits are afforded statutory protection by the 'relics provision'. section 4(1) of the Heritage Act (as amended 2009) defines 'relic' as follows:

any deposit, artefact, object or material evidence that:

(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and

(b) is of State or local heritage significance.

The 'relics provisions' requires that no archaeological relics be disturbed or destroyed without prior consent from the Heritage Council of NSW. Therefore, no ground disturbance works may proceed in areas identified as having archaeological potential without first obtaining an Excavation Permit pursuant to section 140 of the Heritage Act, or an archaeological exception, or in the case of places listed on the SHR, an approval under section 60, or an exemption under section 57 of the Heritage Act from the NSW Heritage Council.

Extent Comment

The proposal does not involve any works, impacts or changes to items listed on the State Heritage Register, nor is there any substantial potential to impact significant historic archaeological relics. Therefore, no approval by the Heritage Council of NSW or its delegates is required.

Although the proposed works are not expected to excavate or disturb land that will result in a relic being discovered, and do not require a permit, a stop works protocol should be implemented in the event of unexpected discovery.

10.3 State Environmental Planning Policy (State and Regional Development) 2011

The *State Environmental Planning Policy (State and Regional Development)* outlines planning provisions for development that has been declared as State Significant Development (SSD). State Significant Development is development that has been specific in Schedule 1 or 2 of the SEPP.

The proposed development is development for the purpose of manufacturing research and development facilities. As the proposed development will have a capital investment value (CIV) exceeding \$30 million, it is declared to be State Significant Development (SSD application # 25452459) for the purposes of the Environmental Planning and Assessment Act 1979 (EP&A Act) pursuant to Section 11(a) of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011. Specifically, the proposed development meets the criteria under s11(a) because it:

- Is for the purpose of research and development within the advanced manufacturing sector.

- Will accommodate specialised manufacturing equipment and technology that is critical to the development of advanced manufacturing processes and products.
- Provides access for industry to highly specialised equipment to emerging businesses, to facilitate the establishment of new advanced manufacturing businesses.
- Incorporates office and meeting spaces that are integrated with advanced manufacturing spaces to facilitate connection and knowledge-sharing, for the purpose of research and development.
- Provides opportunities for collaborative research partnerships between industry, tertiary education institutions and government agencies.
- The CIV of the proposed development exceeds the statutory \$30m threshold.

Extent Comment

The proposed works are considered SSD as an activity relating to laboratory, research or development facilities with a capital investment value of more than \$30 million, outlined in Schedule 1, Section 11(a) of the SEPP (State and Regional Development).

In accordance with Section 89D of the EP&A Act, the Minister for Planning becomes the Consent Authority for this development.

10.4 State Environmental Planning Policy (Western Sydney Aerotropolis) 2020

The *State Environmental Planning Policy (Western Sydney Aerotropolis)* was gazetted in September 2020 and came into effect on 1 October 2020. It applies to the land within the study area and provides statutory weight to the planning and development of land within the Aerotropolis.

With specific reference to heritage, section 28 of part 4 of the Aerotropolis SEPP includes objectives and controls for heritage conservation. In addition, the SEPP includes a list of heritage items within the initial Aerotropolis precincts in schedule 2 and an associated map. Of the items in the vicinity of the study area, two items, 'Kelvin' and 'The Church of the Holy Innocents' are listed as state-significant.

The objectives of the Aerotropolis SEPP pertaining to heritage conservation as per clause 1 of part 4, section 28 are:

- to conserve the environmental heritage of the land to which this Policy applies,
- to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
- to conserve archaeological sites, and
- to conserve Aboriginal objects and Aboriginal places of heritage significance.

Clause 6 of part 4, Section 28 states that the consent authority may before granting consent to development:

- (a) on land on which a heritage item is located, or
- (b) on land that is within a heritage conservation area, or
- (c) on land that is within the vicinity of land referred to in paragraph (a) or (b),

require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

Extent Comment

Two items in the vicinity of the study area, Kelvin (Item #00046) and the Church of the Holy Innocents (Item #02005) are listed as a state significant heritage item on the Aerotropolis SEPP 2020. This report, its assessment and recommendations fulfill the requirement of Clause 6, part 4, Section 28 of this SEPP and should be submitted as part of the Environmental Impact Statement for consideration by the Minister.

11. Conclusion and recommendations

11.1 Conclusion

This Statement of Heritage Impact considers the proposed construction of the Bradfield City Centre AMRF - First Building. The proposed construction is declared a State Significant Development. The proposed works assessed within this report included the construction of an advanced manufacturing research and development facility, including site preparation works, site access and parking, utilities infrastructure, landscaping/ public domain, signage and other ancillary works. The proposed building will have an approximate building footprint of approximately 2,500m, an internal area of approximately 2,000 m² (GFA), a building height of approximately 18 metres above finished ground level, and will include approximately 51 at-grade parking spaces. The new development will command a prominent position of the top of a hill within a predominately rural landscape.

This report has determined that the study area is not identified as a heritage item on any statutory or non-statutory registers, nor does it meet the criteria for local or State significance. The proposed works will not directly impact on any identified built heritage. An analysis of historic plans and historical aerial photographs demonstrates that the site was located within a portion of the former estate referred to as The Retreat and subsequently Kelvin and then Kelvin Grove. The estate operated primarily as a grazing property until the early 1950s at which time it was purchased by the Commonwealth and functioned as the RAAF Bringelly Receiving Station. The assessed potential for the presence of archaeological material associated with all post 1788 occupational phases of the site are low within the works footprint. Any surviving remains are likely to have a low archaeological significance.

There are two State heritage listed items in the vicinity of the proposed development Kelvin, and the Church of the Holy Innocents. Kelvin is located approximately 500 metres to the north-east of the study area. The impact on the views to and from this item is considered to be minor given the rural landscape and the location of the study area on top of a hill. Any minor negative impacts to the heritage significance of these items are considered acceptable in understanding the positive outcomes of the proposed development for the wider community. The Church of the Holy Innocents is located approximately 4 kilometres southeast of the study area. Due to the large distance between the study area and this item there will be no physical impact to the item and no visual impact to the settings and views of this heritage item.

11.2 Approval and Notification Requirements

Heritage Act 1977 – As the works will not directly affect any items on the State Heritage Register and there is low potential for impacting on known or expected relics, no notifications, permits or approvals are required in accordance with the Heritage Act.

Environmental Planning and Assessment Act 1979 – The development has been declared a State Significant Development and as such, authority to approve the works has been delegated to the Minister for Planning. An assessment of Environmental Impacts (through the preparation of an Environmental Impact Statement) is required, where heritage is considered a

matter of the environment. As the works are being undertaken in the vicinity of a State heritage item, an assessment of impacts to this item must be made. This report fulfils this requirement.

SEPP (State and Regional Development) 2011 – The development is considered a State Significant Development as an activity relating to laboratory, research or development facilities with a capital investment value of more than \$30 million. As such, development approval has been delegated to the Minister for Planning.

SEPP (Western Sydney Aerotropolis) 2020 - As this development has been declared a State Significant Development, development approval has been delegated to the Minister for Planning.

11.3 Recommendations

The following recommendations have been prepared for the proposed development of the AMRF – First building site.

- Any comment or conditions of consent resulting from the approvals and notifications should be considered for incorporation into the Scope of Work.
- In regards to the management of historical archaeological remains an Unexpected Finds Procedure should be in place prior to the commencement of ground works.
- It should be noted that any works outside the footprint of the proposed works should be subject to a management procedure that is appropriate for the significance level of potential archaeological remains. In the first instance this would include undertaking an accurate survey of the remains of the aerial array and other receiving station infrastructure prior to removal.

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Appendix 7 – Archaeological Test Excavation Report



BRADFIELD CITY CENTRE

Master Plan

Aboriginal Archaeological Test Excavation Report

October 2022



Acknowledgement of Country

The Western Parkland City Authority acknowledges more than 60,000 years of continuous Aboriginal connection to the land that makes up New South Wales.

Since time immemorial, Aboriginal people have managed, cultivated and cared for the landscape where Sydney was established and continues to grow. Aboriginal people hold profound knowledge, understanding, obligation and custodianship of the landscape.

The Western Parkland City Authority acknowledges the traditional owners of the lands that include the Western Parkland City and the living culture of the traditional custodians of these lands.

Version	Status	Date	Prepared By	Reviewer	Comments
Draft 01	Technical	02 Feb 2022	Hannah Morris	Andrew Costello	
Draft 01	Copyedit	07 Feb 2022	Hannah Morris	Will Cox	
Draft 02	Copyedit	29 Apr 2022		Hannah Morris	

EXECUTIVE SUMMARY

This archaeological test excavation report (ATER) report accompanies the Aboriginal Cultural Heritage Assessment Report (ACHAR) and the Master Plan Application for the Bradfield City Centre submitted to the Department of Planning Environment (DPE) pursuant to Chapter 4 of *State Environmental Planning Policy (Precincts – Western Parkland City)* (Western Parkland City SEPP). The ATER addresses the results of the test excavation programme and provides relevant information to ensure all considerations are appropriately identified and assessed.

Extent Heritage Pty Ltd have been engaged by the Western Parkland City Authority (WPCA) to prepare an ACHAR and corollary ATER to identify any Aboriginal object or places within the proposed study area. The results of this assessment will be used to inform the development of the master plan for the Bradfield City Centre. The aims and objectives of this report are to:

- identify any Aboriginal objects or places within the study area;
- assess the scientific significance of an identified Aboriginal objects or places;
- evaluate and discuss the impacts of the proposed works on identified Aboriginal objects or places; and
- develop management measures for the proposed impacts to identified Aboriginal objects or places.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) database resulted in the identification of eight registered sites within the study area. A full coverage survey of the study area was completed on 7 December 2020, with representatives of Registered Aboriginal Parties (RAPs). The survey resulted in the identification of two previously unrecorded Aboriginal sites: an isolated find in the western edge of the site (ACAS02 / AHIMS ID Pending) and a low-density artefact scatter containing four artefacts (ACAS01 / AHIMS ID 45-5-5481), as well as an area of potential archaeological deposit (PAD) (ACIF01 / AHIMS ID 45-5-5480). Five additional Aboriginal objects were also identified at the location of B 23 (AHIMS ID 45-5-2641). No Aboriginal objects were identified at the recorded location of the eight previously registered AHIMS sites.

Due to the moderate potential for Aboriginal archaeological remains across the study area, an archaeological test excavation program was proposed. The test excavation programme investigated the nature and extent of potential subsurface artefacts within these three PADs: ACIF01, Moore Gully, and Thompsons Creek. An additional area, the Northern Transect, in the north-western corner of the study area, was also investigated to test an area of low archaeological potential and support the conclusions of the predictive modelling.

In accordance with this recommendation, a test excavation methodology was developed and issued to the RAPs for this project for review and comment. Three PADs were investigated as part of the test excavation program: ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491). The results of the test excavation program confirmed that each of the PADs contained several areas of subsurface Aboriginal archaeology.

Through the completion of background research, database searches, field survey and test excavations, a total of sixteen Aboriginal sites were identified within the study area. The following recommendations are made based on the identified potential for Aboriginal heritage impact and the statutory requirements of the *Code of Practice* (DECCW 2010b):

1. An AHIP is required to authorise harm to the Aboriginal sites identified and registered with AHIMS that are located within the study area. These sites cannot be impacted until an approved AHIP has been obtained, and all impacts must conform with the AHIP conditions.
2. The area surrounding TP 15 and TP 114, comprising a buffer of 50 m, should be protected from harm (Figure 83). If these areas are not able to be protected, a salvage excavation program would be required to fully understand the extent and significance of the Aboriginal archaeological remains in the area. An AHIP would be required to authorise the salvage excavations.
3. Aboriginal representatives must be given an opportunity to collect the surface artefacts identified across the study area prior to the commencement of construction works.

4. An appropriate Keeping Place or reburial site must be determined to house the Aboriginal objects. The location of this Keeping Place must be chosen in consultation with the RAPs and Gandangara LALC.
5. If unexpected Aboriginal objects are uncovered during construction, work should cease, and a qualified archaeologist, Heritage NSW-DPC, and the Gandangara LALC should be informed to determine whether further Aboriginal heritage assessment or permit approvals are required.
6. If suspected human remains are located during any stage of the proposed works, work should stop immediately, and the NSW police and Coroner's Office should be notified. Heritage NSW-DPC, Gandangara LALC and the Commonwealth Minister for the Environment should be notified if the remains are found to be those of an Aboriginal person and greater than 100 years old.

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Appendix List

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Glossary of Terms

ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AHMS	Archaeological and Heritage Management Solutions
AS	Australian Standard
ATER	Archaeological Test Excavation Report
Aerotropolis	Western Sydney Aerotropolis
BC Act	Biodiversity Conservation Act 2016
BP	Before present (AD 1950)
CHL	Commonwealth Heritage List
CIV	Capital Investment Value
CRM	Cultural Resource Management
DA	Development Application
DCP	Development Control Plan
DECCW	Department of Environment, Climate Change and Water (now DPIE)
DP	Deposited Plan
DPC	Department of Premier and Cabinet (NSW)
DPE	Department of Planning and Environment (formerly OEH)
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPI	Environmental Planning Instruments
ERS	Eastern Regional Sequence
GPS	Global Positioning System
IF	Isolated Find
JMCHM	Jo McDonald Cultural Heritage Management Pty Ltd
ka	Abbreviation for thousands of years ago (e.g., 1 ka equals 1,000 years ago)
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LGM	Last Glacial Maximum
Ma	million years ago
NHL	National Heritage List
NPW Act	<i>National Parks and Wildlife Act 1974</i> (NSW)
NSW Government	State Government for NSW
NTSCorp	Native Title Service Corporation
OEH	Office of Environment and Heritage (formerly DECCW, now Heritage NSW-DPC)
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
RTK	Real-Time Kinematic
REP	Regional Environmental Plan
SEPP	State Environment Planning Policy
SU	Survey Unit
TP	Test Pit
WHL	World Heritage List

Aboriginal cultural heritage assessment report (ACHAR)	A document developed to assess the archaeological and cultural values of an area, generally required as part of an environmental assessment (EA).
Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010	Guidelines developed by DECCW to guide formal Aboriginal community consultation undertaken as part of an Aboriginal cultural heritage assessment report (ACHAR).
Aboriginal Heritage Impact Permit (AHIP)	The statutory instrument that the Director General of the Department of Planning and Environment (DPE) issues under section 90 of the <i>National Parks and Wildlife Act 1974</i> (NSW) to allow the investigation (when not in accordance with certain guidelines), impact and/or destruction of Aboriginal objects. AHIPs are not required where project approval under the state-significant provisions of Part 4 (Division 4.1) of the <i>Environmental Planning and Assessment Act 1979</i> (NSW).
Aboriginal object	A statutory term defined under the <i>National Parks and Wildlife Act 1974</i> (NSW) 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'.
Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales	Guidelines developed by DECCW (2010) to inform the structure, practice and content of any archaeological investigations undertaken as part of an Aboriginal cultural heritage assessment report (ACHAR).
Department of Environment, Climate Change and Water (DECCW)	Now known as the Department of Planning and Environment (DPIE), Department of Premier and Cabinet.
Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales	Guidelines developed by DECCW, outlining the first stage of a two-stage process in determining whether Aboriginal objects and/or areas of archaeological interest are present within a study area. The findings of a due diligence assessment may lead to the development of an Aboriginal cultural heritage assessment report.
Environmental Planning and Assessment Act 1979 (NSW)	Statutory instrument that provides planning controls and requirements for environmental assessment in the development approval process. The Act is administered by the Department of Planning and Environment.
Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW	Guidelines developed by OEH to inform the structure and content of an Aboriginal cultural heritage assessment report (ACHAR).
Isolated find	An isolated find is usually considered a single artefact or stone tool, but can relate to any product of prehistoric Aboriginal societies. The term 'object' is used in the Aboriginal cultural heritage assessment report (ACHAR), to reflect the definitions of Aboriginal stone tools or other products in the <i>National Parks and Wildlife Act 1974</i> (NSW).
National Parks and Wildlife Act 1974 (NSW)	The primary piece of legislation for the protection of Aboriginal cultural heritage in New South Wales. Part 6 of this Act outlines the protection afforded to and offences relating to disturbance of Aboriginal objects. The Act is administered by DPE.
Department of Planning Environment (DPE)	The DPE is responsible for managing the Aboriginal Heritage (and other) provisions of the <i>National Parks and Wildlife Act 1974</i> .
Potential archaeological deposit (PAD)	An area assessed as having the potential to contain Aboriginal objects. PADs are commonly identified on the basis of landform types, surface expressions of Aboriginal objects, surrounding archaeological material, disturbance, and a range of other factors. While not defined in the <i>National Parks and Wildlife Act 1974</i> (NSW), PADs are generally considered to retain Aboriginal objects and are therefore protected and managed in accordance with that Act.
Proponent	A corporate entity, government agency or an individual in the private sector which proposes to undertake a development project.

1. Introduction

This report addresses the Aboriginal Heritage requirements for the development of the Bradfield City Centre Master Plan within the heart of the Aerotropolis Core Precinct of the broader Western Sydney Aerotropolis.

1.1 PURPOSE OF THIS REPORT

This report accompanies the Master Plan Application for the Bradfield City Centre submitted to the Department of Planning Environment (DPE) pursuant to Chapter 4 of *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (A Western Parkland City SEPP).

The Western Parkland City Authority (WPCA) is seeking to secure Master Plan approval for a mixed-use development, comprising industrial, commercial, open space and residential uses for a 115-hectare site centred around a new Sydney Metro station.

This will include a Stage 1 Complying Development Code intended to facilitate development of a variety of land uses including commercial, advanced manufacturing, research and development (R&D), innovation, residential, education, retail and recreation uses.

This report has been prepared to address Aboriginal Heritage within the study area and specifically to respond to the relevant Secretary's Master Plan Requirements as outlined at Section 3.1.

Extent Heritage Pty Ltd (Extent Heritage) have been engaged by Western Parkland City Authority (WPCA) to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) to identify any Aboriginal object, places, or cultural heritage values within the proposed Bradfield City Centre. The results of this assessment will be used to inform the development of a master plan for the Bradfield City Centre

The following sections introduce the site, context, and nature of the Bradfield City Centre Master Plan.

1.2 THE WESTERN SYDNEY AEROTROPOLIS

The Western Sydney Aerotropolis is an 11,000-hectare region set to become Sydney's third city (the Western Parkland City), and the gateway and economic powerhouse of Western Sydney.

The Aerotropolis comprises of the new international airport surrounded by ten (10) precincts which focus on advanced manufacturing, technology, research, training, education, freight and logistics, agribusiness, and mixed-use development.

The first phase of the Western Sydney Aerotropolis Planning Package was finalised in September 2020, and includes the *Western Sydney Aerotropolis Plan* (WSAP), *Western Sydney Aerotropolis (Aerotropolis) State Environmental Planning Policy* (Aerotropolis SEPP), *Western Sydney Aerotropolis Precinct Plan* (Precinct Plan) and the *Western Sydney Aerotropolis Development Control Plan (DCP) Phase 1*. The Initial Precinct Plans released in November 2020 followed by the release of the Draft Phase 2 DCP in 2021.

On 1 March 2022, the Aerotropolis SEPP was consolidated into the State Environmental Planning Policy (Precincts – Western Parklands City) 2021 (Western Parkland City SEPP). The Aerotropolis Planning Package and supporting technical studies for the initial precincts was finalised on 25 March 2022. The Planning Package included amendments to the Western Parkland City SEPP and Aerotropolis Precinct Plan.

The proposed Master Plan Application for the Site has been formed by the requirements of the WSAP, Western Parkland City SEPP, Final Precinct Plan and the Draft Phase 2 DCP, as required by the Master Plan Guidelines.

2. Vision

2.1 WESTERN PARKLAND VISION

The Western Parkland vision is provided for with three key guiding themes:

- Green
- Connected.
- Advanced.

The image below outlines the key guiding themes for the Western Parkland vision. Further detail on the vision can be found within the accompanying Master Plan Report.

Figure 1 Western Parkland Vision

3. Bradfield City Centre

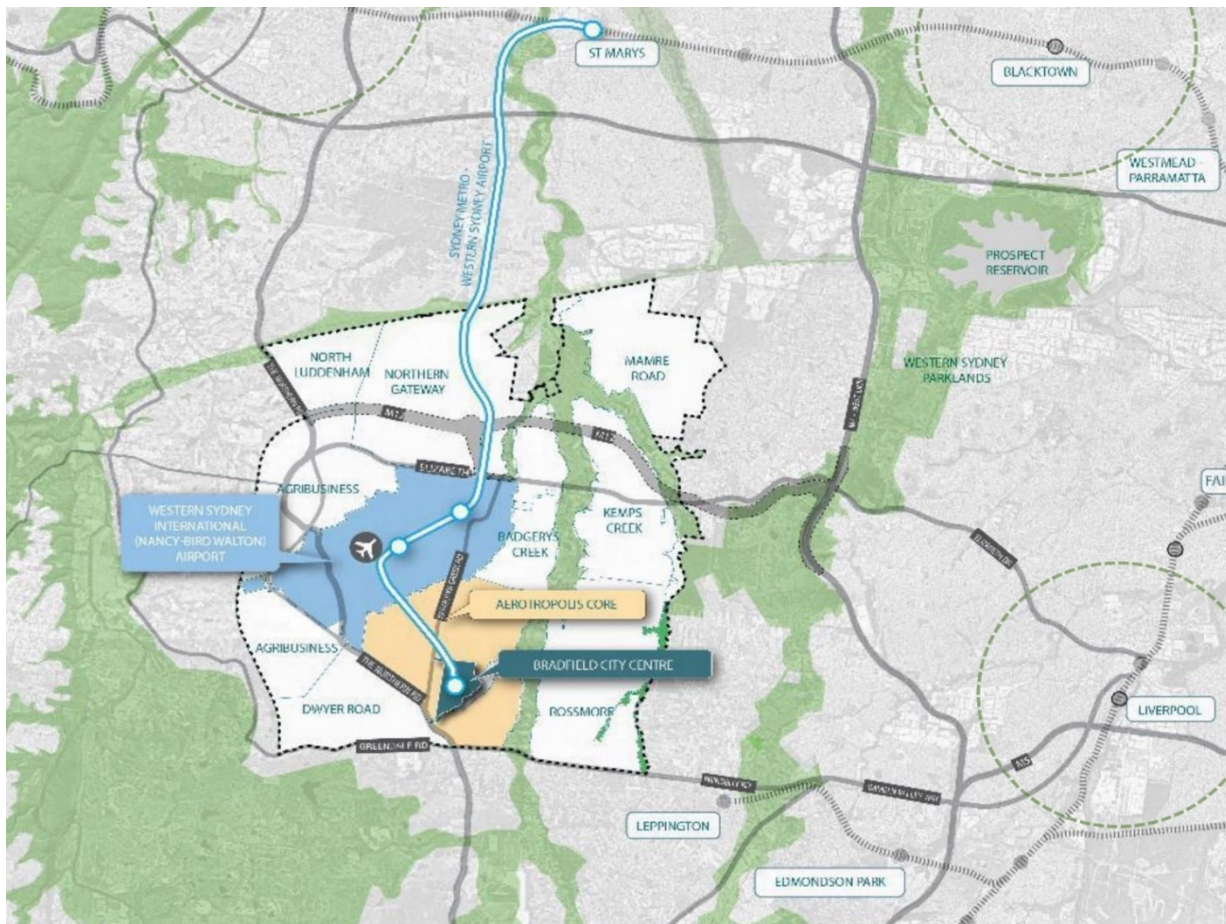
Strategic Context

The Bradfield City Centre is located to the south-east of the new Western Sydney Airport at the intersection of Badgerys Creek Road and the Northern Road (see **Figure 1** below).

The Sydney Metro Western Sydney Airport line runs through the site, providing connections from the key centres of St Marys through to stations at Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and the Aerotropolis which is located within the site.

The site is surrounded by several key roads and infrastructure corridors including Bringelly Road, Badgerys Creek Road, Elizabeth Drive, M12 and the Northern Road.

Figure 2 Strategic Context



Set on natural waterways, Bradfield City Centre presents a rare opportunity to showcase the best urban design and to create a thriving, blue and green, connected city in which Australians will want to live, learn and work. The Bradfield City Centre will be the nation's newest city centre – a 24-hour global metropolis with facilities for research, innovation and advanced manufacturing, education and housing.

3.1 THE MASTER PLAN SITE

The street address for Bradfield City Centre is 215 Badgerys Creek Road, Bringelly (the Site) within the Liverpool Council Local Government Area (LGA). The site is legally described as Lot 10 DP 1235662 and has an area of 114.9

hectares, with road access to Badgerys Creek Road at the north-western corner of it. The site includes land that is located within the Aerotropolis Core and Wianamatta-South Creek Precincts of the Western Sydney Aerotropolis. The Site is outlined in **Figure 2** below.

The Site is predominantly zoned Mixed Use under the Western Parkland City SEPP, with a small portion of Enterprise zoned land located on the north-western corner of the site. The site includes Environment and Recreation zoned land mostly along Thompson Creek.

Figure 3 Master Plan Site



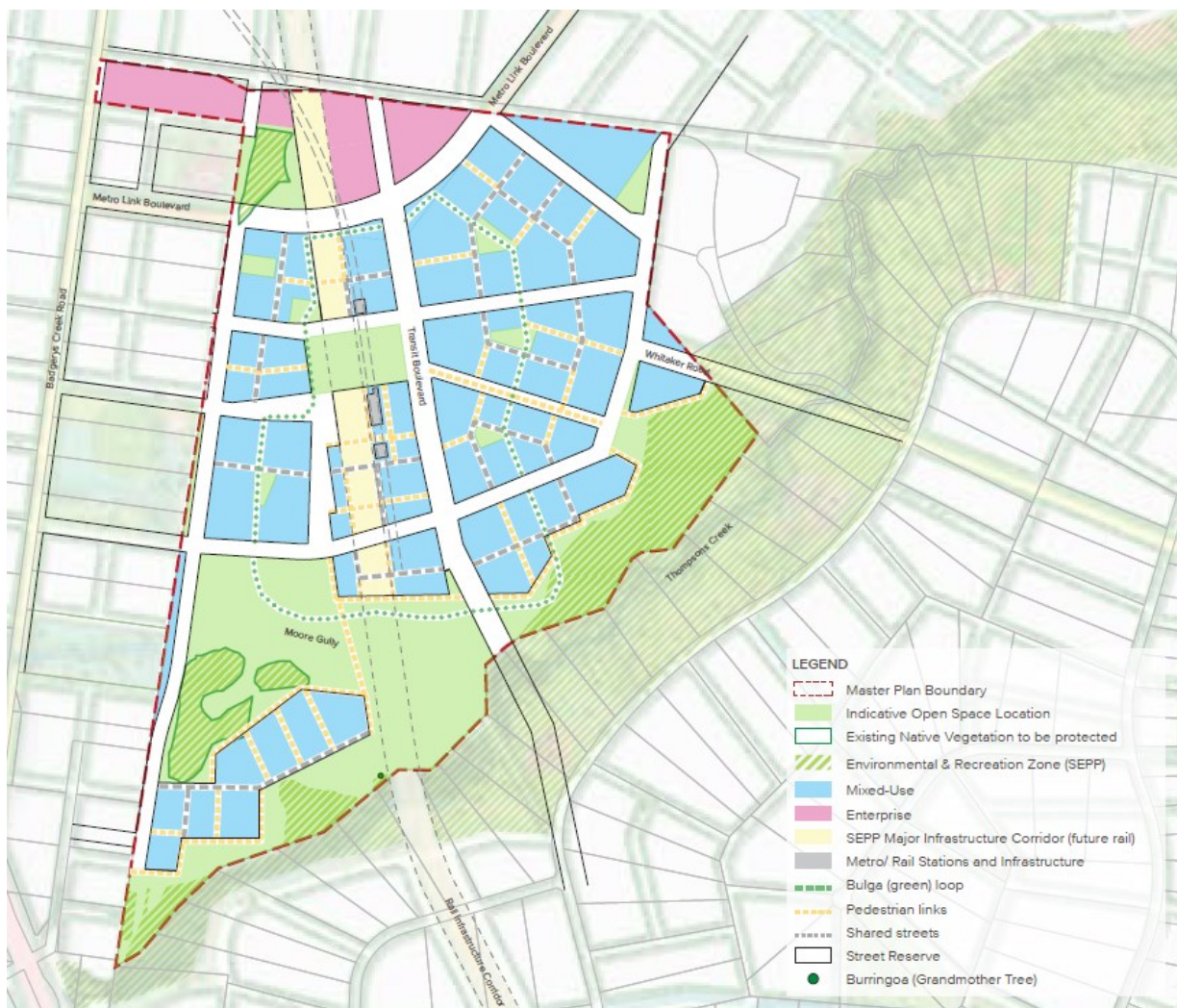
3.2 THE BRADFIELD CITY CENTRE MASTER PLAN

The WPCA has prepared a Master Plan (Figure 3 below) in accordance with the DPE Master Plan Requirements. The Master Plan sets out a framework for future development within the Bradfield City Centre which includes:

- Road network, key connectors to adjoining land and the regional road network (existing and future)

- Block structure
- Indicative open space network
- Sustainability strategy
- Social and infrastructure strategy
- Arts and culture strategy
- Infrastructure servicing strategy

Figure 4 Master Plan



3.3 THE BRADFIELD CITY CENTRE MASTER PLAN LAND AREAS

The Bradfield City Centre Master Plan's total site area of 114.9 hectares comprises of the following elements:

- Mixed Use Land Area: 458,949sqm (40%)
- Enterprise Land Area: 57,800sqm (5%)
- Infrastructure Corridor Land Area: 45,571sqm (4%)
- Open Space: 375,051sqm (33%)
- Streets: 209,435sqm (18%)

- Metro Box: 2,554sqm

3.4 THE PROPOSAL

The Bradfield City Centre Master Plan is intended to facilitate the growth of the centre over time. Three (3) horizons are established for the purpose of planning for and assessing the development of the Master Plan within this and other technical assessments.

Table 1 - Planning and Development Horizons

Phase	Indicative Timeframe	Estimated employment	Estimated residential population	Total Gross Floor Area (cumulative)
Immediate	2026 i.e., first 5 years	1,216 jobs	0 residents	48,500sqm
Stage 1	2036 i.e., first 10 years	8,390 jobs	3,112 residents	341,000sqm
Long-term	2056 i.e., after 40 years	24,997 jobs	15,288 residents	1,258,000sqm

4. Baseline Investigations

4.1 PROJECT BACKGROUND

Extent Heritage Pty Ltd have been engaged by the Western Parkland City Authority (WPCA) to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) to identify any Aboriginal object or places within the proposed study area. The results of this assessment will be used to inform the development of the master plan for the Bradfield City Centre.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) database was completed on 16 June 2020 for an area of land which encompasses the study area. The search resulted in the identification of eight registered sites within the study area:

- B 22 (AHIMS ID 45-5-2640)
- B17 (AHIMS ID 45-5-2779);
- B 18 (AHIMS ID 45-5-2620);
- B 19 (AHIMS ID 45-5-2621);
- B 20 (AHIMS ID 45-5-2622);
- B 21 (AHIMS ID 45-5-2639);
- B 23 (AHIMS ID 45-5-2641); and
- B 38 (AHIMS ID 45-5-2628).

A full coverage survey of the study area was completed on 7 December 2020, with representatives of Registered Aboriginal Parties (RAPs). The survey resulted in the identification of two previously unrecorded Aboriginal sites: an isolated find in the western edge of the site (ACAS02 / AHIMS ID Pending) and a low-density artefact scatter containing four artefacts (ACAS01 / AHIMS ID 45-5-5481), as well as an area of potential archaeological deposit (PAD) (ACIF01 / AHIMS ID 45-5-5480). Five additional Aboriginal objects were also identified at the location of B 23 (AHIMS ID 45-5-2641). No Aboriginal objects were identified at the recorded location of the eight previously registered AHIMS sites.

An Aboriginal Cultural Heritage Assessment Report (ACHAR) was prepared to understand and investigate the known and unknown areas of Aboriginal archaeology within the study area. The report was created in accordance with the 2010 *Consultation Requirements*. The preliminary assessment identified three areas of potential archaeological deposits (PADs). ACIF01 (AHIMS ID 45-5-5480) was identified as a PAD during site survey, as the area appeared to have comparatively less historical disturbances than the rest of the study area. The Moore Gully PAD (AHIMS ID 45-5-5492) comprised a 50 m buffer on either side of Moore Gully, which is a third-order waterway running east to west through the site. The Thompsons Creek PAD (AHIMS ID 45-5-5491) comprised the area within a 100 m buffer of Thompsons Creek, a fourth-order waterway located outside the eastern extent of the study area.

Due to the moderate potential for Aboriginal archaeological remains across the study area, an archaeological test excavation program was proposed. The test excavation programme investigated the nature and extent of potential subsurface artefacts within these three PADs: ACIF01, Moore Gully, and Thompsons Creek. An additional area, the Northern Transect, in the north-western corner of the study area, was also investigated to test an area of low archaeological potential and support the conclusions of the predictive modelling.

In accordance with this recommendation, a test excavation methodology was developed and issued to the RAPs for this project for review and comment. The methodology was revised based on stakeholder feedback, and an updated methodology was sent again for review and comment. The approved test excavation methodology proposed the excavation of 202 test pits measuring 50 x 50 cm. The test excavation programme was undertaken between 5 October and 12 November 2021. This Aboriginal Archaeological Test Excavation Report (ATER) outlines the results of the test excavation programme.

4.2 REPORT AIMS AND OBJECTIVES

This ATER has been prepared in accordance with the *Code of Practice* (DECCW 2010b). The aims and objectives of this report are to:

- identify any Aboriginal objects or places within the study area;
- assess the scientific significance of an identified Aboriginal objects or places;
- evaluate and discuss the impacts of the proposed works on identified Aboriginal objects or places; and
- develop management measures for the proposed impacts to identified Aboriginal objects or places.

To satisfy the objectives of this report, the following tasks will be completed:

- a review of existing archaeological data, including assessments previously completed within the vicinity of the study area and relevant heritage databases;
- investigation of the environmental context of the study area;
- synthesis of background information into a predictive model to inform an assessment of archaeological potential across the study area; and
- completion of a test excavation program across the study area to test the results of the predictive model and identify subsurface Aboriginal objects.

4.3 LIMITATIONS

This report is based on existing and publicly available environmental and archaeological information, previous investigations of the study area, and the results of an archaeological survey and test excavations. The AHIMS data was provided to Extent Heritage by Heritage NSW-DPC. Information in the archaeological assessment report reflects the scope and the accuracy of the AHIMS site data, which in some instances is limited. This report also does not consider historical archaeology or built heritage.

4.4 AUTHORSHIP AND ACKNOWLEDGEMENTS

This report is authored by Hannah Morris (senior heritage advisor, Extent Heritage) and reviewed by Andrew Costello (senior associate, Extent Heritage).

5. Landscape context

This part provides a concise summary of the geology, soils, hydrology, vegetation, and past land-use of the study area. These environmental factors have an influence on the potential types of raw material sources available, past human activities and site formation processes in the study area. A firm understanding of local environmental factors and how they have changed over time is fundamental to the identification of areas of archaeological potential and their relative levels of preservation in the study area.

5.1 GEOLOGY AND TOPOGRAPHY

The study area is located on the Cumberland Plain, an extensive low-lying sub-region within the wider Sydney Basin bioregion (DAWE n.d.). The surface geology underlying the study area is largely characterised by sandstone, siltstone, and shale rocks of the Wianamatta Group (Geoscience Australiferrera and Australian Stratigraphy Commission [GAASC] 2017). With a maximum thickness of 300 m, the Wianamatta Group was deposited during the Triassic period (c. 251.9–201.3 Mya) and includes three major geological units: Ashfield Shale (consisting of laminate and dark grey siltstones), Bringelly Shale (consisting of shale with occasional calcareous claystone, laminate, and infrequent coal) and Minchinbury Sandstone (consisting of fine-to-medium-grained quartz lithic sandstone) (GAASC 2017; Office of Environment and Heritage [OEH] 2019). Over the course of the Holocene epoch (c. 11,650 cal. BP–present), channel and floodplain alluvium comprising of gravel, sand, silt, and clay has also been deposited along the bank of Thompsons Creek, located along the eastern and western boundary of the study area (GAASC 2017). Arising from this geological background within the study area are two distinctive natural soil landscapes (OEH 2019): South Creek and Blacktown (Figure 5).

The South Creek soil landscape is located along the channels and floodplains of Badgerys, Cosgroves, Kemps, South, and Thompsons creeks, as well as that of a minor unnamed watercourse at the northern boundary of the study area (OEH 2019). This landscape comprises flat-to-gently-sloping floodplains and valley flats, drainage depressions and incised channels, with occasional terraces or levees providing low, local reliefs (Figure 6). Its soil generally consists of shallow-to-deep sediment layers with an A horizon topsoil of brown loam over a B horizon of brown clay. The South Creek soil landscape is an active floodplain that is presently reworked by fluvial processes, resulting in streambank and gully erosion during periods of concentrated flows.

The Blacktown soil landscape is located on higher elevations adjacent to the South Creek soil landscape, and characterises most of the study area (OEH 2019). This landscape consists of gently undulating rises with broad crests and ridges that are rounded with convex upper slopes grading into concave lower slopes. Its soil generally consists of shallow-to-deep layered sediments with an A horizon topsoil of brownish black loam or clay loam over a B horizon subsoil of brown or grey mottled clay. In contrast to the South Creek soil landscape, the erosion hazard for the Blacktown soil landscape is generally slight-to-moderate, which can increase to moderate or high during periods of concentrated flows.

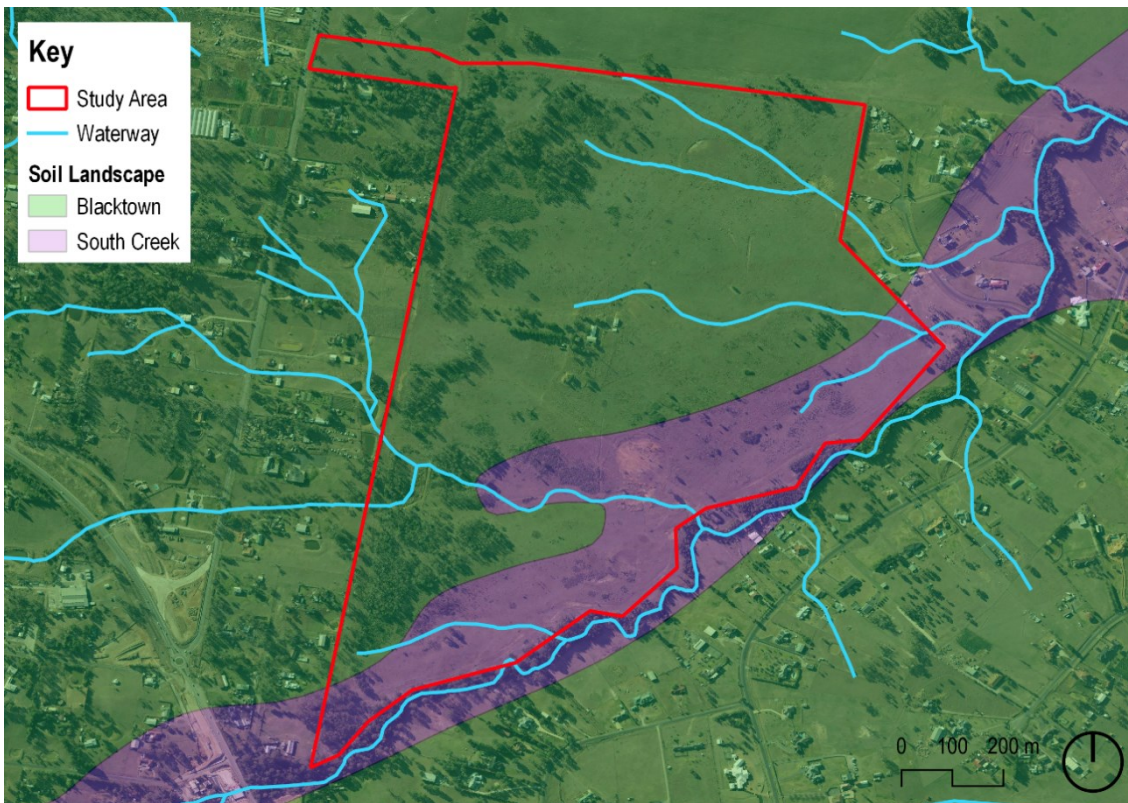


Figure 5 Soil landscapes within the study area. Source: NSW Planning and Environment 2021 (with Extent Heritage additions).

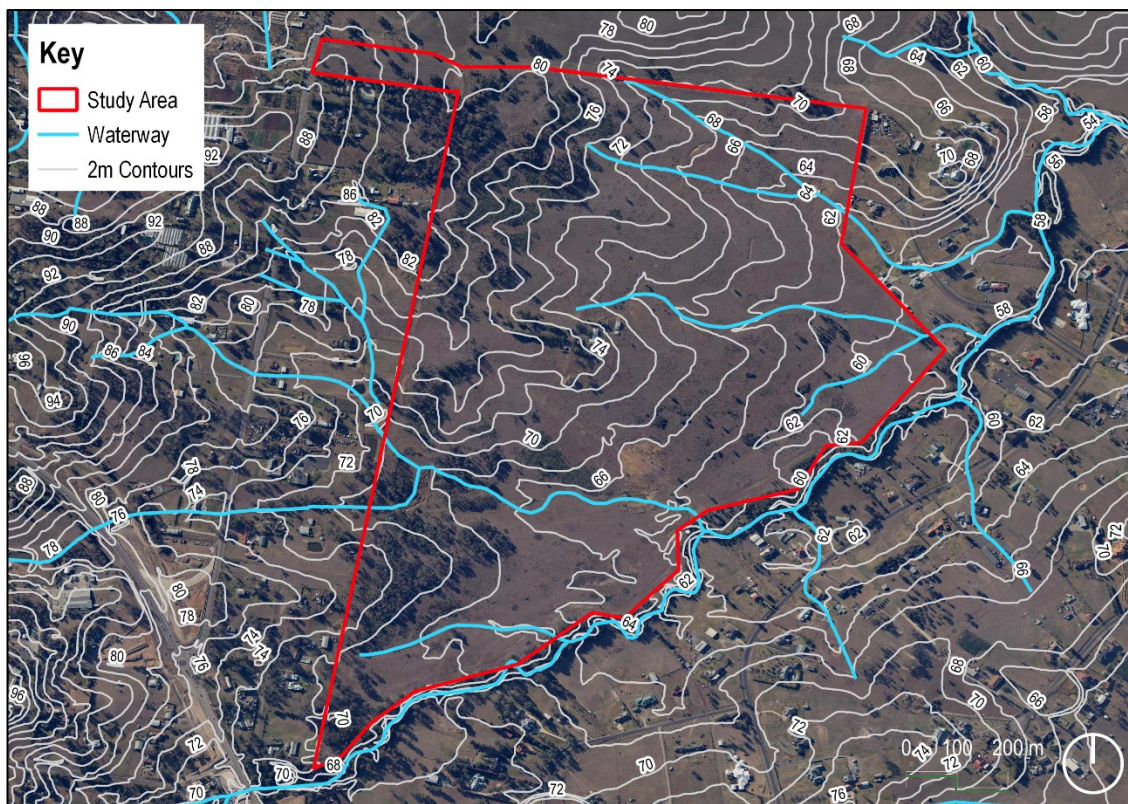


Figure 6. Contours (2 m) of the landscape. Source: NSW Planning and Environment.

5.2 HYDROLOGY

The Hawkesbury-Nepean catchment consists of thirty sub-catchments, and the study area lies within the South Creek sub-catchment (HNCMA 2007a, 19; HNCMA 2007b, 7-102). The South Creek sub-catchment is presently the most degraded sub-catchment due to the dramatic alteration of hydrological and sediment regimes from historical vegetation clearance and increasing urbanisation (HNCMA 2007b, 69). Increasing impervious surfaces in the catchment are causing changes to the hydrology of the sub-catchment which has, in turn, greatly altered the geomorphology and ecology of its watercourses (HNCMA 2007b, 69).

Thompsons Creek, a fourth-order creek, runs along the southern and eastern boundary of the study area, and five ephemeral tributaries of Thompson Creek run east-to-west across the study area. Thompsons Creek is a branch of the Wianamatta South Creek precinct, which is largely defined by the courses of both the South and Kemps Creek. These run almost parallel to each other on a broadly north-to-south axis, with two smaller 'arms' of the precinct following the course of Badgerys and Thompsons Creek.

Moore Gully, a third-order waterway, runs west-to-east in the southern portion of the site. It joins Thompsons Creek just outside the study area boundary. An associated swampy, waterlogged area sits in the low-lying land along Moore Gully.

The non-perennial waterway has been affected by modern agricultural activities including ploughing and the construction of dams along its route. The 1947, 1965, and 1986 aerials of the site show the waterway clearly, with a pool toward its western extent (8–Figure 10). This catchment was artificially modified to form a clearer dam feature after this point, as is clearly visible by the marking seen in the present aerials of the site.

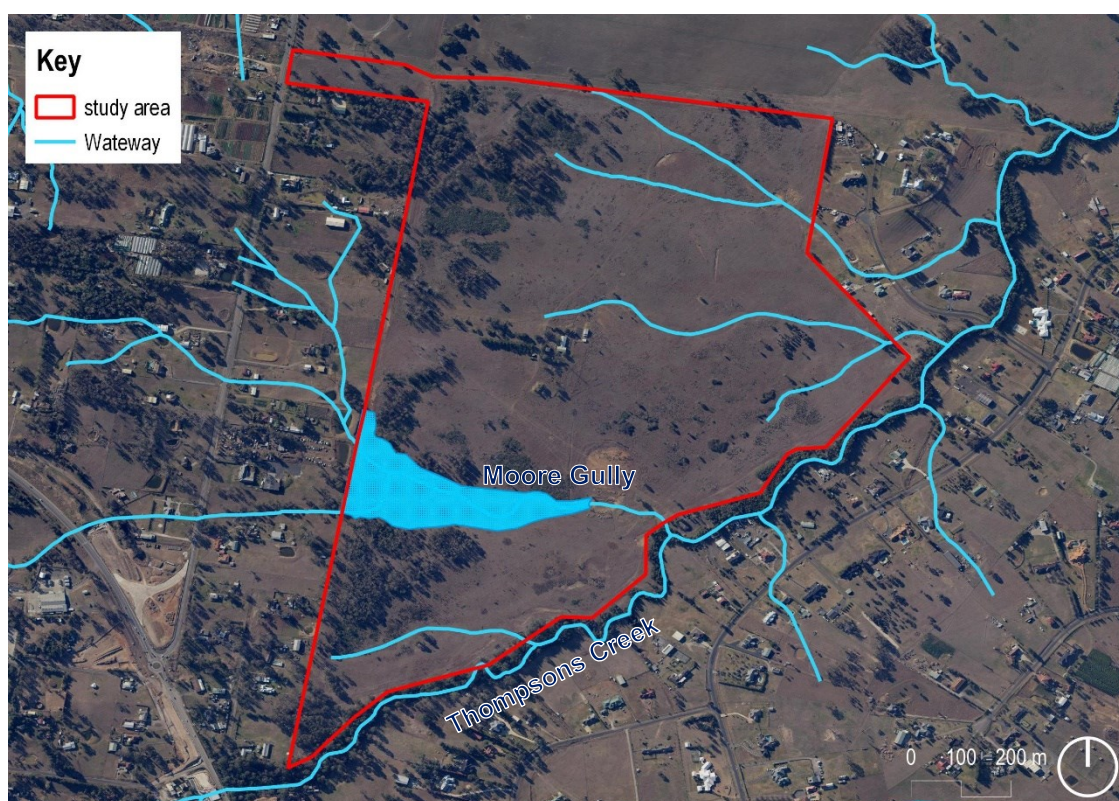


Figure 7 Waterways associated with the study area. A waterlogged area associated with Moore Gully is also indicated.
Source: DPE 2021 (with Extent Heritage additions).

5.3 PAST VEGETATION

The native vegetation in the study area and the rest of the Cumberland Plain has been extensively cleared since British colonisation. As the Blacktown soil landscape covers most of the land within the study area, the vegetation landscape of the study area is largely characterised by almost completely cleared open-forest and open woodland

(dry sclerophyll forest), with individual trees or small stands of Mugga Ironbark (*Eucalyptus sideroxylon*) found occasionally on crests (OEH 2019).

Vegetation on the channels and floodplains of the South Creek soil landscape reflects its frequent inundation (OEH 2019). Common tree species present in this soil landscape include the Broad-Leaved Apple (*Angophora subvelutina*), Cabbage Gum (*Eucalyptus amplifolia*), and Swamp Oak (*Casuarina glauca*), while tall shrublands of paperbarks and tea trees may occur on more elevated streambanks. Exotic species such as the Blackberry (*Rubus vulgaris*) and other weeds are also observed to dominate areas where significant land clearance have occurred.

5.4 HISTORICAL ACTIVITIES AND DISTURBANCES

For the purposes of this assessment, this Part relates to historic land use that may impact the survivability of Aboriginal objects.

5.4.1 Agricultural activities

The first land grant covering the study area was given to Thomas Laycock Junior, who was given a 600-acre lot known as Cottage Vale in 1818. The adjoining 600-acre lot to the south, originally granted to Charles Reid, was soon absorbed and the property became known as the Retreat, and later Kelvin Park. The homestead associated with Laycock Junior has been listed as a State Heritage landscape of farming and grazing (Item No. 00046) called the Kelvin Park Group. The SHR boundary for the site abuts the north-eastern edge of the study area.

Agricultural activities were undertaken in the study area by Laycock Junior and subsequent landowners including John Thomas Campbell and Alfred Kennerley. These activities most likely revolved around cattle breeding. Campbell, for example, was a successful farmer and pastoralist who bred cattle and horses. The property was also leased by the Australian Agricultural Company from 1825, Australia's oldest agricultural and pastoral development company established in 1824.

Across the twentieth century, the site remained in private hands and underwent limited developments. It continued to be utilised for agricultural pursuits. The 1947 aerial (Figure 8) reveals heavy ploughing across the eastern half of the study area.

5.4.2 Commonwealth and Overseas Telecommunications Commission

In the 1950s, Cottage Vale was chosen as the site of the Overseas Telecommunications Commission (Figure 9). At this point, the Laycock estate had never been subdivided. However, upon the purchase by the Commonwealth, a strip of land (now 970 acres) was established as the Kelvin Park Group.

The telecommunication commission station was constructed to the north of the present study area, in the adjacent lot. Between 1952 and 1955, the Royal Australian Air Force (RAAF) Radio Receiving Station was constructed within the study area. The site, also known as RAAF Bringelly, remained in use until the late 1990s.

The RAAF station comprised several structures: a main receiving tower and receiving station buildings were constructed in the centre of the site; staff houses were built along the entryway into the complex (Figure 11); and additional structures built included lampposts, a water tank and water tower, an incinerator, a rain garage, vehicle garages, and two antennas with burial radial lines located within octagonal paddocks. In addition, an array of concrete pads that anchored light aeriels were set up across the entirety of the study area (Figure 12). Each anchor possessed at least three underground guy-wires. Several, but not all, of the pads have been mapped (Figure 13). Finally, several roads and tracks through the study area, seen in the 1965, 1986 and present aeriels (Figure 9–Figure 10).

An additional area of disturbance was identified during the test excavation program. A drainage line, running north to south, had been established to lead water to the northern bank of Moore Gully (Figure 11). The feature was located within the Moore Gully PAD. As the level of disturbance associated with the feature was high, and all natural soil profiles had been removed, the extent of the Moore Gully PAD (AHIMS ID 45-5-5492) was altered to remove the area of the drainage channel.



Figure 8 1947 aerial of the study area. Source: Neapmaps 2021 (with Extent Heritage additions).



Figure 9 1965 aerial of the study area. Source: Neapmaps 2021 (with Extent Heritage additions).



Figure 10 1986 aerial of the study area. Source: Neapmaps 2021 (with Extent Heritage additions).

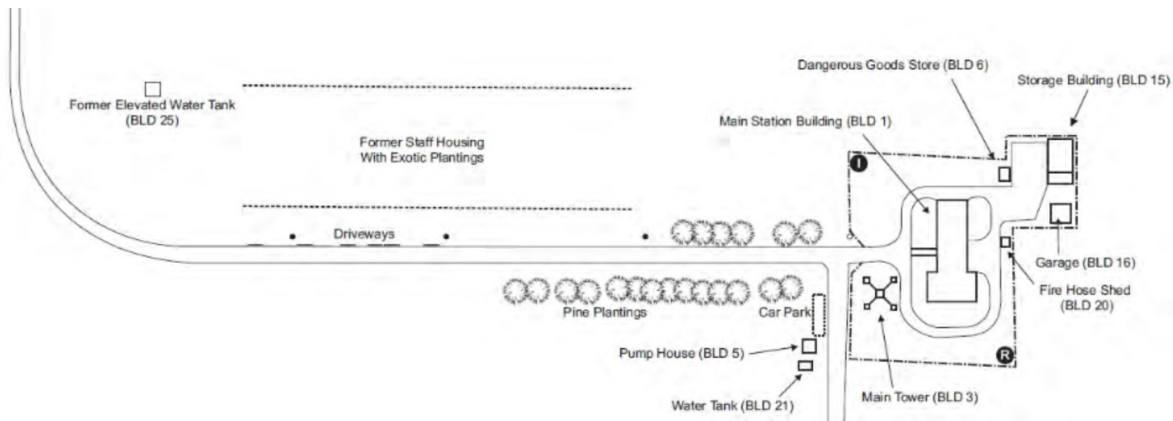


Figure 3.5 RAAF Bringelly Site Layout (ERM 2010)

Figure 11 Layout of structures built as part of the RAAF Bringelly site. Source: ERM 2010, figure 3.5.



Figure 12 Example of some concrete pads as seen on the 1986 aerial, located to the east of the southern antenna. Source: Nearmaps 2021 (with Extent Heritage additions).

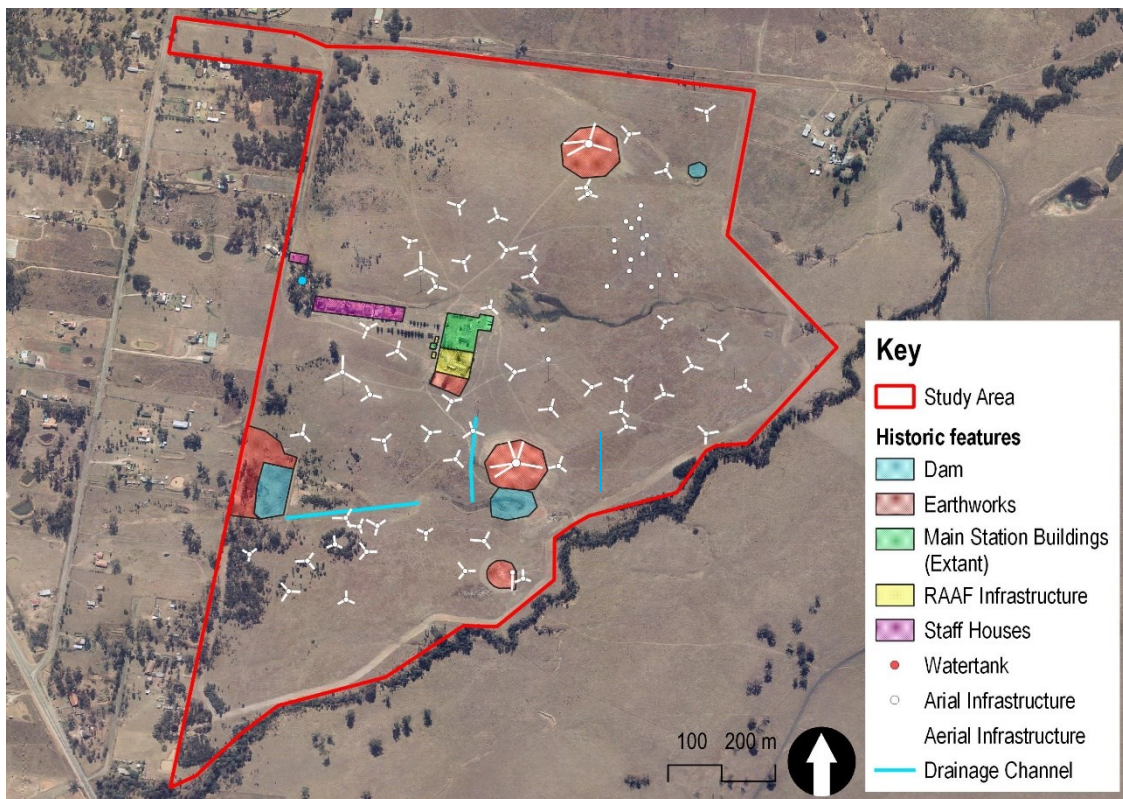


Figure 13 Location of structures built across the study area during its use as Bringelly RAAF base, including concrete pads for light aerals and associated guy-wires. Source: Extent Heritage 2021.

Note that not all the concrete pads have been identified and marked on this map.

6. Archaeological background

6.1 REGIONAL ARCHAEOLOGICAL CONTEXT

Aboriginal occupation of NSW spans at least 40,000 years (Stockton and Holland 1974; Nanson et al. 1987; JMCHM 2005, 107–125), although older dates have been claimed for artefacts and human remains found within the barrier sands of Lake Mungo in the Willandra Lakes Region (Bowler et al. 2003; Shawcross 1998). Within the Cumberland Plain, Aboriginal occupation dates back well into the Pleistocene period. This evidence comes from radiocarbon dating of charcoal retrieved from excavated sites at Cranebrook Terrace, Penrith (41,700 years before present [BP]), Shaw's Creek K2 (14,700 BP), and George & Charles Streets, Parramatta (c. 25,000–30,000 BP). As the dating of Cranebrook Terrace is currently under review (Attenbrow 2010, 21; see also Williams et al. 2017), the oldest reliable dates for Aboriginal occupation in the Cumberland Plain are presently derived from the George and Charles Streets site.

More than 7,000 sites have been recorded on the Heritage NSW-DPC AHIMS database for the Cumberland Plain sub-region. The majority of these sites are artefact sites (open camp sites or isolated finds) (approximately 54 per cent), PADs (approximately 17 per cent), grinding grooves (approximately 13 per cent), and other undefined site types (approximately 15 per cent). These findings are similar to the frequency of site types recorded for the overall Sydney region. The comparatively small number of rock shelters with art or deposits for the western Sydney area can be attributed to the lack of sandstone escarpments and shelters. Other site types in western Sydney include stone quarries, non-human bone or organic material, and shell deposits.

Kohen (1986) completed a study of the regional archaeology of the Cumberland Plain that demonstrated that proximity to water was an important factor in site patterning. Kohen found that 65 per cent of open artefact scatter sites were located within 100 m of permanent fresh water. Only 8 per cent of sites were found more than 500 m from permanent fresh water (Kohen 1986). Kohen ultimately argued that open artefact scatters are larger, more complex, and more densely clustered along permanent creek and river lines. The study also found that silcrete (51 per cent) and chert (34 per cent) are the most common raw materials used to manufacture stone artefacts. Other raw materials include quartz, basalt, and quartzite (Kohen 1986).

Although these patterns have been generally supported by subsequent investigations, Kohen's study was limited by a reliance on surface evidence. Extensive excavation across the Cumberland Plain has since shown that areas with no surface evidence often contain sub-surface deposits buried beneath current ground surfaces. This is a critical consideration in aggrading soil landscapes, such as those commonly found across the Cumberland Plain. In a 1997 study of the Cumberland Plain, McDonald (JMCHM, 1997) found that:

- a total of 27.87 per cent of excavated sites had no surface artefacts identified before excavation; and
- the ratio of recorded surface to excavated material was 1:25.

The character and composition of the excavated sites in McDonald's study could not be properly predicted on the basis of the surface evidence. Surface evidence (or the absence of surface evidence) does not necessarily indicate the potential, nature or density of sub-surface material. The results of McDonald's study highlight the limitations of surface survey in identifying archaeological deposits in this landscape. The study also shows the importance of test excavation in establishing the nature and density of archaeological material on the Cumberland Plain.

The distribution, density, size, and features of sites on the Cumberland Plain largely depends on their environmental contexts. For instance, middens are typically found in close proximity to marine, estuarine, and sometimes freshwater bodies. On the other hand, rock shelters are only found in areas of exposed sandstone escarpment, whereas grinding grooves are located in areas of exposed flat-bedded sandstone near water sources.

6.2 LOCAL ABORIGINAL ARCHAEOLOGICAL CONTEXT

The previously completed assessments (outlined below) have identified the presence of 'open camp' or 'shelter' and art sites, areas of rich natural resources for subsistence and raw material sources for stone tool manufacture. In general, the raw materials utilised in the manufacture of stone tools appear to be predominantly silcrete, with lesser utilisation of chert, quartz, quartzite, sandstone, petrified wood, and mudstone/tuff. Edge-ground artefacts and grinding grooves were found along South Creek as it passes near Badgerys Creek (Haglund 1978), while another edge-ground axe was recently recovered with other stone flakes during another survey at Mamre Road near Kemps Creek (Artefact 2019b). A fragment of a possible 'microblade' was also identified during a survey of a

locality at Badgerys Creek by Kohen (1991, 14). Two 'backed implements' were identified during another survey on a spur above South Creek near Ramsay Road (Brayshaw McDonald 1992, 9), whereas an indurated mudstone scraper was recovered during test excavations at the Twin Creeks Estate near South Creek (Dominic Steele 2007).

Liverpool Rural Lands Study. Aboriginal Archaeology: Prediction and Management (Brayshaw McDonald 1994)

As part of a wider rural lands study conducted by Liverpool Council, Brayshaw McDonald (1994) was commissioned by Don Fox Planning Pty Ltd to determine and predict the state of the Aboriginal archaeological resource in the rural lands west of Liverpool. In doing so, Brayshaw McDonald (1994) determined that 'an extensive distribution of archaeological traces of their [Aboriginal] occupation still exists there' despite the significant attrition of these traces from historical land clearance and agricultural activities.

Brayshaw McDonald predicted that 'there will be some potential for the deeper portions of these [archaeological deposits] to have escaped disturbance, especially in alluvial areas where archaeological deposits may be relatively deep' (1994). Conversely, archaeological deposits on hillslopes and ridges are likely to be relatively 'more shallow' and hence, the impact to deposits at these locations are 'likely to be severe since the artefact-bearing layer there is more likely to be wholly within the plough zone' (1994). They conclude that alluvial terraces in rural Liverpool (i.e., the southern portion of the present study area) are likely to have the best potential for containing intact open sites.

Archaeological Investigations at Twin Creeks Estate (Dominic Steele 1999; 2001; 2004; 2007)

Dominic Steele (1999) undertook a series of archaeological investigations of an approximately 350 ha parcel of land situated between Luddenham and Mamre Roads at South Creek, Luddenham (i.e., the north-eastern portion of the present study area) in preparation of proposed plans for the Twin Creeks Estate recreational and residential development in the area.

Based on the distribution of these sites in this locality, Dominic Steele observed that sites along Cosgroves Creek and its surrounding flats appears to be 'well dispersed along the watercourse and generally possess low artefact densities,' and that it is 'unlikely that archaeological deposits either substantial in extent, significant in composition or undisturbed in context will be encountered' (Dominic Steele 1999) along this creek. Hence, Dominic Steele concluded that the confluence of various creek lines at the South Creek locality 'represented an important focus of repeated Aboriginal use and occupation' due to 'the concentrations of archaeological material in this area' (1999).

Subsequent test excavations conducted in this locality did not recover any significant undisturbed archaeological remains as only low-density distributions of artefacts were recovered (Dominic Steele 2001; 2004). These results were interpreted to reflect 'casual Aboriginal use of the local landscape and associated loss or discard of flaked stone items, whilst occasional knapping may also have been undertaken in the past' (Dominic Steele 2001; 2004). This interpretation was confirmed by further test excavations conducted at a PAD (LEC 10/ TCE PAD 1) located within the estate (Zones F and G) in 2004 (Dominic Steele 2007).

Dominic Steele (2004) concluded that 'the principal focus of past Aboriginal visitation and use of the landscape' is 'sited at the confluence of South, Badgerys and Kemps Creeks' and the associated slopes that extend away from these watercourses (i.e., the north-eastern portion of the present study area). According to Dominic Steele (2004), this locality bears extensive evidence for Aboriginal silcrete extraction, utilisation (e.g., de-cortication and heat treatment), and flaked stone tool manufacture and maintenance.

South West Growth Centre. Preliminary Aboriginal and Historical Heritage—Gap Analysis (AHMS 2015a)

In 2015, AHMS (now Extent Heritage) was commissioned to undertake an Aboriginal and Historic Heritage Gap Analysis of the South West Growth Centre (SWGC) as part of an update to the SWGC structure plan. In doing so, AHMS (2015, 39) concluded that the archaeological record of the SWGC (incorporating the western portions of the present study area) is dominated by surface and sub-surface artefactual material generally found within 200 m of the larger river systems in the region. In particular, the distribution of these sites is more variable in areas where creek lines are in their upper reaches and the geomorphology is more undulating. Furthermore, elevated areas up to 500 m from major creek banks have also been shown to bear archaeological materials.

In addition, the predictive modelling developed by AHMS concluded that there is high potential for Aboriginal objects/sites to occur along the banks of South, Kemps, Badgerys, Lowes, Thompsons, and Rileys Creeks. In particular, the areas to the north of South and Kemps creeks, along the northern stretches of Thompson Creek and at the confluence of South, Rileys, and Lowes creeks are all considered by the model to have the highest potential for significant cultural material. This is because these areas have a higher frequency of elevations (e.g., hills, ridgelines, terraces, etc) and there has been 'a general absence of development' (AHMS 2015, 39).

Mamre Road Precinct Aboriginal Heritage Study (EMM 2020)

EMM Consulting (2020) was engaged to undertake an Aboriginal Heritage Study of the Mamre Road Precinct (i.e., the north-eastern portion of the present study area adjacent to Twins Creek Estate) as part of a broader masterplan to guide the industrial development in this locality.

Desktop and field survey investigation of this precinct by EMM demonstrated that the area is comparable with the wider cultural landscape of the Cumberland Plain. Significantly, all the sites identified within the Mamre Road Precinct are observed to be mainly located on the edges of main creek systems and/or on a ridge line to its north. All of the sites are also characterised by isolated objects and/or low-density artefact scatters (usually consisting of fewer than ten artefacts), and excavations at some of these sites indicate that they are primarily found in shallow duplex and/or fabric contrast soil profiles (under around 30 cm deep), with rare examples extending to depths of 60–80 cm.

EMM (2020) identified areas of archaeological potential in buffer zones along the banks of Kemps Creek (100 m buffer), South Creek (100 m buffer), and Ropes Creek (200 m buffer). Elevated areas within the buffer zones along these creeks (e.g., levees, terraces, and ridgelines) were considered in the study to have a greater potential for significant cultural material to be present.

Sydney Metro—Western Sydney Airport (AECOM 2021)

AECOM (2021) completed an archaeological report for the Western Sydney Airport, which extends into the current study area. The assessment included an archaeological survey of a portion of the current study area in February 2020. An objective of the survey was to re-identify an artefact scatter, AHIMS ID 45-5-2640 (B 22), previously identified within the study area. During the survey, however, no artefacts were detected. AECOM noted that the artefacts were likely obscured by dense vegetation, and that the site was still likely to be valid. No additional surface artefacts were identified during the survey, but the land surrounding AHIMS ID 45-5-2640 was assessed as demonstrating potential to contain subsurface artefacts.

A total of twenty-six test pits (measuring 500 x 500 mm) were excavated by AECOM in the centre of the study area, surrounding the main house complex. No Aboriginal objects were recovered from the test excavation program. As result, the land surrounding AHIMS ID 45-5-2640 was assessed by AECOM as demonstrating low archaeological potential.

6.3 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS) DATABASE

The AHIMS database is presently managed by Heritage NSW-DPC, and includes spatial and compositional information of Aboriginal sites (i.e., objects, places and declared Aboriginal Places) previously recorded through academic and compliance-based cultural resource management projects associated with modern various developments.

To cover the full extent of the study area, two extensive searches of the AHIMS database were undertaken on 16 June 2020. Land surrounding the study area was included within the search parameters to gain information on the regional archaeological context and inform predictive statements regarding the archaeological potential of the study area. AHIMS search area 1 included an area of land at datum GDA, zone 56, eastings 284800–298050, northings 6243390–6246890, with a buffer of 0 m. AHIMS search area 2 included an area of land at datum GDA, zone 56, eastings 284800–298050, northings 6241150–6243400, with a buffer of 0 m.

The AHIMS search results identified 191 registered sites (Figure 14). There are twenty standard AHIMS site features and a site can include more than one feature. The frequency of AHIMS site features is included in Table 2 below.

Table 2. Summary of AHIMS features.

Site feature	Number	Percentage
Artefact	158	82.72%
Grinding groove	1	0.52%
Art (pigment or engraved)	3	1.57%

Potential archaeological deposit (PAD)	11	5.76%
Artefact, potential archaeological deposit (PAD)	12	6.28%
Modified tree (carved or scarred)	6	3.14%
Total	191	100.00%

A large number of sites were identified across the landscape and concentrated within areas where relatively low amount of land disturbances has occurred (Figure 13). The wide distribution of artefact sites across various terrains in the landscape is indicative of their nature as part of the wider 'background scatter' of artefacts across the landscape within the Aboriginal archaeological record.

Culturally modified trees have been identified within areas where remnant vegetation remains extant (e.g., along creek lines and away from urban areas). Grinding groove sites have been identified close to creek lines due to the need for water in the grinding process.

A total of eight AHIMS registered sites were located within the study area prior to the surface survey and test excavation program (Figure 15):

- B17 (AHIMS ID 45-5-2779);
- B 18 (AHIMS ID 45-5-2620);
- B 19 (AHIMS ID 45-5-2621);
- B 20 (AHIMS ID 45-5-2622);
- B 21 (AHIMS ID 45-5-2639);
- B 22 (AHIMS ID 45-5-2640);
- B 23 (AHIMS ID 45-5-2641); and
- B 38 (AHIMS ID 45-5-2628).

B17 (AHIMS ID 45-5-2779)

The site was recorded in 1996 as an open artefact scatter, measuring 50 x 15 m. The site was located across a spur line, extending down to the upper slope. The comprised two complete flakes of silcrete and two flaked pieces of quartz and silcrete. B 17 was identified within an exposure associated with a vehicle track and animal digging. As a result, the site was assessed as being in poor condition.

B 18 (AHIMS ID 45-5-2620)

The site was recorded in 1996 as an isolated artefact. Limited information was included on the site and associated record. As a result, the landform context, extent and nature of the site is unknown.

B 19 (AHIMS ID 45-5-2621)

The site was recorded in 1996 as an open camp site. Limited information was included on the site and associated record. As a result, the landform context, extent and nature of the site is unknown.

B 20 (AHIMS ID 45-5-2622)

The site was recorded in 1996 as an open camp site. Limited information was included on the site and associated record. As a result, the landform context, extent, and nature of the site is unknown.

B 21 (AHIMS ID 45-5-2639)

The site was recorded in 1996 as an open artefact scatter, measuring 50 x 15 m. The site was located on a valley floor, associated with a vehicle track and animal digging. The assemblage predominantly comprised silcrete (n=7) with lesser numbers of quartzite (n=2), quartz (n=1), and mudstone (n=1). Artefact types were predominantly complete flakes (n=9) with lesser numbers of flaked pieces (n=2). One of the complete flakes was found to be a product of bi-polar flaking. It was assessed by Navin Officer (1996) that the site was likely to contain additional sub-surface resources. The location of B 21 has been incorporated into the extent of the Thompsons Creek PAD (AHIMS ID 45-5-5491) investigated as part of the test excavation program.

B 22 (AHIMS ID 45-5-2640)

The site was recorded in 1996 as an open artefact scatter. The site comprised three complete flakes: two of silcrete, and one of mudstone. B 22 was located on a vehicle track on a mid-slope.

B 23 (AHIMS ID 45-5-2641)

The site was recorded in 1996 as an open artefact scatter, located on a valley side slope. The site assemblage comprised two complete flakes of silcrete, one bi-polar flake of silcrete, and one flaked piece of quartz.

B 38 (AHIMS ID 45-5-2628)

The site was recorded in 1996 as an artefact site. Limited information was included on the site and associated record. As a result, the landform context, extent, and nature of the site is unknown.

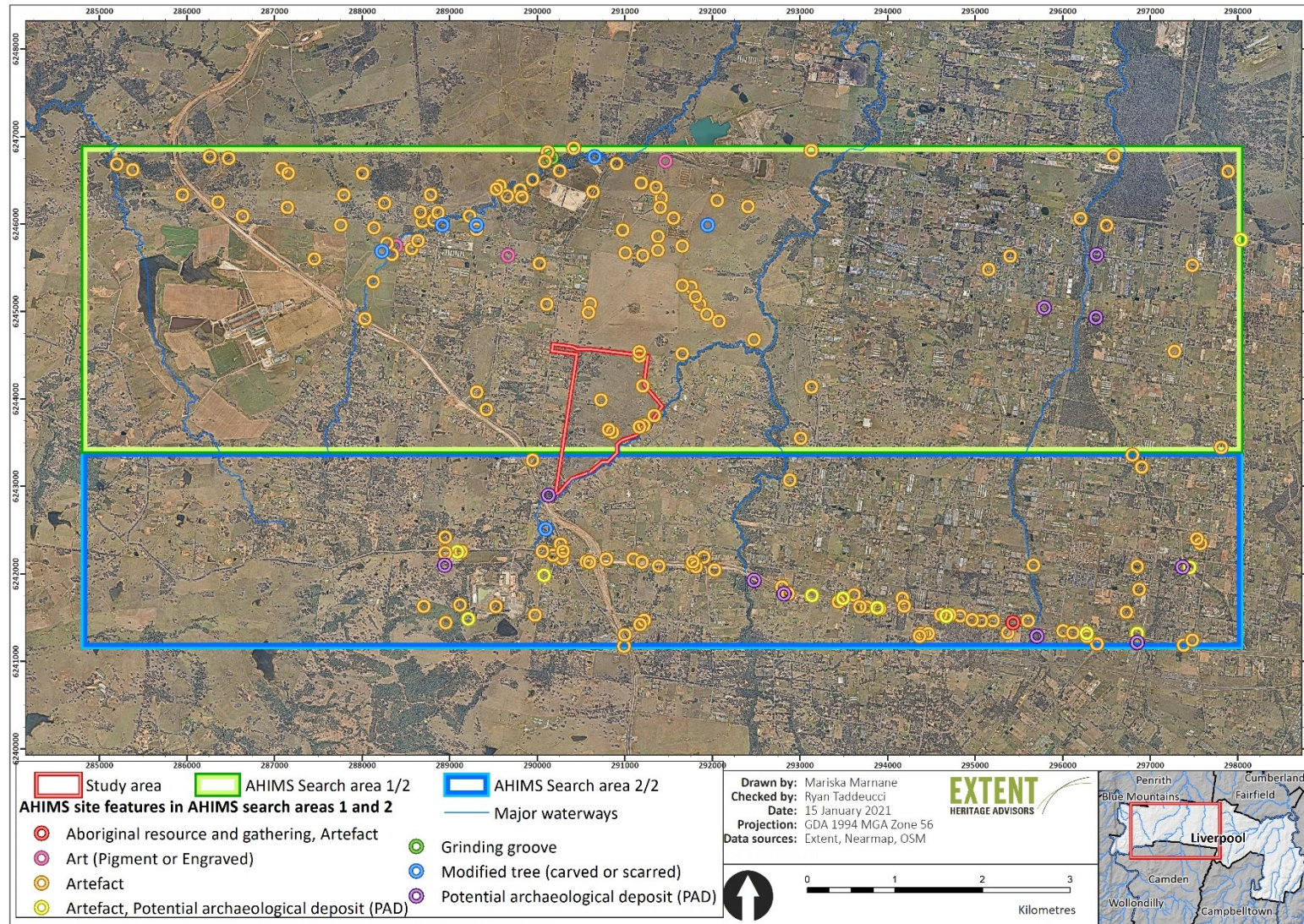


Figure 14: Results of extensive AHIMS search.

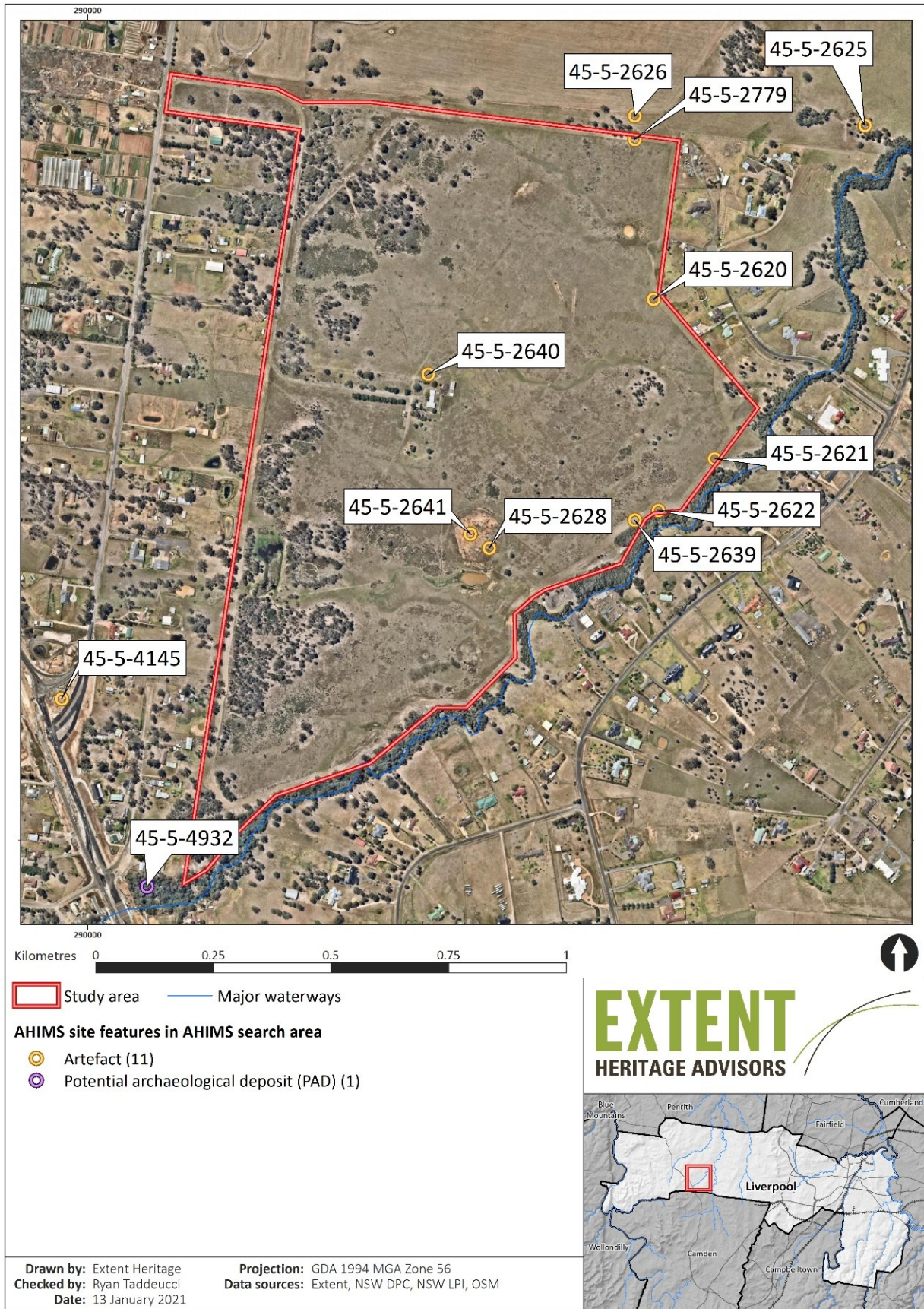


Figure 15. Location of AHIMS sites already registered within the study area.

6.4 ABORIGINAL ARCHAEOLOGICAL SURVEY

Completed on 7 December 2020, the Aboriginal archaeological survey was directed and supervised by Ryan Taddeucci (senior heritage advisor, Extent Heritage) with assistance from Cameron Neal (research assistant, Extent Heritage). They were assisted by representatives from Gandangara Local Aboriginal Land Council, Darug Custodian Aboriginal Corporation, Waawaar Awaa Aboriginal Corporation, and Wurrumay Pty Ltd.

A total of ten Aboriginal sites were identified within the study area (Figure 16). Eight of the sites had been previously registered on the AHIMS database and three sites were newly identified during the completion of the survey. See Table 3 for a summary of results.

Table 3: Results summary.

Site number	Feature(s)	Survey unit	Landform
B17 (AHIMS ID 45-5-2779)	Artefact	1	Slope
B 18 (AHIMS ID 45-5-2620)	Artefact	1	Slope
B 19 (AHIMS ID 45-5-2621)	Artefact	4	Slope
B 20 (AHIMS ID 45-5-2622)	Artefact	6	Saddle
B 21 (AHIMS ID 45-5-2639)	Artefact	6	Saddle
B 22 (AHIMS ID 45-5-2640)	Artefact	1	Slope
B 23 (AHIMS ID 45-5-2641)	Artefact	1	Slope
B 38 (AHIMS ID 45-5-2628)	Artefact	1	Slope
ACAS01 (AHIMS ID 54-4-5481)	Artefact	1	Slope
ACAS02 (AHIMS ID Pending)	Artefact	2	Slope
ACIF01 (AHIMS ID 54-5-5480)	PAD	1 and 2	Slope

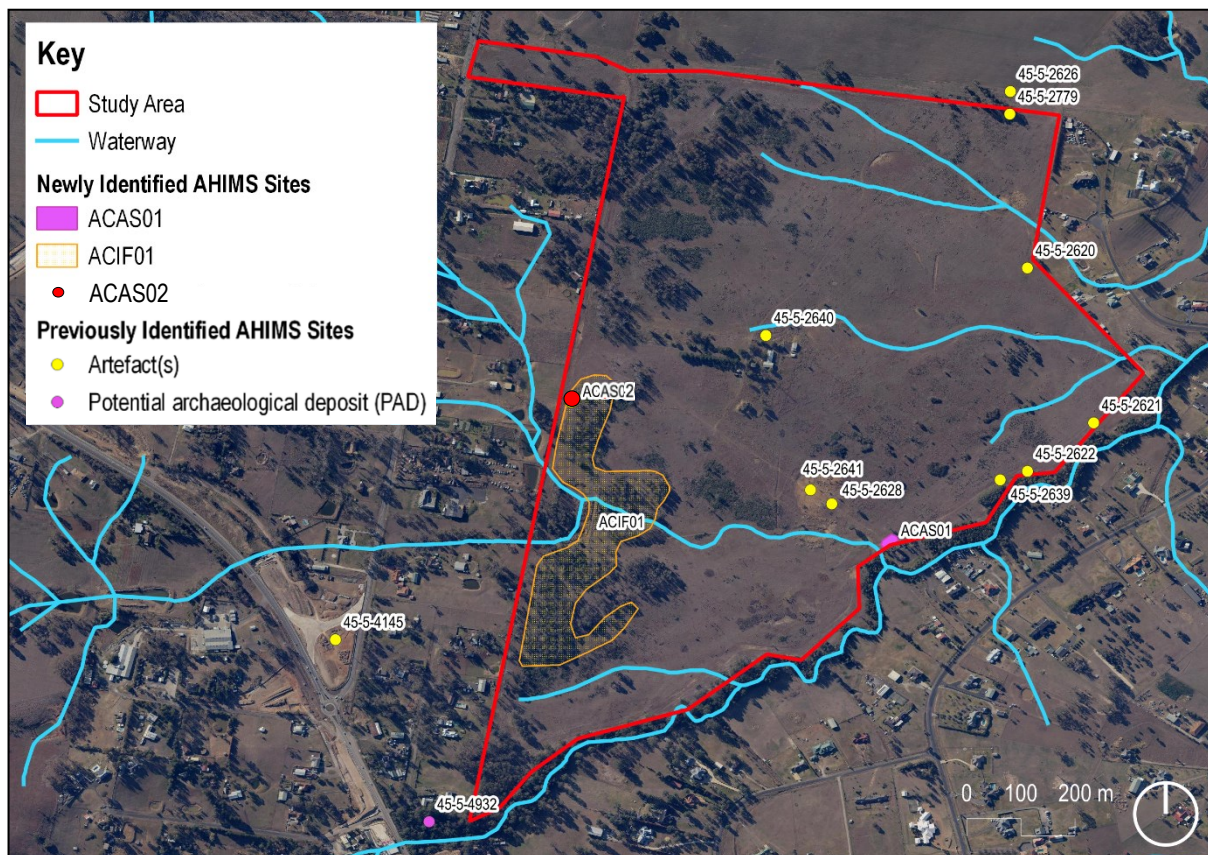


Figure 16: Results of the archaeological survey.

6.5 ARCHAEOLOGICAL POTENTIAL

One area of PAD, ACIF01 (AHIMS ID 45-5-5480), was identified as having limited historical disturbance during the archaeological surface survey. Historical background research and use of predictive models, particularly the Cumberland Plain Predictive Model (White and McDonald 2010; McDonald 1997), revealed additional areas of high archaeological potential along Moore Gully and Thompsons Creek.

6.5.1 ACIF01 (AHIMS ID 45-5-5480)

ACIF01 (AHIMS ID 45-5-5480) was an area of PAD was located within thinly-wooded bushland. While the vegetation had been previously stripped in the twentieth century, the area appeared to have undergone less historical disturbances associated with the Bringelly RAAF base than other parts of the study area. Test excavations of the identified area of PAD were undertaken to further investigate the nature and extent of the archaeological remains in the area.

6.5.2 Moore Gully (AHIMS ID 45-5-5492)

The Cumberland Plain Predictive Model indicated that the third-order creek, Moore Gully, was likely to be associated with sites of frequent and repeated occupation by small groups of Aboriginal people. Archaeological evidence of these sites was expected to take the form of knapping floors that may be reused, and more concentrated activities.

The model suggested that the highest potential for artefacts associated with the waterway would be within a zone of 50 m from the watercourse. As Moore Gully is heavily swampy, the 50 m buffer was based on the periphery of the waterlogged area. The alluvial nature of the South Creek soil landscape along part of the creek line provided further opportunity for recovering stratified deposits.

The nature and extent of archaeology associated with Moore Gully (AHIMS ID 45-5-5492) was unknown, and further investigation in the form of test excavations was required to understand the soil landscape, and any use of the area and its resources.

The area of potential associated with Moore Gully (AHIMS ID 45-5-5492) extended to the west where it is contained within the boundary of PAD ACIF01 (AHIMS ID 45-5-5480).

6.5.3 Thompsons Creek (AHIMS ID 45-5-5491)

The Cumberland Plain Predictive Model indicated that the fourth-order waterway, Thompsons Creek, was likely to be associated with complex and stratified sites containing high artefact densities. Artefacts associated with these sites were expected to show less use of rationing strategies, as people may have remained in the same location for several days, or even weeks. Evidence of the caching or raw materials may also be present.

The model suggested that the highest potential for artefacts associated with fourth-order landscapes occurs 51–100 m from the watercourse. These flat terraces overlook the waterway, and are not likely affected by flooding which makes them ideal site locations. As most of the eastern boundary of the study area is located at 50 m or less from the watercourse, the predictive model put this high-density area within the project boundary. The alluvial nature of the South Creek soil landscape along part of the creek line provided further opportunity for recovering stratified deposits. In addition, the confluence between Moore Gully and Thompsons Creek, which falls just outside the study area, may present evidence of an occupation site (McDonald 1997, 56–57).

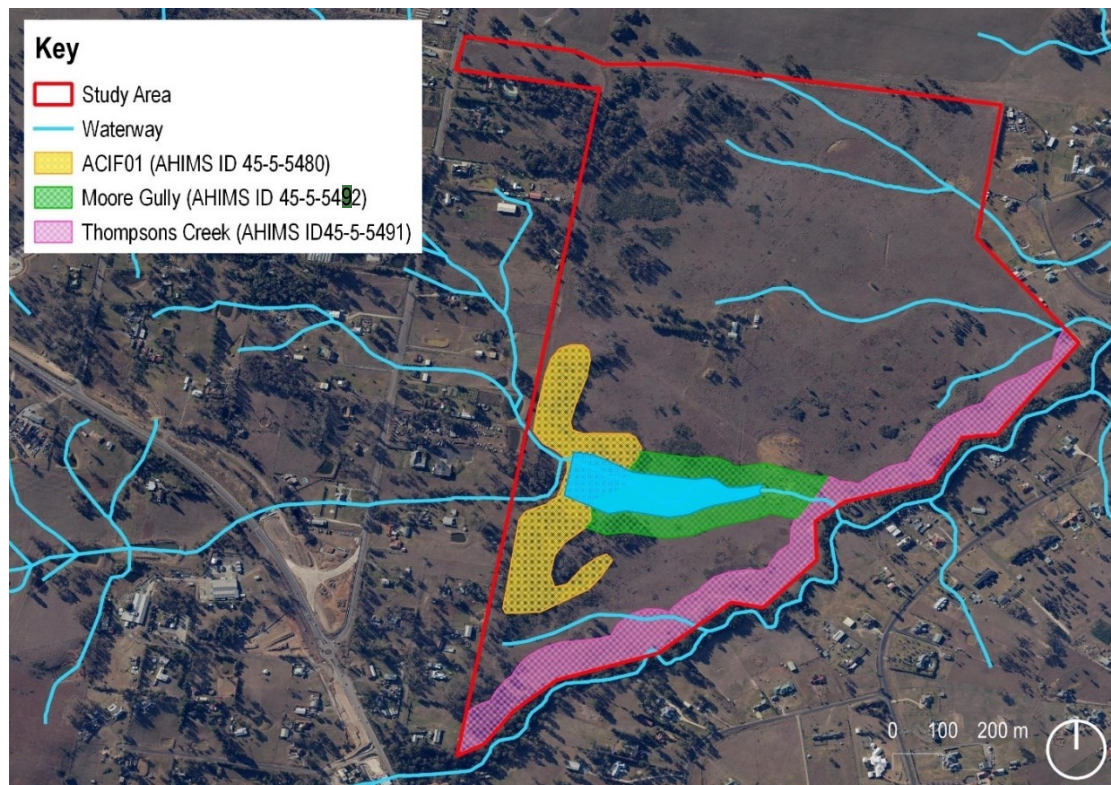


Figure 17. Location of ACIFS01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491).

7. Assessment Requirements and Policy Context

The study area is subject to several legislative acts and statutory controls that govern the management of environmental heritage. An overview of the legislation relevant to heritage matters is provided below.

7.1 COMMONWEALTH LEGISLATION

7.1.1 Native Title Act 1993 (Commonwealth)

The *Native Title Act 1993* (Cth) (NTA) recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs. Section 24KA of the NTA, requires that Native Title claimants are notified of any 'future act' which may result in a change in land use for Crown lands affected by claims. 'Future act' is defined in section 233 of the NTA as a proposed activity or development on land and/or waters that may affect Native Title, by extinguishing (removing) it or creating interests that are inconsistent with the existence or exercise of native title. If after one month there was no response, then the proponent will be deemed to have fulfilled their obligations under the Act.

A search of the National Native Title Tribunal database was completed on 10 December 2020. There are **no Native Title claims** currently registered in the study area.

7.1.2 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) took effect on 16 July 2000. Subsequently, the *Environment and Heritage Legislation Amendment Act (No.1) 2003* amends the EPBC Act to include 'national heritage' as a matter of National Environmental Significance, and protects listed places to the fullest extent under the Constitution. It also establishes the National Heritage List (NHL) and the Commonwealth Heritage List (CHL).

Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with approval of the Commonwealth Minister for the Department of the Environment (DoE). An action is defined as a project, development, undertaking, activity (or series of activities), or alteration. An action will also require approval if:

- it is undertaken on Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land; or
- it is undertaken by the Commonwealth and will have or is likely to have a significant impact.

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic cultural heritage items. Under the Act, protected heritage items are listed on the World Heritage List (WHL), NHL (items of significance to the nation), or the CHL (items belonging to the Commonwealth or its agencies). These last two lists replaced the Register of the National Estate (RNE). The RNE is no longer a statutory list; however, it remains available as an archive.

A search of the heritage databases was completed on 21 May 2021. A summary of register searches is outlined below:

- WHL: **No listed items** are located within the study area.
- NHL: **No listed items** are located within the study area.
- CHL: **No listed items** are located within the study area.
- RNE: **No listed items** are located within the study area.

7.2 STATE LEGISLATION

7.2.1 National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974* (NSW) (NPW Act), administered by Heritage NSW-DPC, provides protection to all Aboriginal places and objects in NSW. The NPW Act gives Heritage NSW-DPC responsibility for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', defined under section 5 of the NPW Act as follows:

- An 'Aboriginal object' is 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.
- An 'Aboriginal place' is a place declared so by the Minister administering the NPW Act because the place is or was of special significance to Aboriginal culture. It may or may not contain 'Aboriginal objects'.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them and includes a 'strict liability offence' for such harm. A 'strict liability offence' does not require someone to know that they are causing harm to an Aboriginal object or place to be prosecuted. Defences against the 'strict liability offence' in the NPW Act include the carrying out of certain 'Low Impact Activities', prescribed in section 58 of the *National Parks and Wildlife Regulation 2019* (NPW Regulation), and the demonstration of due diligence.

An Aboriginal Heritage Impact Permit (AHIP) issued under section 90 of the NPW Act is required if impacts to Aboriginal objects and/or places cannot be avoided. An AHIP is a defence to a prosecution for harming Aboriginal objects and places if the harm was authorised by the AHIP, and the conditions of that AHIP were not contravened. Consultation with Aboriginal communities is required under Heritage NSW-DPC policy when an application for an AHIP is considered and is an integral part of the process. AHIPs may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity, or person, or specified types or classes of Aboriginal objects, Aboriginal places, land, activities, or persons. Section 89A of the NPW Act requires notification of the location of Aboriginal sites within a reasonable time, with penalties for non-notification.

7.2.2 Environmental Planning and Assessment Act 1979 (NSW)

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 development 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 Environmental Plans (LEPs) and State Environmental Planning Policies (SEPPs). LEPs commonly identify and have provisions for the protection of local heritage items and heritage conservation areas. The LEP relevant to this project is the Liverpool Local Environmental Plan 2008. There are **no Aboriginal items within the study area** listed on the Liverpool LEP (2008).

The objectives of the LEP with respect to heritage conservation is provided in Clause 5.10, which (amongst other objectives) aims to conserve identified local heritage places, including archaeological sites, and requires development consent for any works that affect that item. Schedule 5 of the LEP lists items of environmental heritage within the LGA, including archaeological sites, buildings, and conservation areas. These items may be of national, state, or local heritage significance.

7.3 ABORIGINAL STAKEHOLDER CONSULTATION

7.3.1 Consultation process in NSW

Aboriginal stakeholder consultation for the project has been undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a; the 'Consultation Requirements').

7.3.2 Identification of RAPs

In accordance with stage 4.1.2 of the Consultation Requirements, Extent Heritage corresponded with the following organisations to obtain the names of Aboriginal people who may hold cultural knowledge of the study area:

- Greater Sydney Local Land Service;
- Camden City Council;
- Native Title Service Corporation (NTSCorp);
- Gandangara LALC;
- Heritage NSW-DPC;
- National Native Title Tribunal; and
- Office of the Registrar, *Aboriginal Land Rights Act 1983*.

In accordance with Step 4.1.3 of the Consultation Requirements, an advertisement was placed on buysearchsell.com.au on 24 October 2020 inviting Aboriginal individuals or organisations to register an interest in the project by 5 November 2020. In addition, correspondence was sent to all Aboriginal individuals and organisations identified through the completion of Step 4.1.2 on 21 October 2020, inviting them to register an interest in the project by 5 November 2020.

The consultation process has resulted in the identification of 24 Registered Aboriginal Parties (RAPs) (Table 4).

Table 4. List of Registered Aboriginal Parties.

Contact	Organisation
Carolyn Hickey	A1 Indigenous Services
Amanda DeZwart	Amanda Hickey Cultural Services
Jamie Eastwood	Aragung Aboriginal Cultural Heritage Site Assessments
Karia Lea Bond	Badu
Mrs Jody Kulakowski	Barking Owl Aboriginal Corporation
Lee Field	Barraby Cultural Services
Daisy Stewart	Bidawal
Simalene Carriage	Bilinga
Louis Hockey	Birrungal
Lisa Dixon	Bullawaya
Whane Carberry	Bulling Gang
Jennifer Beale	Butucarbin Aboriginal Corporation
Marilyn Carroll-Johnson	Corroboree Aboriginal Corporation
Glenda Chalker	Cubbitch Barta
Donald Smith	Curwur Murre
Andrew Bond	Dharug
Stephen Fields	Dhinawan Culture & Heritage Pty Ltd
Stacey Higgins	Dhurga

Lilly Carroll and Paul Boyd	Didge Ngunawal Clan
Jay Stevenson	Djanaba Gaxabara
Adam Johnson	Djiringanj
Lionel Brown	Elouera
Kahu Brennan	Eora
Clive Freeman	Freeman and Marx
Kathy Burns	Gadung
Melissa Williams	Gandangara Local Aboriginal Land Council
Kim Carriage	Gangangarra
Donna Wray	Garranga Bumbarri
Krystle Carroll	Ginninderra Aboriginal Corporation
Sam Peters	Golangaya
Caine Carroll	Goodradigbee Cultural & Heritage Aboriginal Corporation
Clayton Moore	Gulla Gunar
Cherie Carroll Turrise	Gunjee Wong CHC
Kylie Ann Bell and Mundarra Drew	Gunyuu
Phil Khan	Kamilaroi Yankuntjatjara Working Group
Toni Banda	Kurringgai
Aaron Broad	Minnamunnung
Kaya Dawn Bell and Jason Booth	Munyunga
Shane Saunders	Murrumbul
Kaarina Slater	Ngambaa Cultural Connections
Steven Pittman	Ngario
Edward Stewart	Ngunawal Aboriginal Corporation
Thomas Tighe	Nundagurri
Tarlarra Te Kowhai	Tarlarra Te Kowhai
John Stewart	Tharawal
Jeffery Daves	Thauaira
Greg Kerry	Thawa
Ray Moffat	Thurumba
Rodney Gunther	Waawaar Awaa Aboriginal Corporation
Philip Boney	Wailwan Aboriginal Group
Hika Te Kowhai	Walbunja
Ronald Stewart	Walgalu
William Bond	Wandandian
Aaron Slater	Warragil Cultural Services

Steven Hickey and Donna Hickey	Widescope Indigenous Group
Mary Parsons	Wimbalaya Nura
Travis Dixon	Wingikara
Vivian Lacey	Wirambie
Daniel Chalker	Wori Woilywa
Kerrie Slater and Vicky Slater	Wurrumay Pty Ltd
Violet Banda	Yaxa Burra
Nathan Walker-Davis	Yerramurra
Arika Jalomaki	Yulay Cultural Services
Bo Field	Yurrandaali

7.3.3 Assessment methodology

A copy of the proposed ACHAR methodology was provided to the RAPs for a twenty-eight-day (28) review on 11 November 2020. At the end of this period, fifteen groups provided a comment on the proposed methodology.

Table 5. Summary of comments of the ACHAR methodology.

Contact	Organisation	Comments
Carolyn Hickey	A1 Indigenous Services	Agrees with the proposed methodology, and would like to be involved in any future works within the project.
Lee Field	Barraby Cultural Services	Agrees with the proposed methodology.
Lilly Carroll	DNC	Agrees with the proposed methodology.
Clive Freeman	Freeman and Marx	Would like to be updated on the project and would like to participate in work.
Basil Smith	Goobah	Supports the proposed methodology, would like to be updated on future developments.
Phil Khan	Kamilaroi Yankuntjatjara Working Group	Supports the methodology and notes that the study area is significant to Aboriginal people of the past and present.
Kaarina Slater	Ngambaa Cultural Connections	Agrees with the proposed methodology.
Philip Boney	Wailwan Aboriginal Group	Agrees with the proposed methodology.
Hika Te Kowhai	Walbunja	Hika has requested additional information regarding the survey, and notes that the RAPs should be provided an opportunity to participate in the fieldwork program in addition to the LALC. Hika notes that the South Coast Groups have knowledge of the study area and would provide details in a written response to the ACHAR methodology.
Aaron Slater	Warragil	Agrees with the proposed methodology.
Steven Hickey	Widescope Indigenous Group	Agrees with the proposed methodology, and would like to be involved in any future works within the project.

Daniel Chalker	Wori Woilywa	Daniel notes that the study area is considered to be sacred land, as is all Aboriginal land. Notes that it is difficult to investigate Aboriginal land-use and history, as the post-contact modification of the study area has removed archaeological material. Any works taking place within the study area should be cultural appropriate. A full coverage survey and test excavation program is recommended.
Vicky Slater	Wurrumay	Vicky notes that she holds ancestral knowledge of the study area and is a traditional owner. Vicky asked to be included in all fieldwork.
Arika Jalomaki	Yulay Cultural Services	Agrees with the proposed methodology and would like to be involved in upcoming fieldwork.
Bo Field	Yurrandaali	Agrees with the proposed methodology and would like to be involved in any upcoming fieldwork.

The comments received focused around the placement of test pits. Extent Heritage amended the methodology to incorporate the feedback. During this period, Extent Heritage was also able to access new additional information regarding historical disturbance within the site. The revised methodology clarifies these disturbances.

Due to the substantial changes to the test excavation methodology, a revised methodology was sent to all RAPS for their review over a period of 28 days on 20 August 2021. Table 6 summarises the responses to the revised test excavation methodology.

Table 6 RAP responses to the revised test excavation methodology.

Contact	Organisation	Comments
Philip Boney	Wailan Aboriginal Group	Wailan Aboriginal Group has no comments.
James Eastwood	Arangung	Arangung agrees with and supports the test excavation and methodology. Arangung would like to be updated with all future development, and would like to be considered for participation in the test excavation.
Arika Jalomaki	Yulay	Yulay Cultural has reviewed and agrees with the updated methodology.
Steven Hickey	Widescope	Widescope supports the recommendations outlined in the draft methodology.
Kadibulla Khan	KYWG	<p>Kadibulla notes the following:</p> <p>“The study area is highly significant to Aboriginal people, especially since there are water ways within the study area and around. Aboriginal people would have and still do utilise these water ways, many daily activities would have taken place as the whole of the area, is of significance to us. Once flora fauna was thriving in this area, resource rich for the Aboriginal peoples.</p> <p>“We would like to recommend further testing of the whole study area. It is important to also include a [sic] Interpretation plan for the project, this can be achieved through design, art, native gardens, apps, signage and many other ways. Interpretation is important as it is a way in which Aboriginal people are being recognised for being the[sic] one of the oldest live [sic] cultures in the world.</p>

		<p>“A keeping place also should be sort of any artefacts found, to ensure they are kept on country rather than in and [sic] office on a shelf. Both keeping place and interpretation educates the wider community about Aboriginal culture and is a part of the connecting to country framework.</p> <p>“We would like to agree to your methodology, and we support you [sic] report.”</p>
Paul Boyd and Lilly Carroll	Didge Ngunawal Clan	Paul and Lilly note that they are happy with the process in this job.”

7.3.4 Archaeological test excavation

Invitations to participate in the test excavation program were sent out to four RAPs and the LALC. Table 7 below identifies the organisations who participated in the test excavation program.

Table 7. Aboriginal stakeholder groups that participated in the test excavation program.

Organisation
Arangung
Cubbitch Barta Native Title
Didge Ngunawal Clan
Gandangara Local Aboriginal Land Council
Walbunja

8. Test excavation methodology

8.1 AIMS

The key aims of archaeological test excavation are to:

- characterise the sub-surface soil profile and identify evidence of stratification;
- identify and determine the content, composition, and distribution of the potential sub-surface artefact assemblage;
- collect data that may provide information on past ways of life of the Aboriginal people who created and occupied the landscape, including diet, functional use of spaces and landforms, resource exploitation, and chronology;
- compare the study area to relevant available archaeological and ethnographic data, in order to contribute to a greater understanding of the Aboriginal history of the local area; and
- obtain necessary information to inform the final design of proposed works and to guide development of appropriate significance-based strategies for conservation and management of the study area.

8.2 TIMING AND PERSONNEL

The test excavation program was carried out between 5 November and 12 November 2021. Extent Heritage directed and undertook the excavations. Representatives from the Gandangara Local Aboriginal Land Council, Arangung, Cubbitch Barta Native Title, Walbunja, and Didge Ngunawal Clan also undertook the excavations, and provided cultural knowledge and expertise. Table 8 lists all participants in the test excavation.

Table 8. Summary of participants in the test excavation program.

Organisation	Name	Role
Arangung	Raymond Adams	Site officer
Cubbitch Barta Native Title	Kiahni Chalker	Site officer
	Kirsty-Lee Chalker	Site officer
Didge Ngunawal Clan	Adam King	Site officer
	Braydon Carroll-Boyd	Site officer
	Joeleen Smith	Site officer
	Paul Boyd	Site officer
	Paul Middleton	Site officer
Gandangara Local Aboriginal Land Council	Darren Duncan	Site officer
Wabunja	Julia-Ann Narayan	Site officer
	Tjala Campbell-Parsons	Site officer
Extent Heritage	Hannah Morris	Excavation director
	Anastasia Klasen	Assistant supervisor
	Andrew Costello	Assistant supervisor
	Rebekah Hawkins	Assistant supervisor
	Coral Hadwick	Archaeologist
	Emily Bennett	Archaeologist

Jasper Chick	Archaeologist
Nestor Nicola	Archaeologist
Sarah Rollason	Archaeologist



Figure 18. Images of the worksite including the excavation and sieving process, featuring (clockwise) Ana Klasen, Darren Duncan, Nestor Nicola, Kiahni Chalker, and Jasper Chick.

8.3 SAMPLING STRATEGY

Based on background research, the survey results, and stakeholder feedback, the archaeological test excavation program was focused along three PADs: ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491) (Figure 19). Background research suggested these areas had a moderate potential for background scatter and occupation deposits. An additional area in the north-western corner of the study area, the Northern Transect, was also investigated. Background research predicted this zone to have low archaeological potential for general background scatter.

A total of 202 test trenches were proposed in the test excavation methodology. Due to swampy conditions and dense vegetation, twelve test trenches were unable to be excavated (Part 9.5). With the support of the Aboriginal representatives on site, seven of these trenches were relocated to other areas of potential (Part 9.6).

ACIF01 (AHIMS ID 45-5-5480):

ACIF01 was identified as an area of PAD during the surface survey investigation due to the identification of what appeared to be comparatively relatively intact topsoil. The extent of the PAD was primarily determined by the extent of the thinly wooded forest. While the woodland was young regrowth, the area had undergone less historical disturbances associated with the construction of the RAAF base than other parts of the study area.

Extent Heritage proposed to excavate sixty-five test pits (TPs 138–202) within ACIF01 (Area 1) (Figure 20). The extent of the ACIF01 PAD (AHIMS ID 45-5-5480) was irregularly shaped. As a result, the

proposed test trenches were arranged along seven separate transects of varying lengths instead of a systemic grid. This approach accommodated the physical landform constraints, while ensuring a representative coverage of the excavation area. The trenches were placed at 20 m intervals.

Eight test pits (TPs 187–194) were unable to be excavated due to swampy conditions and previously stripped topsoil (See Part 7.5).

Moore Gully (AHIMS ID 45-5-5492):

The Cumberland Plain Predictive Model indicated that Moore Gully, a third-order creek, was likely to be associated with sites of frequent and repeated occupation by small groups of Aboriginal people. Archaeological evidence of these sites was likely to take the form of knapping floors that may be reused, and more concentrated activities.

Extent Heritage proposed to excavate 40 test pits (TPs 98–137) arranged in a transect along each bank of the Moore Gully waterway (Area 2) (Figure 21). Trenches were located within a 50 m buffer of the Gully. The Cumberland Plain Predictive model suggested that this corridor had the highest potential for Aboriginal sites.

Moore Gully is part of a large area of swamp, the full extent of the which required further investigation on site. The trenches were placed on the periphery of the waterlogged area. While the area had been disturbed by mid-twentieth century ploughing, the majority of the creek line appeared to have avoided severe impacts created by the Bringelly RAAF base. The trenches were placed at 20 m intervals.

Two test pits (TPs 102–103) were unable to be excavated due to heavy vegetation (see Part 9.5).

Thompsons Creek (AHIMS ID 45-5-5491):

The Cumberland Plain Predictive Model indicated that Thompsons Creek, a fourth-order waterway, was likely to be associated with complex and stratified sites containing high artefact densities. Artefacts associated with these sites may show less use of rationing strategies as people may have remained in the same location for several days, or even weeks. Evidence of the caching or raw materials may also be present. The model suggested that the highest potential for artefacts associated with fourth-order landscapes occur 51–100 m from the watercourse.

Extent Heritage proposed to excavate eighty-nine test pits (TPs 9–97) along the western bank of Thompsons Creek (Area 3) (Figure 22–Figure 23). The trenches in the northern half of the PAD were placed on a single transect at intervals of 20 m. The trenches in southern half of the PAD were arranged in two transects, approximately 40 m apart, at intervals of 40 m.

Minimal historical disturbances associated with the Bringelly RAAF base had been identified along these transects (with the exception of a light antenna and concrete PAD to the north-west of AHIMS ID 45-5-2662). Ploughing was likely to have impacted surface and shallow subsurface archaeological remains. However, as these transects were located on the South Creek alluvial soil landscape, the soil profile was expected to be deeper. As a result, the lower levels of the soil profile were expected to have a higher potential of remaining intact.

One test pit (TP 54) was unable to be excavated due to its location in a tributary. Seven additional test pits (TPs 203–209) were relocated to this PAD to explore an area of interest (see Part 9.6).

Northern transect:

Eight test pits (TPs 1–8) were proposed to be placed in the north-western corner of the site at the planned site of the First Building (Area 4) (Figure 24), where disturbance from ploughing and the Bringelly RAAF base had not been undertaken. The trenches were laid in a north to south alignment, at 40 m intervals. The area was expected to contain a low potential for low-density background scatter, known to be present across the Cumberland Plain. It was important to prove the predictive model and further understand the landscape across the study area.

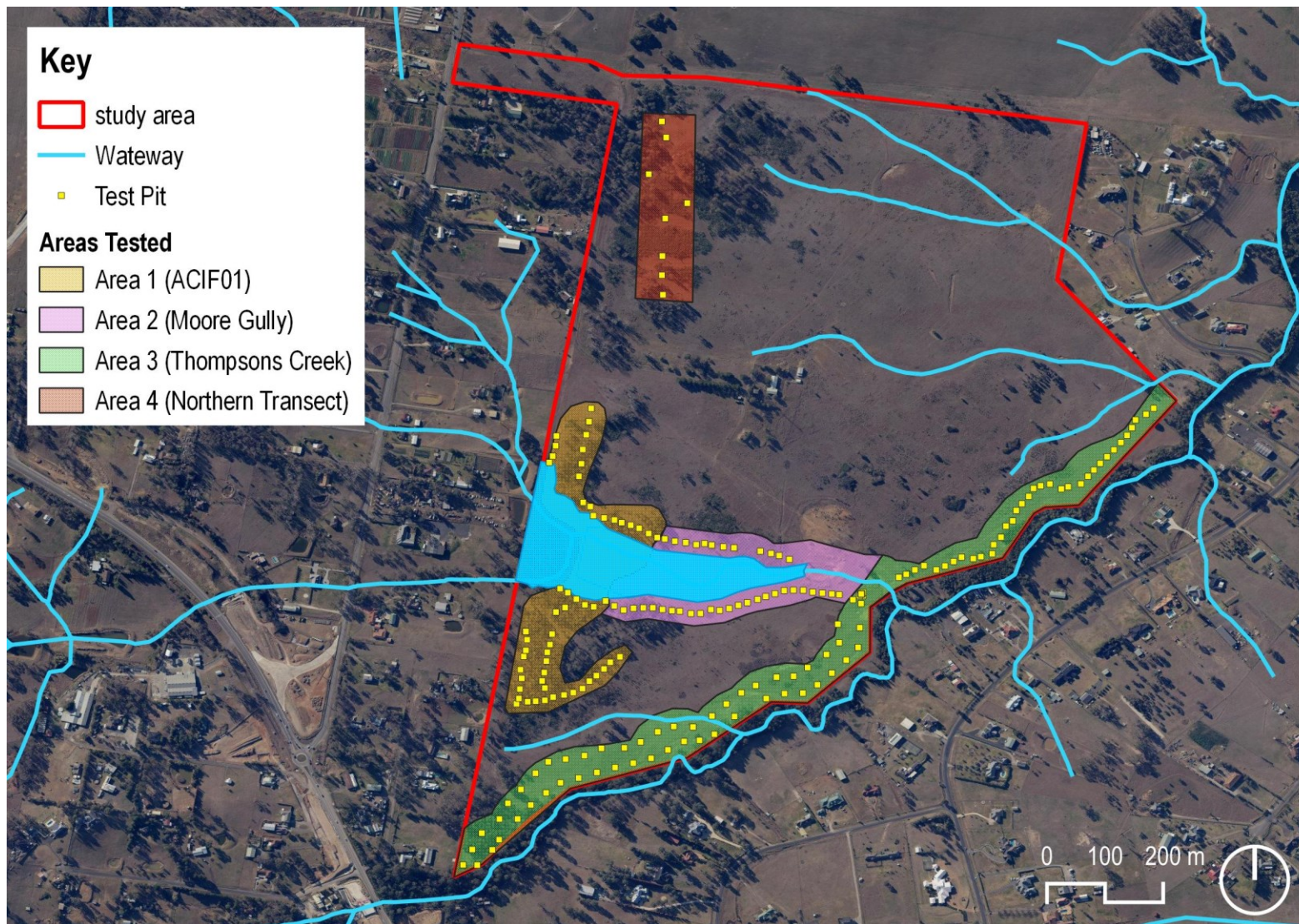


Figure 19. Test pit locations across the study area.

Note: Test pits are not to scale.

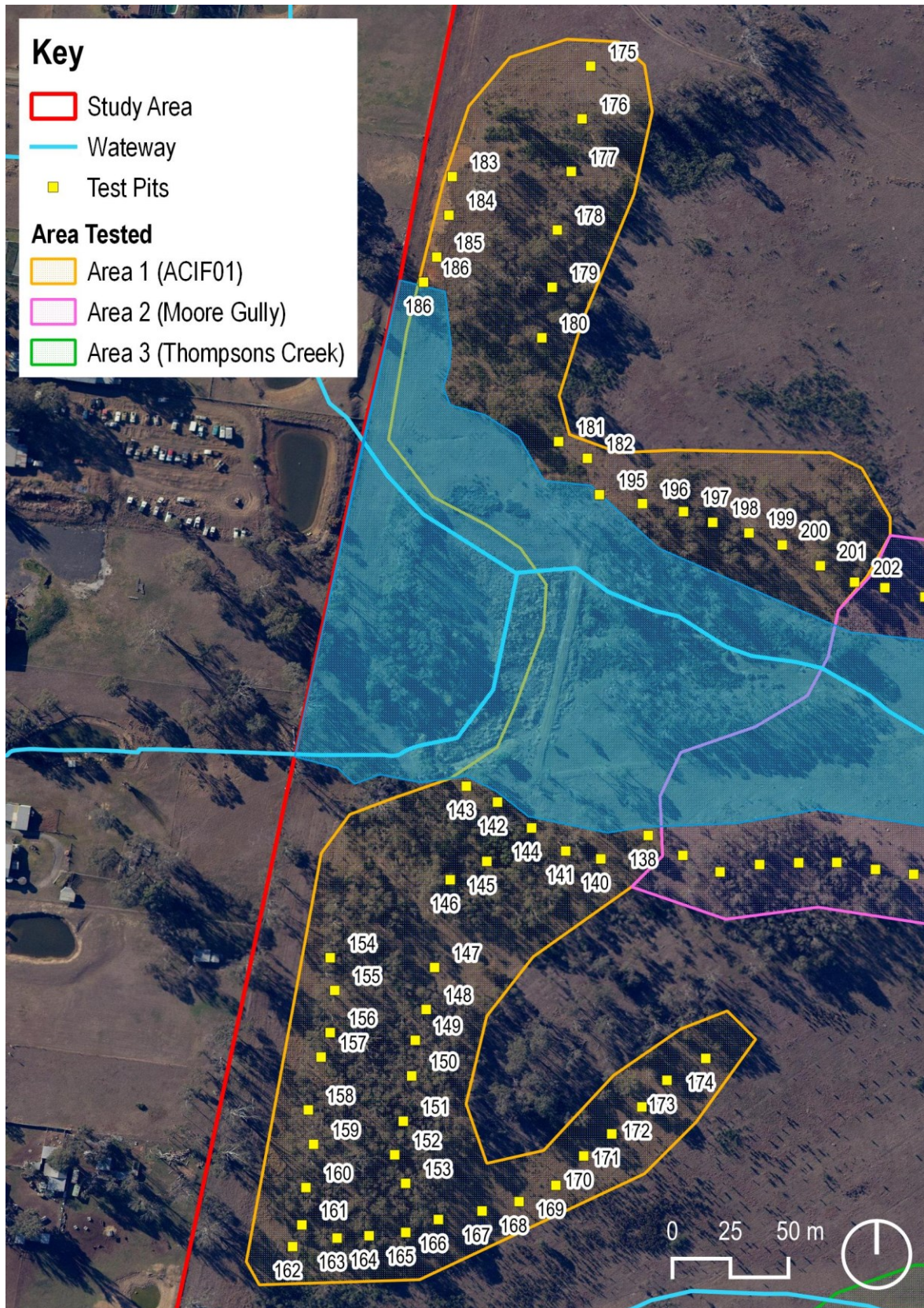


Figure 20. Test pits in Area 1 (ACIF01 PAD, AHIMS ID 45-5-5480).

Note: Test pits are not to scale.

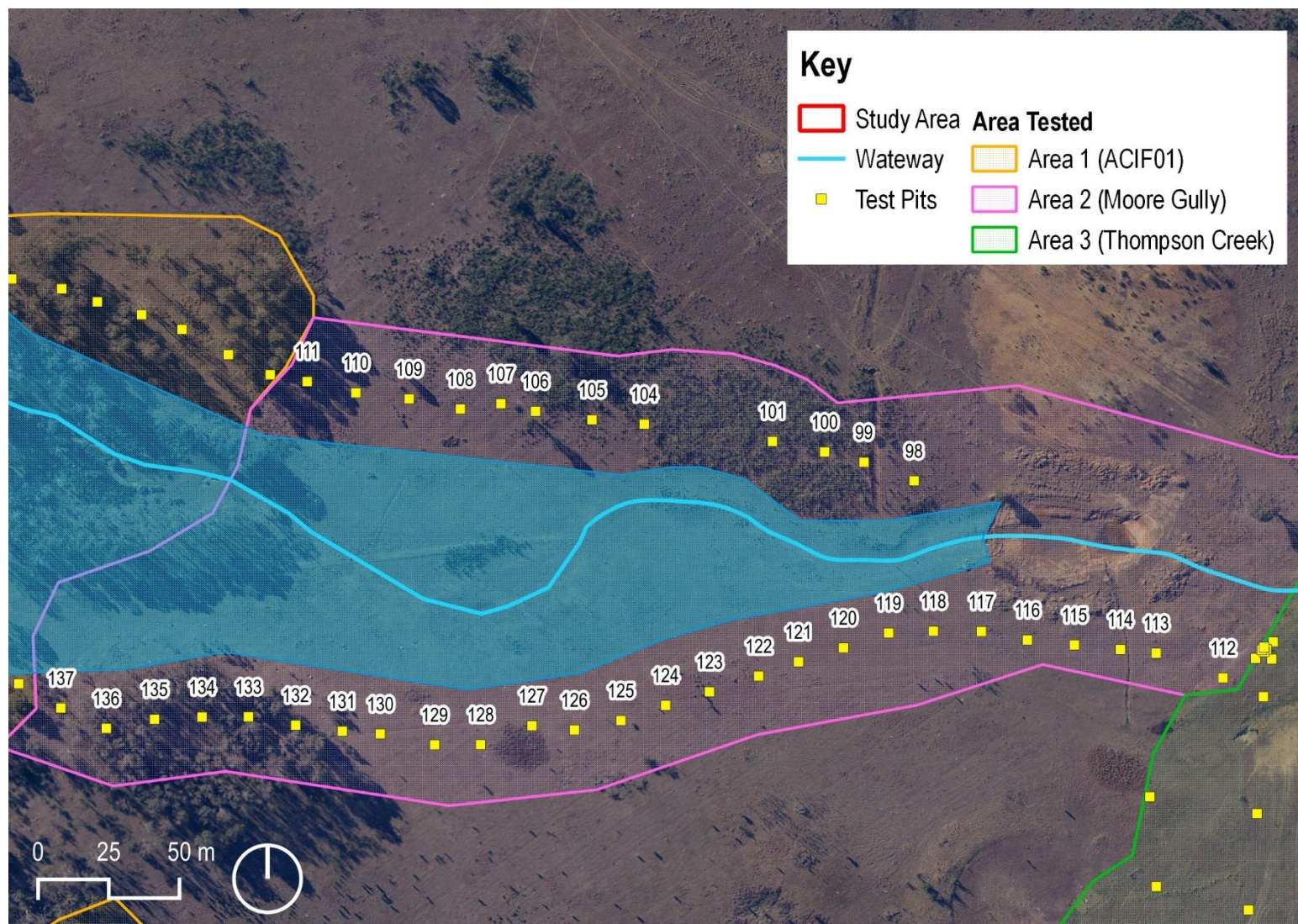


Figure 21. Test pits in Area 2 (Moore Gully PAD, AHIMS ID 45-5-5492).

Note: Test pits are not to scale.

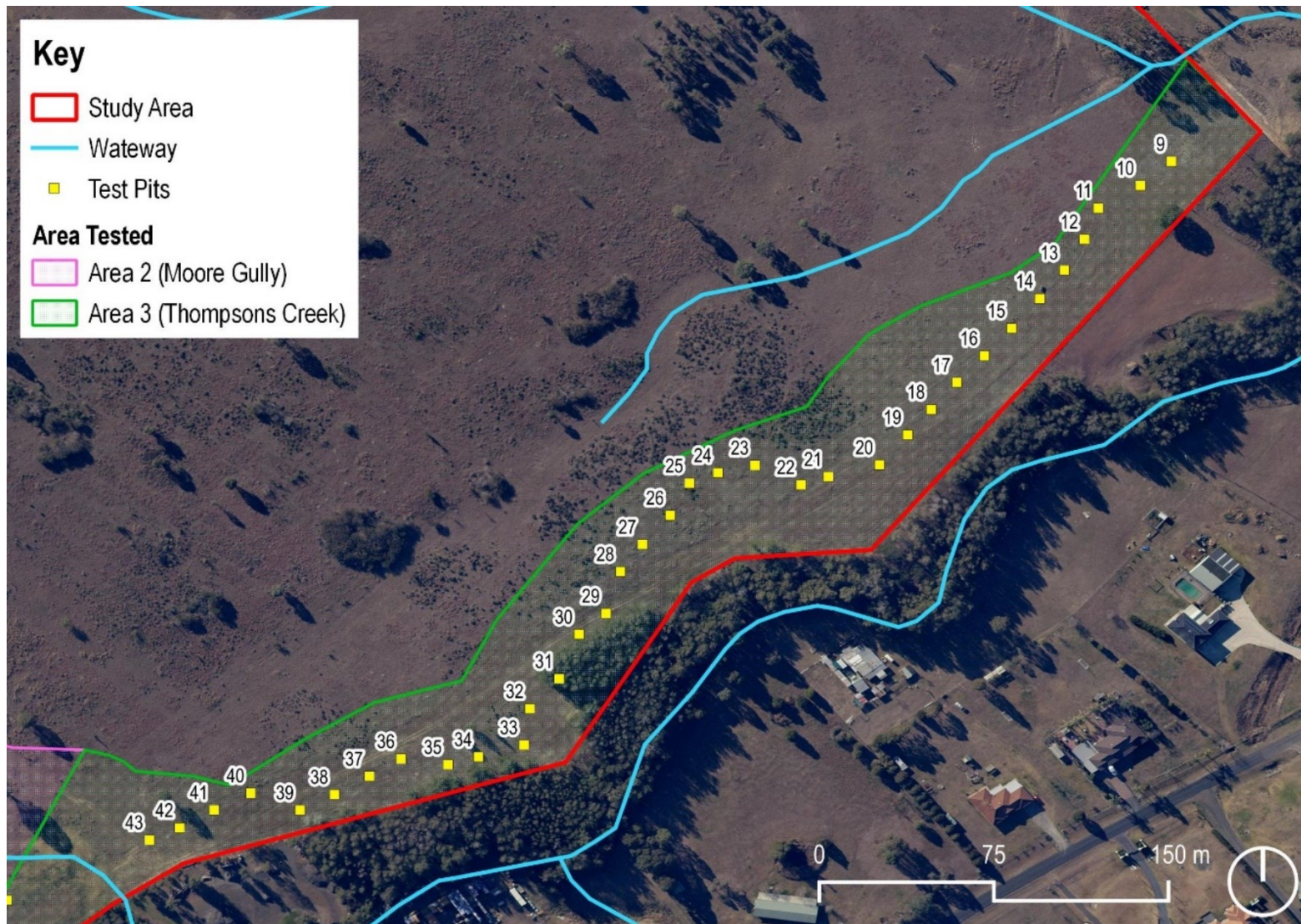


Figure 22. Test pits in the northern half of Area 3 (Thompsons Creek PAD, AHIMS ID 45-5-5491).

Note: Test pits are not to scale.

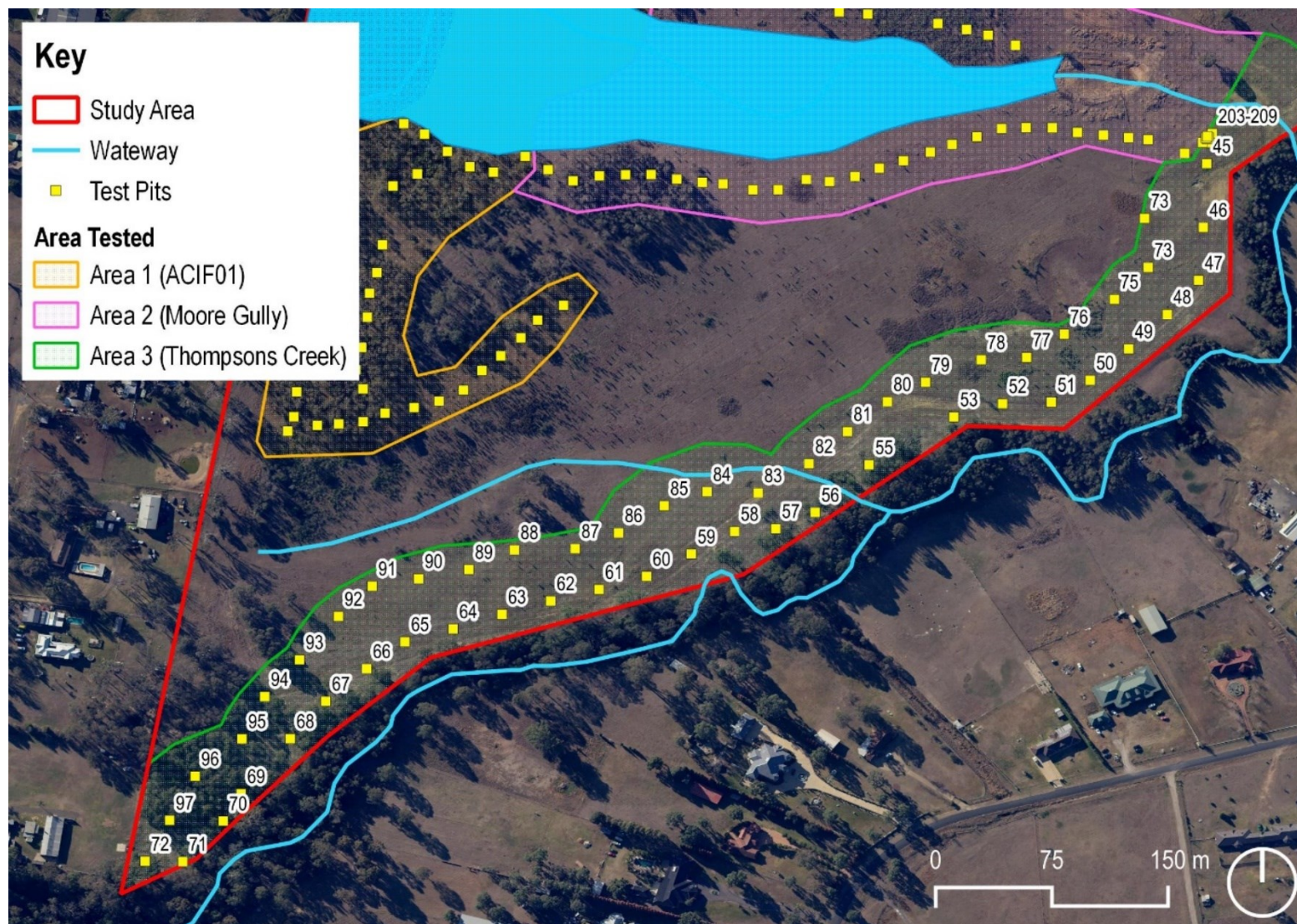




Figure 24. Test pits in Area 4 (Northern Transect).

Note: Test pits are not to scale.

8.4 EXCAVATION PROCEDURE

Test trenches were located using RTK survey equipment. The geographic point was placed in the north-western corner of the trench. The trench was then laid out in a north-to-south alignment.

Excavation of the first test pit (TP 1) was completed in 50 mm spits to understand the soil profile. Excavation of the remaining pits was completed in 100 mm spits. All test pits were excavated manually with hand tools. Excavations in all pit locations ceased where basal clays were exposed. All excavated material was wet sieved through 3 mm mesh sieves.

A context sheet for each test pit was completed in the field (Appendix 2). Details recorded included date of excavation, name of excavators, depth, and soil description. A photographic record and a scale drawing of representative sections were produced for each test pit.

9. Test excavation results

9.1 DESCRIPTION OF AREAS

ACIF01 (AHIMS ID 45-5-5480)

- ACIF01 was predominantly thinly wooded bushland with bark and leaf litter ground cover ranging between 0 and 10 per cent visibility (Figure 25–Figure 27). Historic aerials show this vegetation is young regrowth. Low, thick scrub was located toward the edges of the Moore Gully swamp (Figure 28).
- The north-western transect, comprising TPs 183–185 (Figure 29), were located on an accessway that skirted around the study area. The accessway had been cleared of trees and stripped of its natural topsoil, either as a result of deliberate landscaping or natural erosion. There was more ground visibility, revealing basal clay at the ground surface. Isolated surface artefact ACAS02 (AHIMS ID Pending) was recorded in this area during the surface survey. However, the ground disturbance suggests it is not likely in its original depositional context.
- The south-eastern arm of ACIF01, comprising TPs 168–174, was located on open grassland with no tree coverage (Figure 30). The ground conditions were similar to the exposed grassland identified across the majority of the Thompsons Creek PAD (AHIMS ID 45-5-5491).



Figure 25. Location of TP 197, which is similar to TPs 195–202. Facing north.



Figure 26. Location of TP 179, which is similar to TPs 175–180. Facing north.



Figure 27. Location of TPs in the southern half of ACIF01 representing TPs 147–160.



Figure 28. Location of TP 144 in the foreground with the swamp area directly behind. Facing north.



Figure 29. Location of TPs 183–185 with exposed clay on the surface. Facing north.



Figure 30. Location of TPs 168–174. Facing west.

Moore Gully (AHIMS ID 45-5-5492)

The vegetation and landform of Moore Gully can be separated into two main areas:

- The majority of trenches along the Moore Gully PAD were located on open grassland (Figure 31–Figure 32). During the excavation process, all the trenches appeared to be on the creek bank as opposed to the creek bed. However, heavy rains proved some of the southern bank of Moore

Gully was prone to flooding (Figure 33). TPs 119–122, while having consistent soil profiles with the rest of the trenches in the transect, were easily flooded. It is likely this swamp area was at least partially created by the installation of dams and earthworks at the west extent of the study area. However, the flooding may also explain the limited archaeological remains in the area.

- The western portion of Moore Gully, comprising TPs 132–137 (Figure 34), comprised thinly wooded bushland with bark and leaf litter ground cover ranging between 0 and 10 per cent visibility. Historic aerials show this vegetation is young regrowth. Low, thick scrub was located toward the edges of the Moore Gully swamp.



Figure 31. Location of TP 98 with swamp in the background. Facing east.



Figure 32. Location of TP 108 with swamp in the background. Facing south.



Figure 33. Waterlogged TP 119. Facing north-east.



Figure 34. Location of TP 136 showing grass and thinly wooded forest which is similar to TPs 132–137. Facing north.

Thompsons Creek (AHIMS ID 45-5-5491)

The vegetation and landform of Moore Gully can be separated into two main areas:

- The Thompsons Creek PAD was predominantly located in flat, open grassland. The trenches were placed on the manicured accessway that skirted around the study area (Figure 35–Figure 37). The ground mostly had 0 per cent visibility, with some areas possessing slightly more exposure (Figure 40).
- Several trenches—TPs 30–31, 55–57, 68–72, and 94–97 (Figure 39, Figure 42)—were located in areas of thinly wooded bushland with exposed ground and 60–80 per cent visibility. Historic aerials show this vegetation was young regrowth.



Figure 35. Swamp at TPs 9-10. TP 10 is in the foreground. Facing north-east.



Figure 36. Open grassland associated with TP 32 (right) and thinly wooded bushland associated with TP 31 (left). Facing south-east.



Figure 37. Grass and accessway along transect at location of TPs 10-30. Facing south-west.



Figure 38. Location of ACAS01 (AHIMS 45-5-5481) site at TP 43. Facing south-west toward Moore Gully.



Figure 39. Location of TP 53 showing thinly wooded bushland on the southern side of the road (left) which includes TPs 55-57, accessway (middle) which includes TPs 58-65, and grassland on the northern side of the road (right) which includes TPs 83-93.



Figure 40. Location of TP 81 in the foreground, facing toward TPs 82-85, with low grasses and patches of exposed ground. Facing south-west.



Figure 41. Location of TP 78 in the foreground, facing toward TPs 73–77, with low grasses. Facing north-east.



Figure 42. Location of TP 69, with similar thinly wooded forest as TPs 70–72 and 94–97. Facing north.

Northern transect

The vegetation in the northern transect was consistent across the area. The trenches were located on open grassland with medium to high grasses and areas of low, thick scrub between (Figure 43–Figure 46). TPs 1–3 were positioned on the crest of the hill, with TPs 4–8 situated on the side slope with an easterly aspect.



Figure 43. Location of TP 2. Facing north.



Figure 44. Location of TP 3. Facing south-west.



Figure 45. Location of TP 4. Facing north.

Figure 46. Location of TP 6. Facing north.

9.2 SOIL PROFILES

The study area consisted of two soil landscapes: Blacktown and South Creek. The South Creek soil landscape covered the entirety of Area 3 (Thompsons Creek), and the northern and eastern portion of Area 2 (Moore Gully). It included TPs 10–117 and TPs 202–209. The South Creek soil landscape was relatively consistent across the study area (Figure 49–Figure 52). The soil profile generally consisted of the following classification and description:

- A0: Trenches were predominantly covered with low to high grasses, and 0 per cent ground visibility. Trenches located along the accessway running around the study area had the grass cut to maintain the road. Some leaf and bark litter was identified in areas beneath the thinly wooded bushland.
- A1: In all trenches, the A1 had been stripped and a thin, forming A1 was present. It was predominantly 10–30 mm thick, but was up to 50 mm thick. The thinness of the A1 suggested the ground had been stripped relatively recently, likely its occupation by the Bringelly RAAF base. The A1 was a dark brown (7.5 YR 3/2 dark brown) silty loam, with a slight humic feel. It possessed some rootlets from the grass cover but no gravel inclusions. The transition between the A1 and A2 was often difficult to distinguish but was predominantly identified at the base of the grass rootlets.
- A2: The A2 was a similar mid to dark greyish-brown (7.5 YR 3/2 dark brown) silty loam. Small rounded and subrounded pieces of ironstone (generally under 10 mm), and charcoal pieces (under 10 mm) were found throughout. Ironstone and charcoal flecking was very common. Low levels of bioturbation caused by rootlets, small roots, and insect burrows were common throughout. The A2 often ranged between 100 and 300 mm in depth.
- Transition: Most trenches did not possess a transition between the A2 and B horizons. Where transitions were identified they consisted of an increase in clay content and pieces of ironstone (see for example TP 13 and TP 18).
- B: The transition between the A2 and B was generally distinct. Small roots were sometimes identified at the interface. The B horizon comprised a yellow or dark orange/red, waxy basal clay. The layer was mostly flat.



Figure 47. Northern section of TP 5.



Figure 48. Northern section of TP 7.



Figure 49. Northern face of TP 23.



Figure 50. Northern section of TP 43.



Figure 51. Northern section of TP 57.



Figure 52. Northern section of TP 67.

Only a few trenches did not fit this profile:

- TP 61 (Figure 53) possessed a formerly stripped, forming A1 (0–30 mm in depth) of dark brown fine silty loam with grass roots and a clear horizon with the A2 below. The A2 was heavily banded. The upper layer of A2 (A2a) (30–300 mm in depth) was a more orangey-brown fine, silty loam, with high (60–80 per cent) rounded ironstone flecks (under 1 mm) and the occasional black subangular ironstone piece (under 5 mm). The lower A2 (A2b) (280–440/480 mm in depth) was a darker brown silty loam with higher clay content. Nodules of dark brown and black ironstone (40–60 per cent) (1–5 mm) were identified throughout the horizon but mostly clustered at the horizon between the A2a and A2b layers. The transition to the B horizon was less distinct. The B horizon comprised a fine grained, orangey-brown clay that was malleable but slightly friable. No Aboriginal artefacts were recovered.
- TP 73 (Figure 54) possessed a formerly stripped, forming A1 (0–100 mm in depth) of dark brown medium-grained sandy clay, with rootlets and few charcoal pieces at the interface between the A1 and A2 horizons. The A2 (100–950 mm in depth) was a sandier, loose, soft, dark orange/red course-grained clayey sand. The layer became greyer in colour from 500 mm below the surface. The B horizon was a slightly more compact course-grained sand, with slightly more clayey feel. The layer had dark red ironstone veins and felt like degraded bedrock. No Aboriginal artefacts were recovered.
- In the area of TPs 69–72 and TP 97 (Figure 55), the A2 was a more bleached, comprising a mid-grey silty loam, mottled with sub angular ironstone streaks and charcoal pieces. However, it was otherwise consistent with other trenches in the South Creek soil landscape. One Aboriginal artefact was recovered in TP 70 and another in TP 71.



Figure 53. Northern section of TP 61.



Figure 54. Northern section of TP 73.



Figure 55. Northern section of TP 70.

The Blacktown soil landscape covered the entirety of Area 1 and Area 4. It also covered the southern and western portion of Area 2, along Moore Gully. Two distinct soil profiles within the Blacktown landscape were identified. The first profile was identified in TPs 98–120, 130–166, and 175–202 (Figure 56–Figure 61). It comprised the following:

- A0: Trenches were predominantly covered with low to high grasses, and 0 per cent ground visibility.
- A1: In all trenches, the A1 had been stripped. A thin, forming A1 was present. It was predominantly 10–30 mm thick, but could be up to 50 mm thick. The thinness of the A1 suggested the ground had been stripped relatively recently, likely during use of the site as Bringelly RAAF base. The A1 was a dark brown (7.5 YR 3/2 dark brown) silty loam, with a slightly more humic feel. It possessed some rootlets from the grass cover but no gravel inclusions. The transition between the A1 and A2 was often difficult to distinguish but was predominantly identified by the base of the grass rootlets.
- A2: The A2 was a similar mid to dark greyish-brown (7.5YR 2.5/2 very dark brown to 7.5YR 3/2 dark brown to 7.5YR 3/3 dark brown) silty loam. Ironstone and charcoal flecking/streaking were identified throughout. The firm subangular ironstone pieces ranged between orange and brown and were predominantly small but up to 20 mm in size. Bioturbation was caused by insect burrows, small roots, and rootlets. The A2 often ranged between 200 and 300 mm in depth.
- Transition: Few test pits (TP 153, 159, 160) included a transition between the A2 and B. The transition consisted of increased clay content and more orange colouring.
- B: The transition between the A2 and B was generally distinct. The basal clay horizon comprised a yellow or dark orange/red, waxy clay (7.5YR 4/6 strong brown). The layer was mostly flat. Small roots were sometimes identified at the interface between the A2 and B horizons. Some test pits

included lots of small ironstone inclusions (eg TP 153) or medium to large sized ironstone on the surface (eg TP 162-163).

There were a few trenches which did not fit this profile:

- TP 155-157 comprised a thin dark brown (7.5YR 2.5/2 very dark brown to 7.5YR 2.5/3 very dark brown) silty loam with no inclusions (0-80 mm below the surface). The A2 consisted of a dark brown (7.5YR 3/3 dark brown to 7.5YR 4/4 brown), organic, silty loam layer with roots and rootlets, some large ironstone pieces (up to 20 mm), charcoal and ironstone flecking (80–220 mm below the surface). The transition had a more reddish hue (5YR 4/4 yellowish red to 5YR 4/6 yellowish red), was more compact and with a more clayey feel (22–380 mm below the surface). The B horizon was dark orangey-red (5YR 4/6) compact, waxy but friable clay. It had with lots of ironstone streaks and forming ironstone (40 per cent) inclusions throughout and little pieces of charcoal. No artefacts were recovered.



Figure 56. Eastern section of TP 100.



Figure 57. Northern face of TP 109.



Figure 58. Northern section of TP 114.



Figure 59. Northern face of TP 148.



Figure 60. Northern face of TP 182.



Figure 61. Southern face of TP 200.

The second profile was identified in TPs 121–129 and 167–174 (Figure 62–Figure 63). It comprised duplex soils and consisted of the following profile:

- A0: Trenches were predominantly covered with low grasses, and 0 per cent ground visibility.
 - A1: The A1 had been stripped. A thin, forming A1 was present (10–50 mm in depth). The thinness of the A1 suggested the ground had been stripped relatively recently, likely during use of the site as Bringelly RAAF base. The A1 was a dark brown (7.5 YR 2.5/5 very dark brown) silty loam. It possessed some rootlets from the grass cover but no gravel inclusions. The transition between the A1 and A2 was often difficult to distinguish but was predominantly identified by the base of the grass rootlets.
 - A2a: The upper A2 horizon was a dark brown (7.5YR 2.5/2 very dark brown to 7.5YR 4/3 brown) silty loam. Subrounded ironstone pieces (5–15 per cent) (10–20 mm) and charcoal pieces were identified throughout. Ironstone flecking was also common.
 - A2b: The lower A2 horizon was a lighter brownish-grey (7.5YR 4/3 brown to 10YR 5/3 brown) silty loam with subrounded ironstone (10–50 mm) and charcoal inclusions. These sometimes focus toward the interface between the A2a and A2b horizons. The horizon was often softer and looser.
 - B: The transition between the A2 and B was generally distinct. The basal clay horizon comprised a clean, dark red clay (5YR 4/4 reddish brown) to dark orange clay (7.5YR 4/4 brown).
- One test trench presented a slightly different profile but still presented duplex soils.
- TP 126 (Figure 64) possessed a minimal A1 (0–10 mm in depth). The A2a (10–300 mm in depth) was very silty grey loam (5YR 6/2 pinkish grey) that was soft to the touch with subangular ironstone pieces (10–30 mm) and small charcoal pieces as well as some flecking. The A2b (300–600 mm in depth) became richer in ironstone pieces, grittier, more compact, and more yellow/orange in colour (5YR 5/6 yellowish red). The B horizon was a very moist, dark orangey-red clay with ironstone inclusions, although fewer than the A2 horizons. No Aboriginal artefacts were recovered.



Figure 62. Northern face of TP 125.



Figure 63. Northern section of TP 169.



Figure 64. Northern face of TP 126.

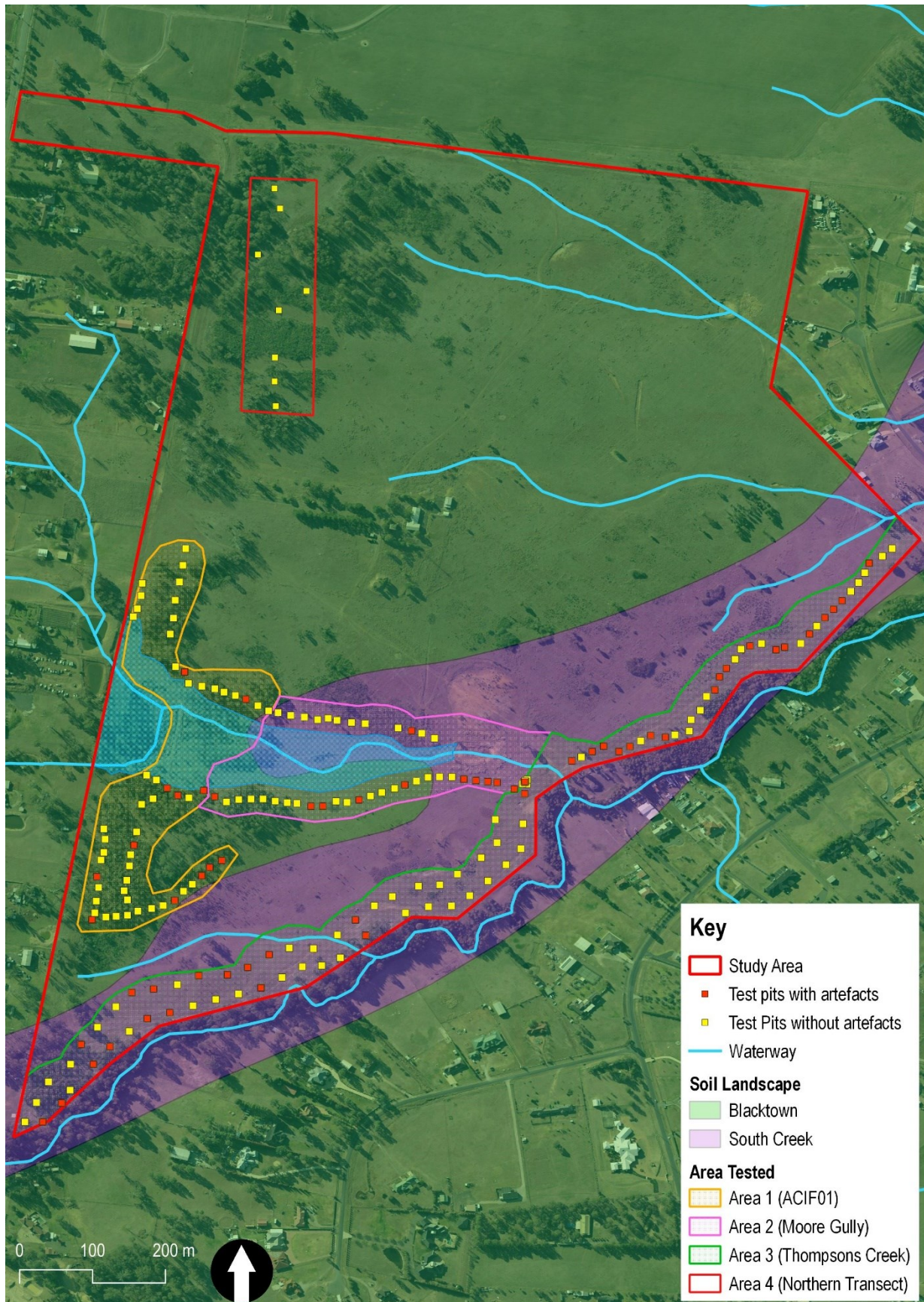


Figure 65. Test trenches and areas of investigation in relation to the soil landscape.

9.3 FEATURES

No Aboriginal archaeological features or layers of ash were identified during the test excavation program. A potential charcoal feature was identified in TPs 44 and TPs 206–209 (Figure 66–Figure 67). However, further investigation revealed the large amount of charcoal was natural and associated with a burnt-out tree rather than a hearth. This was primarily determined by the irregular veining of the charcoal, both horizontally and vertically, through the trenches.



Figure 66. Evidence of a burnt-out tree in TPs 44, 206–209. Facing east.



Figure 67. Evidence of burnt tree roots found in TPs 44, 205–209. Facing north.

9.4 GROUND DISTURBANCE

The test excavations revealed that the natural A1 topsoil had been stripped from across the study area (see Part 7.3). A new A1, averaging 10–30 mm in thickness, was being formed by leaf litter, grasses, and other vegetation. The thinness of the A1 indicated that the topsoil had been stripped relatively recently. Based on an understand of the history of the site, the study area was most likely stripped during its occupation by the Bringelly RAAF base.

Most of the trenches presented evidence of bioturbation caused by rootlets, small roots, and insect burrows (Figure 68–Figure 69). Artefacts were still recovered within TP 44 (n=1, spit 3) and TP 205 (n=1, spit 2), which was affected by bioturbation associated with large burnt-out tree roots. Only trenches with evidence of moderate-to-heavy bioturbation are listed in the table below (Table 9). The trenches most affected by bioturbation were found in the thinly wooded bushland of Area 1.

Ten trenches provided evidence of additional historical disturbance (Table 9). Evidence of historical disturbances was found across Areas 1–3, with a higher number of trenches in Area 3 affected. In some trenches, B horizon clay or large pieces of ironstone were identified in the upper A1 and A2 soil horizons (Figure 70–Figure 72). The presence of this material suggests heavy churning of the ground. A possible interpretation is ploughing. However, the disturbances were not consistent across trenches and were not clustered in any one location. One test trench possessed a cut and fill feature of unknown function (Figure 73).

Modern material was identified within Spit 1 (a maximum depth of 100 mm) of TPs 44, 205–209, and 203 (Table 9). These test pits were all located in the same area within Area 3 (Figure 79).

The presence of some conjoins and artefacts within disturbed test pits indicates that, while there is definite disturbance across the site, some assemblage integrity remains.

Table 9. Test pits with identified disturbance and their artefact counts.

Test pit	Area	Artefact count	Nature of disturbance
26	3	0	historical disturbance, associated with radio towers(?)
37	3	0	historical disturbance
39	3	3	historical disturbance
44	3	1	modern material and burnt-out tree root
49	3	0	historical disturbance
50	3	0	historical disturbance
86	3	1	historical disturbance
98	2	0	tree roots
104	2	0	historical disturbance
110	2	0	tree roots
111	2	0	historical disturbance
116	2	4	tree roots
171	1	0	historical disturbance
177	1	0	tree roots
178	1	0	tree roots
179	1	0	tree roots
186	1	0	historical disturbance
199	1	0	tree roots
205	3	2	modern material
206	3	0	modern material
207	3	0	modern material
208	3	0	modern material
209	3	0	modern material



Figure 68. Bioturbation caused by tree roots in TP 98.



Figure 69. Bioturbation caused by small tree roots and rootlets in TP 178.



Figure 70. B-horizon clay identified in the A2 horizon, indicating disturbance, in TP 50.



Figure 71. B-horizon clay identified in the A2 horizon, indicating disturbance, in TP 49.



Figure 72. Gravels mixed through the A2, indicating disturbance, in TP 104.



Figure 73. Cut and fill feature of unknown function in TP 186.

9.5 ABANDONED TRENCHES

In total, twelve test trenches were abandoned across the study area. In Area 1 (ACIF01), eight test pits were unable to be excavated. TPs 187–194 were located in an area of swamp that appeared to be a result of historical landscaping (Figure 74). Figure 74 and Figure 75 show the original ground level, still visible in property abutting the western boundary of the study area, compared to the lower elevation within the study area. It was determined that, along with swampy conditions unsuitable for excavation, these earthworks removed any potential for intact soil profiles.

In Area 2 (Moore Gully), two test pits were unable to be excavated. TPs 102–103 were located within heavy and impenetrable vegetation (Figure 76). In Area 3 (Thompsons Creek), two trenches were unable to be excavated. TP 9 was located in a swamp which likely belonged to a nearby tributary to Thompsons Creek (Figure 77). One spit was excavated, but the trench became too waterlogged to proceed. TP 54 was situated within a wide, unmarked tributary of Thompsons Creek (Figure 78). There was unlikely to be evidence of Aboriginal occupation within the creek bed.



Figure 74 Location of TPs 187–194. The white rope marks the beginning of the swampy area. Facing south. The figure also shows the higher elevation of the property abutting the western boundary of the study area, compared to the study area which has been levelled.



Figure 75 This figure shows the higher elevation of the property on the western boundary of the study area and where the excavation of the landscape has been undertaken within the study area.

Note: The location to the right of the white rope shows where the elevation in the landscape matches across the property. The area to the left of the white rope shows where the ground in study area has been excavated, creating a lower elevation.



Figure 76 Location of TPs 102–103.



Figure 77 Location of TP 9 (approximate location indicated by arrow) in a tributary to Thompsons Creek.



Figure 78 Location of TP 54 in a tributary to Thompsons Creek.

9.6 RELOCATED TRENCHES

As several test trenches had to be abandoned from across the site (Part 7.5, above), there was an opportunity to relocate some of them to areas of interest. During the test excavation program, it was thought that a number of artefacts had been recovered from TP 44. This was a misunderstanding and TP 44 only contained one Aboriginal artefact. It was, instead, TP 114 which had possessed eleven artefacts.

Based on the understanding that TP 44 contained a moderate number of artefacts, seven additional test trenches (TPs 203–209) were placed in the area surrounding TP 44 (Figure 79-Figure 80). TP 203 was located 5 m north-east of TP 44, TP 204 was placed 5 m south-east, and TP 205 was placed 5 m south-west. In addition, TP 44 was expanded into a cross-shape. TP 206 abutted the western edge of TP 44, TP 207 abutted the eastern edge, TP 208 abutted the northern edge, and TP 209 abutted the southern edge. The additional test trenches (TPs 203-209) did not contain any Aboriginal artefacts.

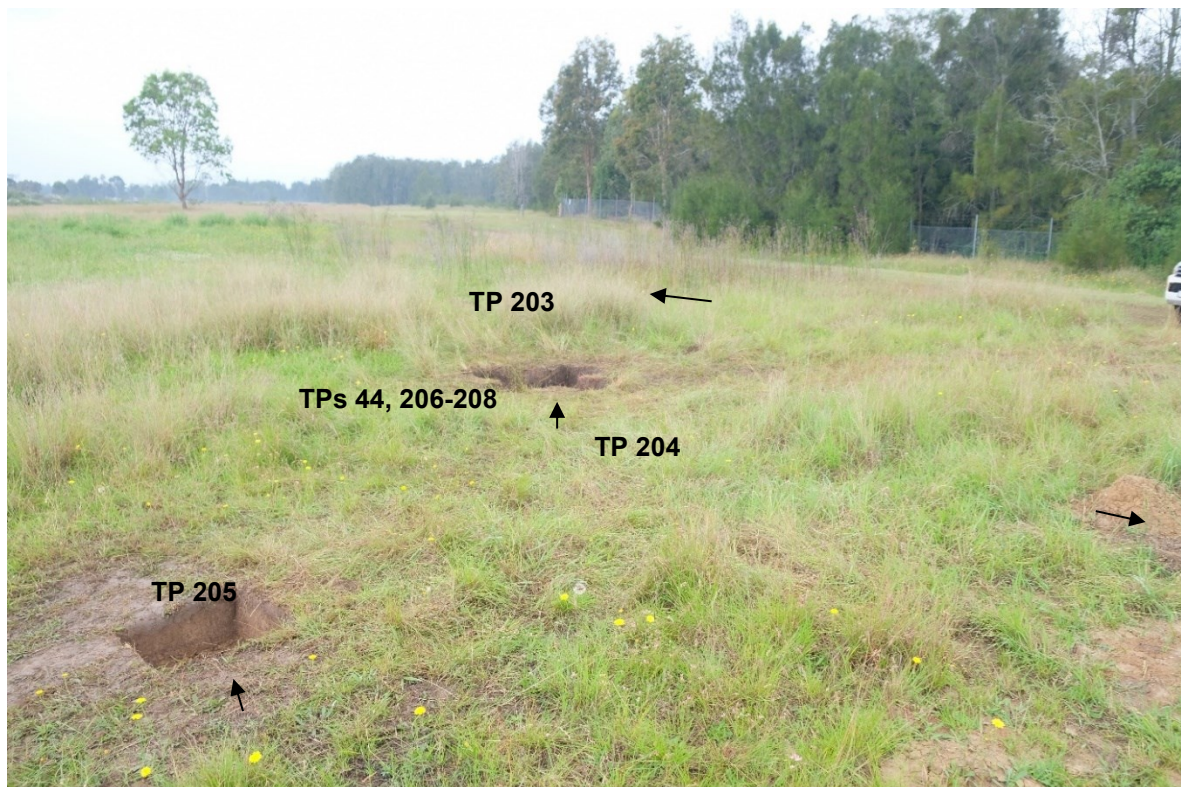


Figure 79 Relocated test trenches.

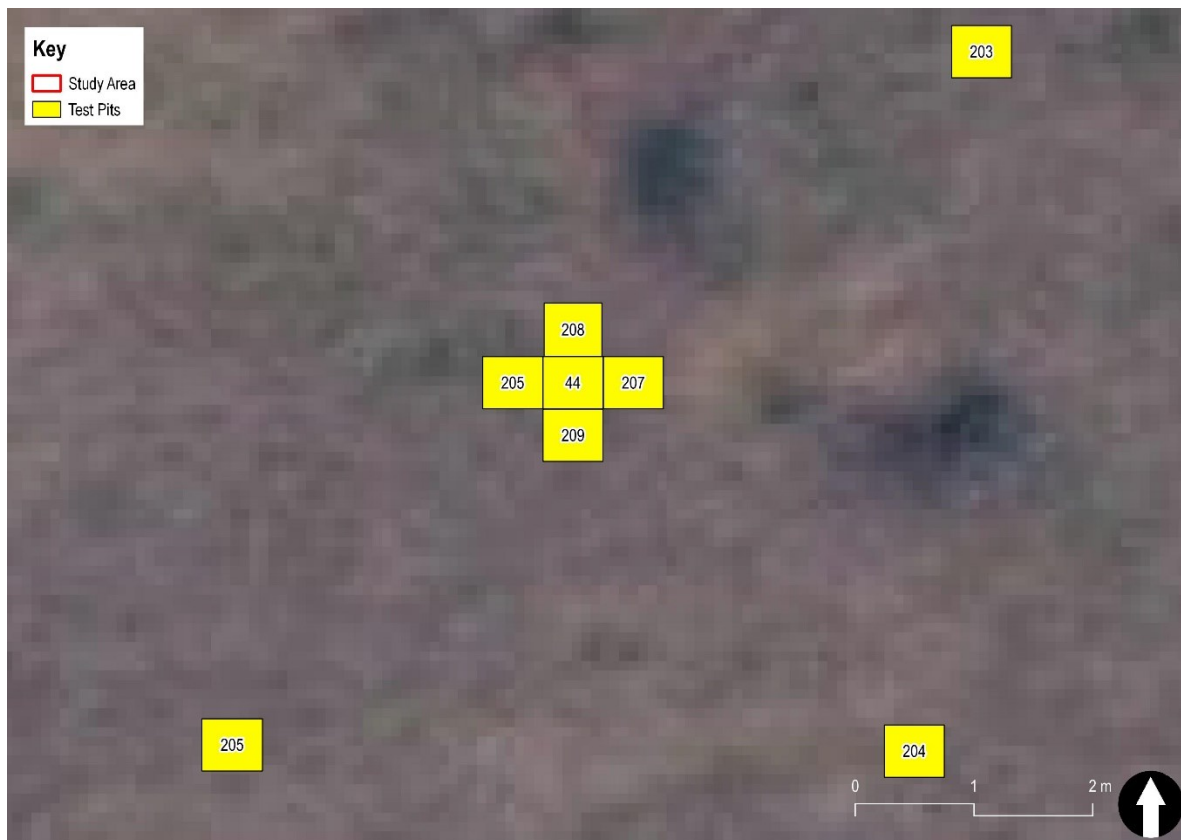


Figure 80 Location of relocated test trenches around TP 44 to further investigate the area.

9.7 ARTEFACT ASSEMBLAGE

A total of 134 Aboriginal objects (a low density of 2.7 artefacts/m²) and one piece of possible ochre were recovered from 60 of the 204 test pits (29.4 per cent) (Table 10). Artefacts were only recovered in Areas 1-3 (Figure 81). The assemblage was dominated by silcrete (n=92). Indurated mudstone/chert (IMT) was the second most dominant material (n=22), followed by milky quartz (n=11), with smaller frequencies of silicified wood (n=4), volcanic material (n=2), chalcedony (n=1), chert (n= 1), and fine-grained siliceous stone (n=1). These raw material types are reflective of those seen across the Cumberland Plain. During the Pleistocene and early Holocene, IMT was the preferred raw material type, and its presence may reflect the mixing/conflation of older assemblages with mid-to-late Holocene artefacts. However, the size of the assemblage is small which limits the ability to draw strong conclusions.

A majority of the assemblage comprised flakes and flake fragments (n=108), with a moderate rate of tools (n=10), including several standardised backed artefacts. Tool rates across Areas 1–3 were similar and the backed artefact shapes varied between trapezoidal, triangular, and elongated. The tool types present reflected occupation of the site during the mid-to-late Holocene, when backed artefact use increased. While the tool rates were low, it appeared that some manufacture of backed artefacts occurred on site, particularly in Area 3. At the same time, few cores were recovered within this assemblage, reflecting low on-site reduction rates, the removal of cores to other sites and/or the removal of cores post-deposition.

A majority of the raw material found during the test excavation did not display any cortex. The low levels of cortex may indicate that the raw material was transported quite a distance from the material sources, with decertification occurring at or close to the source. Silcrete artefacts from the assemblage may have been procured from several different sources as it displayed primary and secondary source cortex types. Outcrops at St Clair and St Mary's approximately 13km north of the site may be the area from which raw material was collected. Rickabys Creek paleochannel gravels have been observed in the banks of South Creek approximately 26km to the north of the site. This secondary source of gravels are

known to contain a range of materials from IMT to quartz to volcanics. There is likely to be closer sources of these gravels to the site, though further research is required. In general, both primary and secondary sources were used to source the materials, with silcrete obtained from primary sources such as outcrop while milky quartz and IMT were obtained from secondary sources such as riverbeds.

A vast majority of the test pits recovered low densities of artefacts (<10). Only two test pits recovered moderate (greater than or equal to 10 artefacts) artefact densities (TP 15 and TP 114). Most of the artefacts were recovered from Spits 1–2 (0–20 cm, n=117), with few recovered from spits 3–5 (30–50 cm, n=16). Therefore, cultural material, when present, was mostly found between 0 and 20 cm. Spatially, the artefact counts was low, reflective of background scatter and some discrete areas of moderate activity (TP 15 and TP 114).

TP 15 contained ten Aboriginal stone objects, consisting four complete flakes, two distal flakes, two broken splits, one proximal flake, and one angular fragment. Five of the artefacts (50 per cent) were smaller than 10 mm. A majority (n=8, 80 per cent of the test pit assemblage) of the artefacts were manufactured on silcrete, with two artefacts on indurated mudstone/tuff (20 per cent of the test pit assemblage). All artefacts were found within Spit 2 (10–20 cm).

TP 114 contained eleven Aboriginal stone objects, consisting of four complete flakes, three distal flakes, three proximal flakes, and an angular fragment. All artefacts were manufactured from silcrete. Only one artefact was smaller than 10 mm. Eight of the artefacts were found within Spit 1 (0–10 cm, 72.7 per cent of the test pit assemblage), while the remaining three artefacts were found within Spit 2 (10–20 cm, 27.2 per cent of the test pit assemblage). A conjoin was identified within Spit 1, however it was difficult to discern if this break occurred during the excavation process.

A small piece of possible ochre was recovered from Spit 2 of TP 54 in Area 3. The piece was cream, and 11.53 mm in size. Further analysis would be required to confirm whether this object is ochre.

A full artefact analysis can be found in Appendix 4.

Table 10. Test pit artefact densities.

Test pit	Artefact count	Test pit	Artefact count	Test pit	Artefact count
11	1	60	3	121	1
15	10	64	2	122	2
16	1	65	2	129	1
17	2	67	1	134	1
19	1	68	2	135	1
21	1	70	1	137	2
22	5	71	1	138	3
24	9	81	1	141	1
27	5	85	2	144	1
29	2	86	1	148	2
35	2	87	1	158	1
36	3	90	3	162	1
38	1	91	2	169	1
39	3	94	2	172	2

40	2	100	2	173	1
41	1	112	2	174	1
43	6	113	1	182	1
44	1	114	11	200	1
45	3	115	4	205	1
55	2	116	4	Total	134

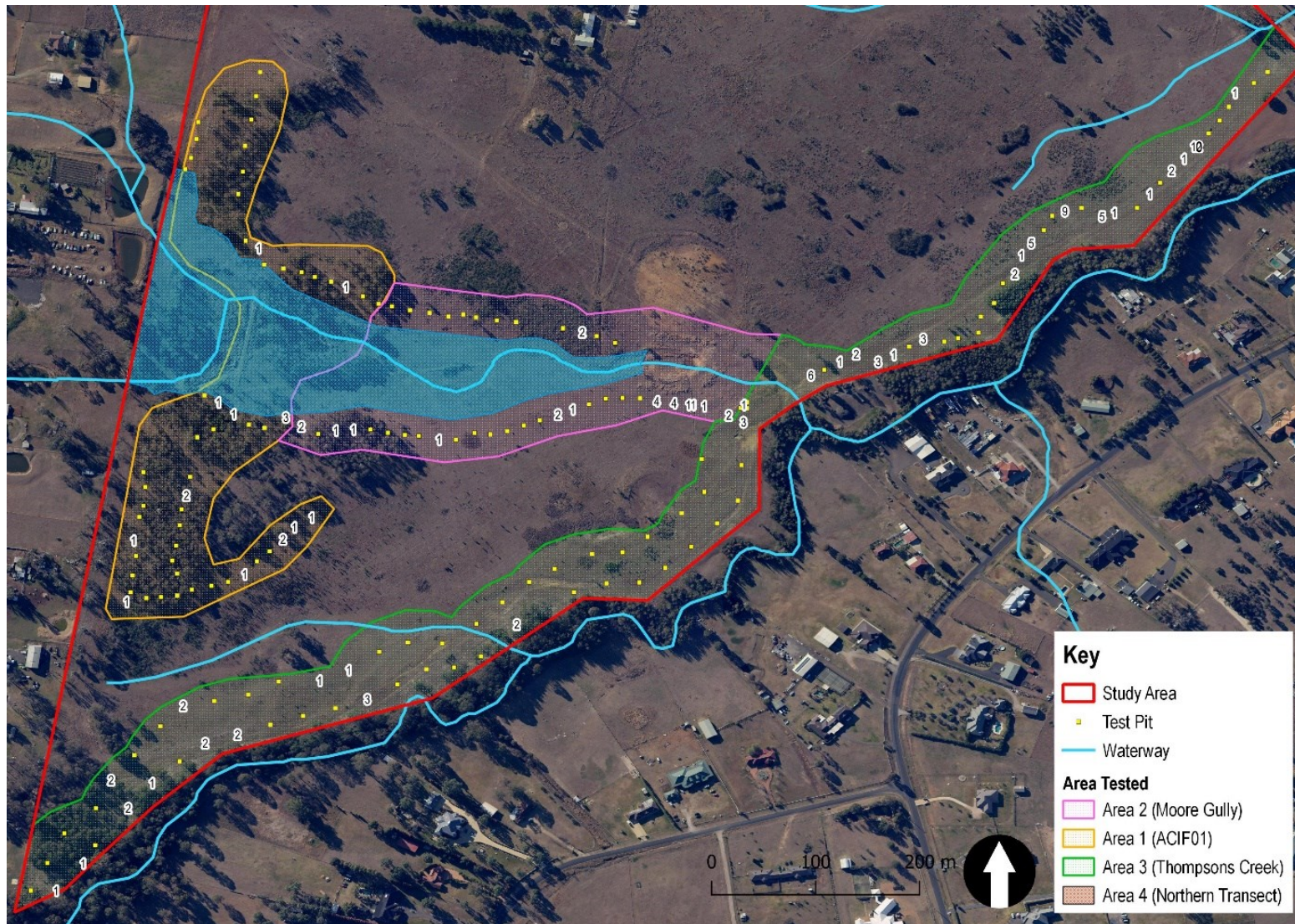


Figure 81 Artefact densities in test trenches excavated.

Note: Test trenches with no number indicate that no artefacts were recovered. Test pits are not to scale.

9.8 UPDATED ABORIGINAL SITES

Three PADs were investigated as part of the test excavation program: ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491). The results of the test excavation program confirmed that each of the PADs contained several areas of subsurface Aboriginal archaeology. As a result, the AHIMS records for each of the sites were updated from 'PADs' to areas or sites of known archaeology.

The extent of each of the three sites was also able to be updated to include only areas of known Aboriginal archaeological remains. Figure 82 shows the location of test trenches that recovered artefacts. An arbitrary buffer of 50 m was placed around each of these trenches to capture additional artefacts that may be associated with each area. The buffer was restricted to the boundary of the original PAD as predictive modelling indicated that areas outside the PAD were only expected to possess a low potential for general background scatter. All areas outside the buffers were removed from the site extent. Figure 83 shows the revised locations of ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491).

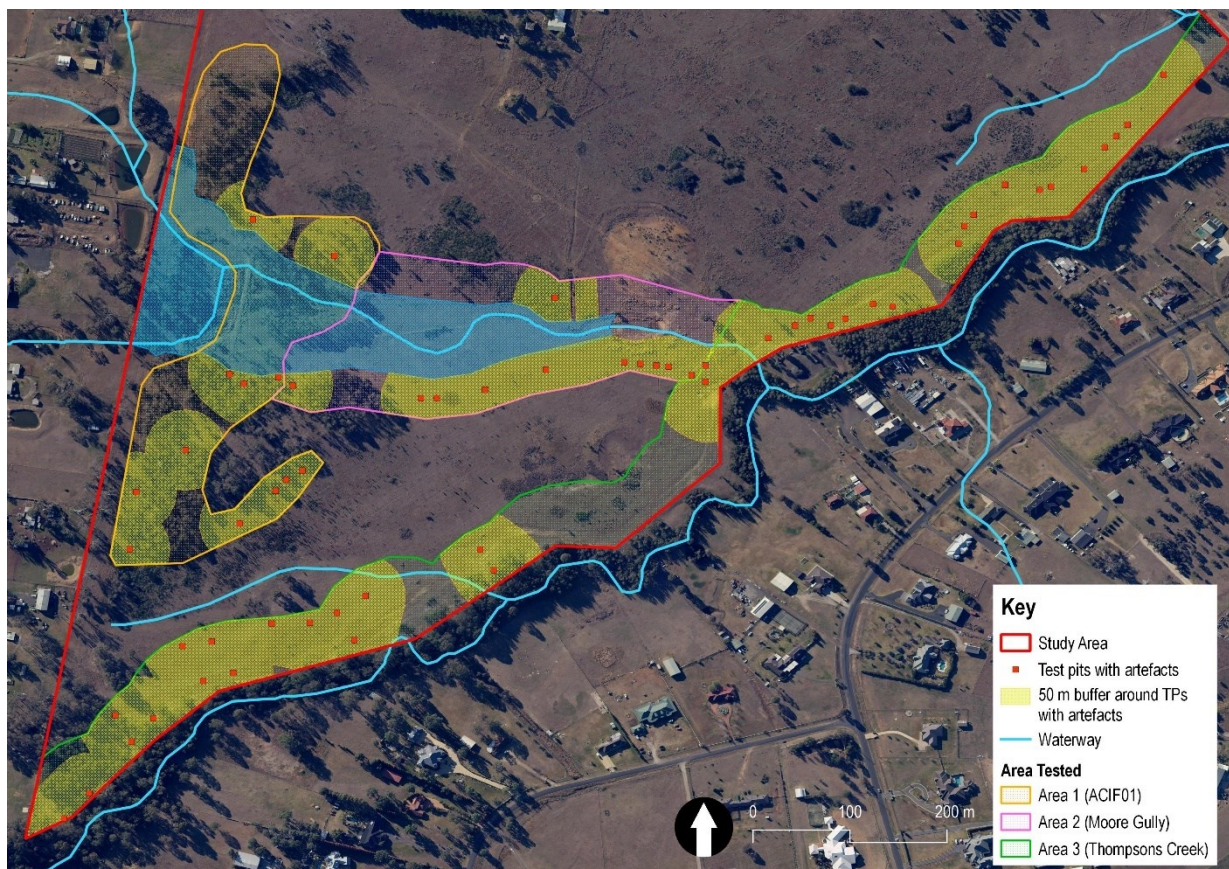


Figure 82 Buffer around TPs containing artefacts. The buffer is restricted to the extent of the PAD, as low archaeological potential was expected outside this area.

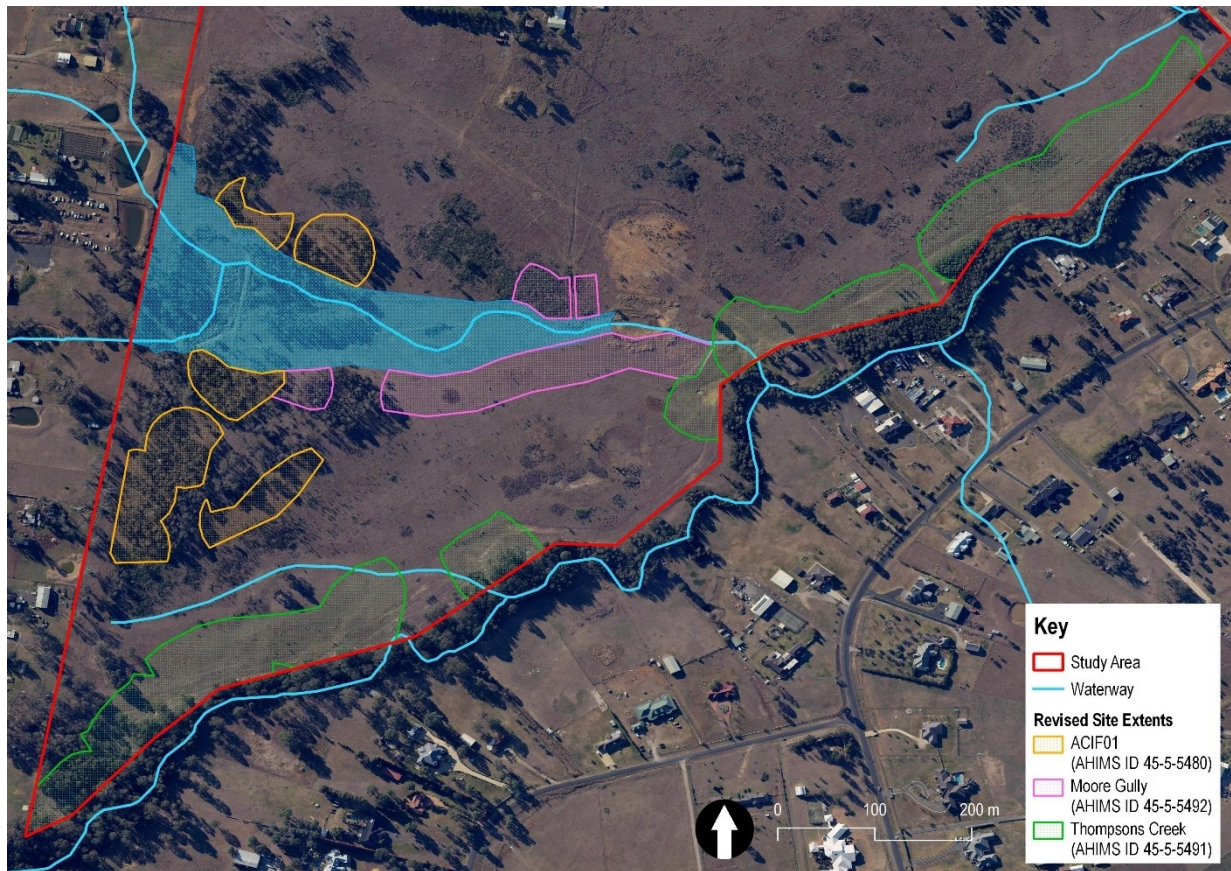


Figure 83 Revised extent of ACIF01, Moore Gully, and Thompsons Creek based on location of artefacts identified during the test excavation program.

9.9 ADDITIONAL ISOLATED SURFACE ARTEFACTS

Three isolated artefacts (BCC Isolated Artefact 1–3) were identified on the ground surface during the test excavations program (Figure 89). The artefacts were not collected but remained on site for future community collection. As a result, an analysis of these artefacts has not been included in the test excavation results.

BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)

Site type	Open camp site
Centroid	MGA94 Zone 56 Zone 56 290896 mE 6243466 mN
Site dimensions	1 x 1 m

BCC Isolated Artefact 1 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491) (Figure 84). It was identified 3.8 m west of BCC Isolated Artefact 2. The artefact comprised a red silcrete flake without clear evidence of retouching (Figure 85-Figure 86).

BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)

Site type	Open camp site
Centroid	MGA94 Zone 56 Zone 56 290899 mE 6243465 mN
Site dimensions	1 x 1 m

BCC Isolated Artefact 2 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491) (Figure 84). It was identified 3.8 m east of BCC Isolated Artefact 1. The artefact comprised an IMT flake (Figure 87-Figure 88).

BCC Isolated Artefact 3 (AHIMS ID 45-5-5590)

Site type	Open camp site
Centroid	MGA94 Zone 56 Zone 56 290781 mE 6243634 mN
Site dimensions	1 x 1 m

BCC Isolated Artefact 3 was located within the Thompsons Creek PAD (AHIMS ID 45-5-5491) (Figure 84). It was identified 31.5 m south-west of the extent of B 23 (AHIMS ID 45-5-2641), within the basing created by the historical aerial associated with the RAAF base. The artefact comprised a red silcrete flake.



Figure 84 Location of isolated surface artefacts (marked by spray cans). BCC Isolated Artefact 1 (left) and BCC Isolated Artefact 2 (right). Facing north to Moore Gully.



Figure 85 Silcrete flake, BCC Isolated Artefact 1.

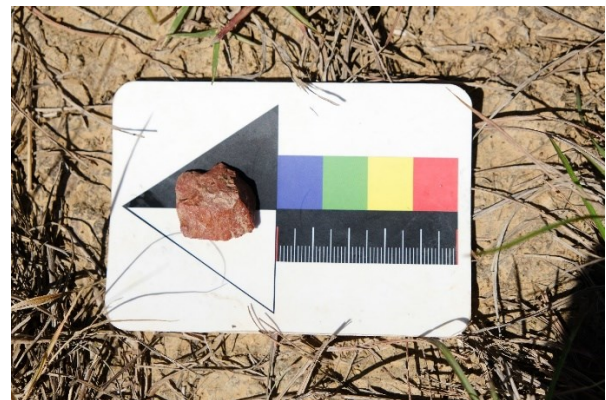


Figure 86 Silcrete flake, BCC Isolated Artefact 1.



Figure 87 IMST flake, BCC Isolated Artefact 2.



Figure 88 IMST flake, BCC Isolated Artefact 2.

10. Analysis and discussion

The results of the surface survey and test excavation program have revealed the use of the study area by Aboriginal people from the Pleistocene to the late Holocene period. The artefact assemblage, especially recovered from ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS ID 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491), showed a preference for silcrete and IMT raw material. Several scrapers and backed artefacts were also recovered. The artefact assemblage is typical of those identified across the Cumberland Plain. Of interest were the smaller-sized artefacts recovered from Thompsons Creek (AHIMS ID 45-5-5491), which demonstrated higher levels of reduction. While these artefacts represented a standard form of manufacturing, they are considered more unusual in the regional context.

The Cumberland Plains predictive model suggested that the third-order waterway, Moore Gully, would be associated with repeated and frequent occupation by small groups. Archaeological evidence of concentrated activities, as well as knapping floors that may be reused, were expected. The results of the test excavation revealed an artefact density of 3.7 artefacts per m², which was lower than anticipated. Most test pits contained between zero and nine artefacts, consistent with general background scatter identified across the Cumberland Plain. One test pit, TP 114, presented a moderate density of artefacts (n=11) which represented a location of on-site manufacturing and occupation along Moore Gully.

The Cumberland Plains predictive model suggested that the fourth-order waterway, Thompsons Creek, would be associated with repeat or continued occupation by large groups who may have remained on a site for several days or weeks. The results of the test excavation revealed an artefact density of 3.5 artefacts per m², with most test pits containing between zero and nine artefacts, which was lower than anticipated and consistent with general background scatter identified across the Cumberland Plain. Overall, however, the number of artefacts found along Thompsons Creek was higher than along Moore Gully. This is consistent with the understanding that higher order waterways produce more resources and would be a more utilised as transient and occupation areas. One test pit, TP 14, presented a moderate density of artefacts (n=10), which represented a location of on-site manufacturing associated with occupation of the area.

The predictive model also suggested that artefacts associated with fourth-order waterways may show less use of rationing strategies. Evidence of caching or raw materials might also be present. This did not appear to be the case as a majority of the materials found during the test excavation did not display any cortex, suggesting the artefacts travelled quite a distance from the material source.

Several surface artefacts were identified during the surface survey and test excavation program. The artefacts were isolated or part of small discontinuous scatters. The assemblage, primarily consisting of silcrete and IMT, was typical of low-density background scatters found across the Cumberland Plain.

The test excavation results showed that moderate levels of historical disturbance have affected the entire study area. The A1 topsoil profile had been removed and was only recently reforming. As a result, stripping of the ground surface was most likely undertaken during the use of the site as the Bringelly RAAF base. In addition, the western portion of ACIF01 was shown to have undergone heavy earthworks, lowering the ground level and impacting the waterflow into Moore Gully. It is highly likely that an entire layer of Aboriginal archaeology was removed during these processes. This would further explain the lack of complex and stratified sites identified along Thompsons Creek which were anticipated by the Cumberland Plain predictive model. Additional modern and historical disturbances were also identified in the installation of aerials and associated infrastructure constructure for Bringelly RAAF base, and in cuts and fills identified within the test areas. The effects of bioturbation on the archaeology were considered to be relatively minimal.

The result of the test excavation program confirmed the use of the study area by Aboriginal people as a thoroughway and occupation location during the Pleistocene to late Holocene, especially along the waterways. Archaeological evidence of later occupation is likely missing as a result of historical disturbances. Modern connection to country remains an important part of the value and appreciation for the archaeological remains. Consultation with the RAPs has focused heavily on the importance of waterways as a lifeforce for people past, present, and future. The appreciation of native vegetation, namely kangaroo grass and [REDACTED], further reminds us of the landscape's viability and history.

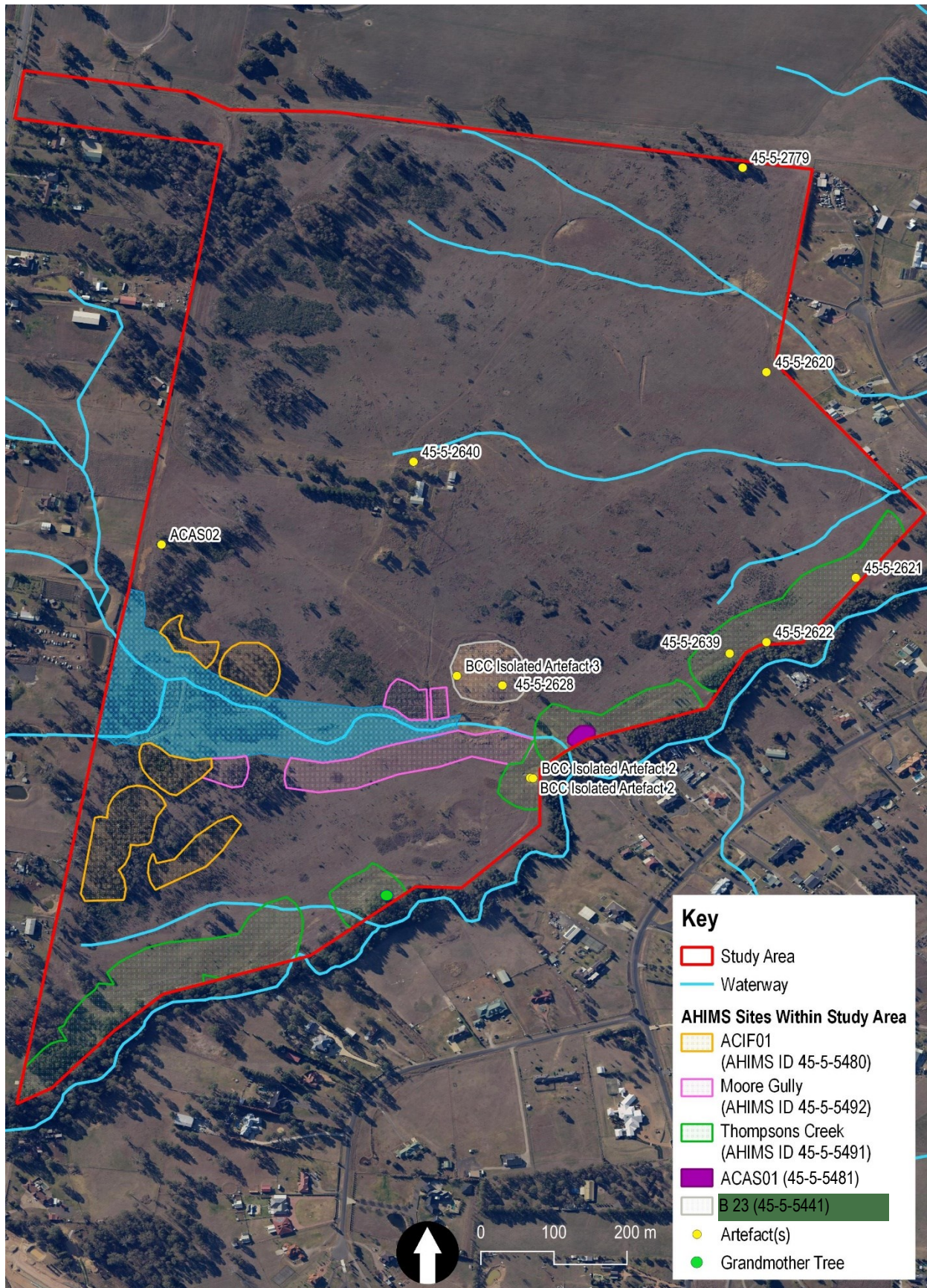


Figure 89 Updated extent of all identified Aboriginal sites registered with AHIMS located in the study area.

11. Technical Assessment

11.1 SIGNIFICANCE ASSESSMENT

11.1.1 Assessment Criteria

While all Aboriginal objects in NSW are protected by state legislation, the National Parks and Wildlife Act recognises that the destruction of sites may be necessary to allow other activities or developments to proceed. In order for the state regulator to make informed decisions on such matters, a consideration of the significance of cultural heritage places and objects is an important element of the assessment process.

An assessment of the archaeological significance of an item or place is required in order to form the basis of its management. The *Code of Practice* required that the assessment must reflect best practice assessment processes as set out in the Burra Charter (Australia ICOMOS 2013a; 2013b):

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or a state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, and how much connectivity is there?
- Rarity: is the subject area important in 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 subject area contain teaching sites or sites that might have teaching potential?

In accordance with the *National Parks and Wildlife Regulations 2019*, this report only includes an assessment of the scientific values of identified Aboriginal sites. An assessment of social, aesthetic, and historic significance would be included in an Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011; 'the Guide') and the Consultation Requirements.

It is important to note that heritage significance is a dynamic value and can be updated in accordance with the results of future investigations.

11.1.2 Archaeological Significance Assessment

The following Part assesses the significance of the PADs investigated through test excavations, and surface artefacts identified during the test excavation program and survey. The assessment is necessary to most effectively provide recommendations and mitigation measures for managing all the sites identified across the study area.

B17 (AHIMS ID 45-5-2779)

The site was recorded in 1996 as an open artefact scatter comprised of two Aboriginal objects. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 18 (AHIMS ID 45-5-2620)

The site was recorded in 1996 as an isolated find. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 19 (AHIMS ID 45-5-2621)

The site was recorded in 1996 as an open camp site. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 20 (AHIMS ID 45-5-2622)

The site was recorded in 1996 as an open camp site. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 21 (AHIMS ID 45-5-2639)

The site was recorded in 1996 as an open artefact scatter, comprising eleven Aboriginal objects. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 22 (AHIMS ID 45-5-2640)

The site was recorded in 1996 as an open artefact scatter comprising three Aboriginal objects. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

B 23 (AHIMS ID 45-5-2641)

The site was recorded in 1996 as an artefact scatter comprising four artefacts. The results of the archaeological survey identified an additional nine Aboriginal objects at the recorded location of the site. None of the Aboriginal objects identified during the archaeological survey matched the artefacts recorded on the 1996 site card. It is likely that the site has been subject to taphonomic processes which have impacted the distribution of the site assemblage. In addition, background research showed that the artefacts were located on an area where a large aerial was constructed in the mid-twentieth century. Due to high levels of historical ground disturbance, the site is considered to have low integrity. The silcrete and mudstone artefacts obtained from the site are also considered to be representative of the artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefacts, the site is not considered to be especially valuable for educational purposes. Overall, B23 (AHIMS ID 45-5-2641) is considered to be of low scientific value.

B 38 (AHIMS ID 45-5-2628)

The site was recorded in 1996 as an artefact site. The site could not be relocated during the archaeological survey and is likely to have been impacted by taphonomic processes. As the site cannot be relocated, it is considered to be of low scientific value.

ACAS01 (AHIMS ID 45-5-5481)

The site comprises four Aboriginal objects identified within an exposure associated with a vehicle track. The site is located within the extent of Thompsons Creek site (AHIMS ID 45-5-5491), which has been determined to hold moderate scientific significance. However, the four artefacts associated with ACAS01 should be considered as a separate deposit as they are likely to have been heavily affected by ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. As a result of these disturbances, the artefacts associated with ACAS01 have low research potential. The silcrete artefacts are also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefacts, the site is not considered to be especially valuable for educational purposes. Overall, ACAS01 (AHIMS ID 45-5-5481) is considered to be of low scientific value.

ACAS02 (AHIMS ID Pending)

The site consists of one Aboriginal object identified in the northern extent of the original ACIF01 PAD (AHIMS 45-5-5480). The site is considered to have low research potential, as it is likely to have been subject to the ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. The mudstone artefact obtained from the site is also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, ACAS02 (AHIMS ID Pending) is considered to be of low scientific value.

BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)

The site consists of one Aboriginal object identified within an exposure associated with a vehicle track. The site is considered to have low research potential, as it is likely to have been subject to the ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. The silcrete artefact obtained from the site is also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, BCC Isolated Artefact 1 (AHIMS ID Pending) is considered to be of low scientific value.

BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)

The site consists of four Aboriginal objects identified within an exposure associated with a vehicle track. The site is considered to have low research potential, as it is likely to have been subject to the ongoing taphonomic processes that have impacted the archaeological integrity of surface artefacts across the study area. The IMT artefact obtained from the site is also considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, BCC Isolated Artefact 2 (AHIMS ID Pending) is considered to be of low scientific value.

BCC Isolated Artefact 3 (AHIMS ID 45-5-5590)

The site consists of one Aboriginal object identified within an exposure associated with a large aerial constructed for the RAAF base. As the area has been subject to high levels of historical ground disturbance impacting the archaeological integrity of surface artefacts, the site is considered to have low research potential. The silcrete artefact obtained from the site is considered to be representative of artefact types identified within the regional Cumberland Plain context. Due to the low research potential and representative nature of the artefact, the site is not considered to be especially valuable for educational purposes. Overall, BCC Isolated Artefact 3 (AHIMS ID Pending) is considered to be of low scientific value.

ACIF01 (AHIMS ID 45-5-5480)

The investigation of ACIF01 through a test excavation program identified sixteen Aboriginal stone artefacts in subsurface archaeological deposits. The assemblage included backed artefacts and scrapers, and showed a preference for silcrete and IMT raw material types. The artefact collection is reflective of Pleistocene to early Holocene assemblages found across the regional Cumberland Plain context.

Due to the low density of artefacts in this area (1.1 artefacts/m²), there is low research potential. The assemblage likely reflects background scatter and limited on-site manufacturing. The assemblage may hold some education potential, however its small size is limiting.

Overall, ACIF01 is reflective of assemblages found across the Cumberland Plain. It has limited research and education potential, and therefore holds low scientific value.

Thompsons Creek (AHIMS ID 45-5-5491)

The investigation of Thompsons Creek through a test excavation program identified eighty-three Aboriginal stone artefacts in subsurface archaeological deposits. The assemblage included backed artefacts and scrapers, and showed a preference for silcrete raw material. The artefact collection is reflective of Pleistocene to early Holocene assemblages found across the regional Cumberland Plain context.

Due to the low density of artefacts in this area (3.5 artefacts/m²), the overall assemblage likely reflects background scatter and limited on-site manufacturing. In contrast to other assemblages within the site, the levels of reduction were higher. This was revealed through the identification of backing flakes, platform rejuvenation flakes, and small artefacts. The nature of the assemblage lends itself to having moderate education potential, as it reflects different manufacturing types seen across the Cumberland Plain. In addition, due to its size, the assemblage provides a moderate research potential to better understand activities that occurred along Thompsons Creek

One test pit within the Thompsons Creek site recovered a moderate density of artefacts. TP 15 recovered ten Aboriginal objects from the 50 x 50 cm test pit, contrasting to the low density of artefacts (more than ten artefacts per test pit) recovered from the other test pits excavated within the site. The site appears to reflect a location of on-site manufacturing. As a result, the artefacts from TP 15 hold moderate scientific and education potential. Moreover, the artefacts recovered from TP 15 may be associated with a larger assemblage. Additional archaeological investigation of TP 15 may be required to further understand the extent

and significance of the assemblage in this area. The results of additional investigations may increase the scientific value of the assemblage.

Overall, the scientific value of the Thompsons Creek site (AHIMS ID 45-5-5491) should be considered moderate.

Moore Gully (AHIMS ID 45-5-5492)

The investigation of Moore Gully through a test excavation program identified thirty-five Aboriginal stone artefacts in subsurface archaeological deposits. The assemblage included backed artefacts and showed a preference for silcrete raw material. The artefact collection is reflective of Pleistocene to early Holocene assemblages found across the regional Cumberland Plain context.

Due to the low density of artefacts in this area (3.7 artefacts/m²), the overall assemblage likely reflects background scatter and limited on-site manufacturing. The presence of complete and proximal splits further indicated that on site manufacture of stone tools was undertaken in the area along Moore Gully. Due to its small size, limited variability in flake forms, manufacturing techniques, and raw material preferences, the site has low research potential, education potential, and rarity.

One test pit within the Moore Gully site recovered a moderate density of artefacts. TP 114 recovered eleven Aboriginal objects from the 50 x 50 cm test pit, contrasting the low density of artefacts recovered from the other test pits within the site (more than ten artefacts per test pit). The site appears to reflect a location of on-site manufacturing. As a result, the artefacts from TP 114 hold moderate scientific and education potential. Moreover, the artefacts recovered from TP 114 may be associated with a larger assemblage. Additional archaeological investigations around TP 114 may be required to further understand the extent and significance of the assemblage in this area. The results of additional investigations may increase the scientific value of the assemblage.

Overall, the scientific value of the Moore Gully site (AHIMS ID 45-5-5492) should be considered low. However, the artefacts associated with TP 114, including those recovered from the test pit and additional unexcavated artefacts in the direct vicinity of the test pit, should be considered to hold moderate scientific value.

A summary of scientific significance for the study area is provided in Table 11 below.

Table 11. Summary of archaeological significance.

Site name (AHIMS ID)	Excavated	Research potential	Representativen ess	Rarity	Education potential	Overall significance assessment
B17 (AHIMS ID 45-5-2779)	No	Low	Low	Low	Low	Low
B 18 (AHIMS ID 45-5-2620)	No	Low	Low	Low	Low	Low
B 19 (AHIMS ID 45-5-2621)	No	Low	Low	Low	Low	Low
B 20 (AHIMS ID 45-5-2622)	No	Low	Low	Low	Low	Low
B 21 (AHIMS ID 45-5-2639)	No	Low	Low	Low	Low	Low
B 22 (AHIMS ID 45-5-2640)	No	Low	Low	Low	Low	Low
B 23 (AHIMS ID 45-5-2641)	No	Low	Low	Low	Low	Low
B 38 (AHIMS ID 45-5-2628)	No	Low	Low	Low	Low	Low
ACAS01 (AHIMS ID 45-5-5481)	No	Low	Low	Low	Low	Low
ACAS02 (AHIMS ID Pending)	No	Low	Low	Low	Low	Low
BCC Isolated Artefact 1	No	Low	Low	Low	Low	Low
BCC Isolated Artefact 2	No	Low	Low	Low	Low	Low
BCC Isolated Artefact 3	No	Low	Low	Low	Low	Low
ACIF01 (AHIMS ID 45-5-5480)	Yes	Low	Low	Low	Low	Low
Thompsons Creek (AHIMS ID 45-5-5491)	Yes	Moderate	Moderate	Moderate	Moderate	Moderate
TP 15 - Thompsons Creek (AHIMS ID 45-5-5491)	Yes	Moderate	Moderate	Moderate	Moderate	Moderate
Moore Gully (AHIMS ID 45-5-5492)	Yes	Low	Low	Low	Low	Low
TP 114 - Moore Gully (AHIMS ID 45-5-5492)	Yes	Moderate	Moderate	Moderate	Moderate	Moderate

11.1.3 Non-archaeological significance

In addition to the scientific values, the ACHAR (Section 11) assesses the social, historical, and aesthetic values of the study area. The majority of the study area has been subject to the clearance of native vegetation, which has compromised the aesthetic value and some areas. However, based on proximity to features such as waterways, trees, and remnant, intact landforms in the margins, the study area is considered to be of moderate aesthetic value.

11.2 IMPACT ASSESSMENT

11.2.1 Proposed development

A Designing for Country approach has been implemented in the creation of Bradfield City Centre. Bangawarra (2022) has been engaged by WPCA to produce a report outlining ways in which the proposed Master Plan can incorporate Aboriginal knowledge and understanding, as well as best practices, into the designs. 'Designing with Country is a non-linear process where decision making, and design become more nuanced and responsive to the whole system's needs' (Bangawarra 2022, 43). The designing with country diagram (Figure 91) shows western planning and architectural priorities on the left, compared to the non-hierarchical perspective adopted in traditional Aboriginal practices, which considers all of the entities of the land, soil, rocks, sky, water, plants, animals, stories, and people as independent and held in relation to one another, on the right (Bangawarra 2022, 43). WPCA has been highly receptive to incorporating these features into the design of Bradfield City Centre.

The proposed mixed-use development at Bradfield City Centre consists of large areas of residential and commercial development. These hubs will cover a majority of the study area. Two parks, Ridge Park, and Larger Central Park (Figure 90), are proposed to be constructed in the centre and north-western corner of the study area. To appreciate its high vantage point, the design of Ridge Park will incorporate views across the study area and wider landscape.

The zone along Thompsons Creek and Moore Gully will also comprise parkland, presently referred to as Thompsons Creek Parkland. The existing waterways and its associated landscape will be maintained and utilised. Two key public spaces will be constructed to enable the community to further engage with the waterfronts. Construction within Thompsons Creek Parkland is expected to include revegetation efforts, with a focus on utilising local and native flora. This revitalisation of the local ecosystem is also expected to create and protect natural habitats for native animals. Retention and revitalisation native and local vegetation was identified through community consultation and the Bangawarra (2022) Designing with Country report as being highly important. The existing waterway, Moore Gully, will be maintained and integrated with urban interfaces. Boardwalks and tracks are expected to be installed to enable the public to access across the landscape.

In addition to the open parkland, a pedestrianised green loop will also be incorporated into Bradfield City Centre. The green loop will link the city, ridges, and the creek (Figure 92). As a dedicated pedestrian and ecological boulevard (Bangwarra 2022, 46), the community will be able to travel through the landscape while maintaining connectivity to the natural environment. Further opportunities to engage with public art, created by local First Nations artists, will also create continuity of cultural and artistic practices by Traditional Owners.

Key design features across the Bradfield City Centre site, and the respective value or effect, are outlined in Table 21 below.

Table 12 Outline of design features and associated values/effects (Bangawarra 2022, 34).

Design feature	Value/Effect
Reimagining and enhancing the waterways	Protecting water is protecting Country
A green spine linking ridge to creek and everything between	Creating space for connections to Country
A legible connected city by all modes	Caring for Country is to honour the connections between all things

A Pedestrianised Green Loop: an integrated experience	Connecting to Country brings all things together
A place of innovation and employment	Honouring Country through a balance of many diverse elements
A variety of distinct civic places	Prioritising Country in the design of prominent spaces
A unique world class urban playground	Celebrating the distinctly unique nature of Country in Western Sydney

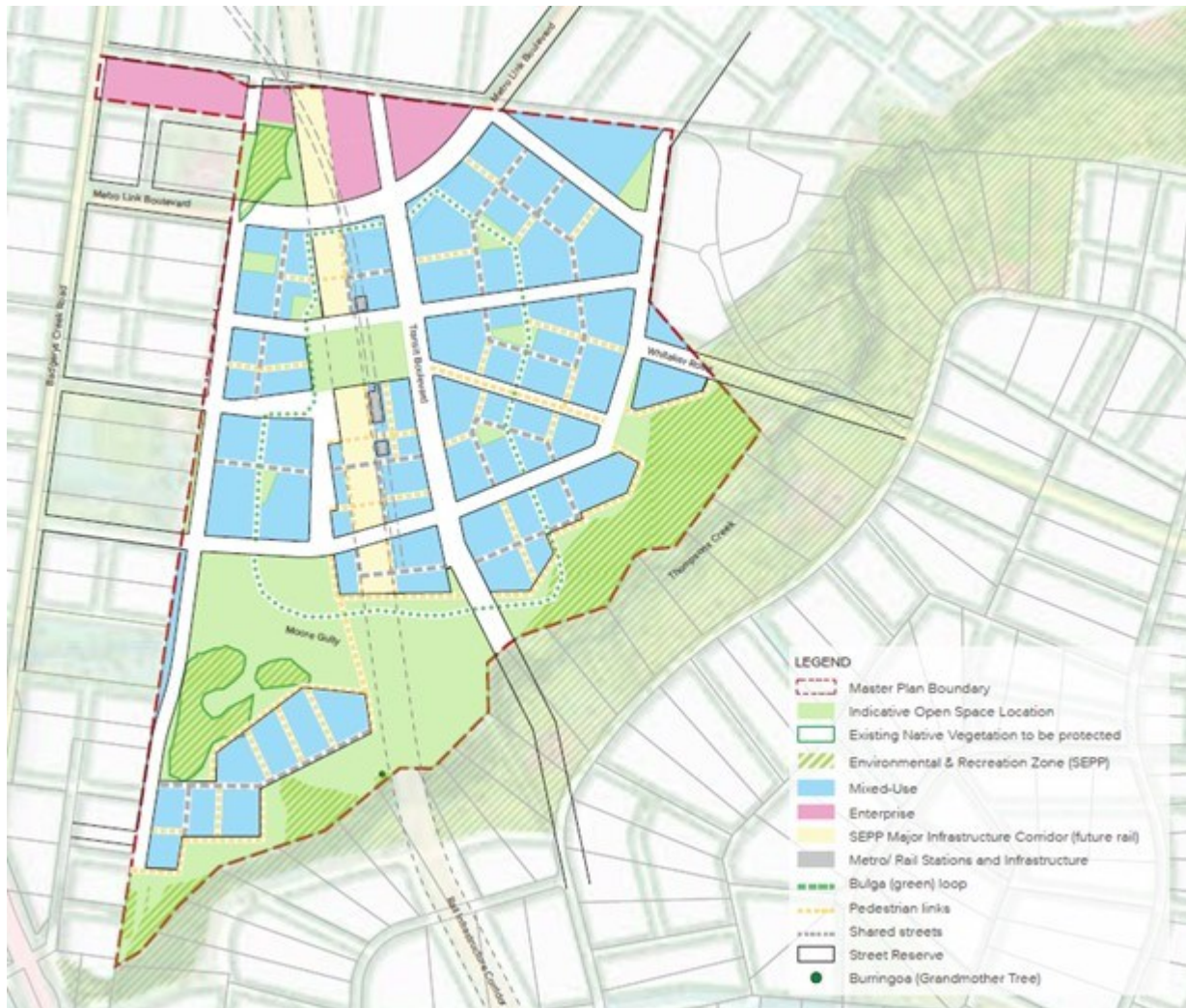


Figure 90 Draft Masterplan. Source: Western Parkland City Authority (October 2022).

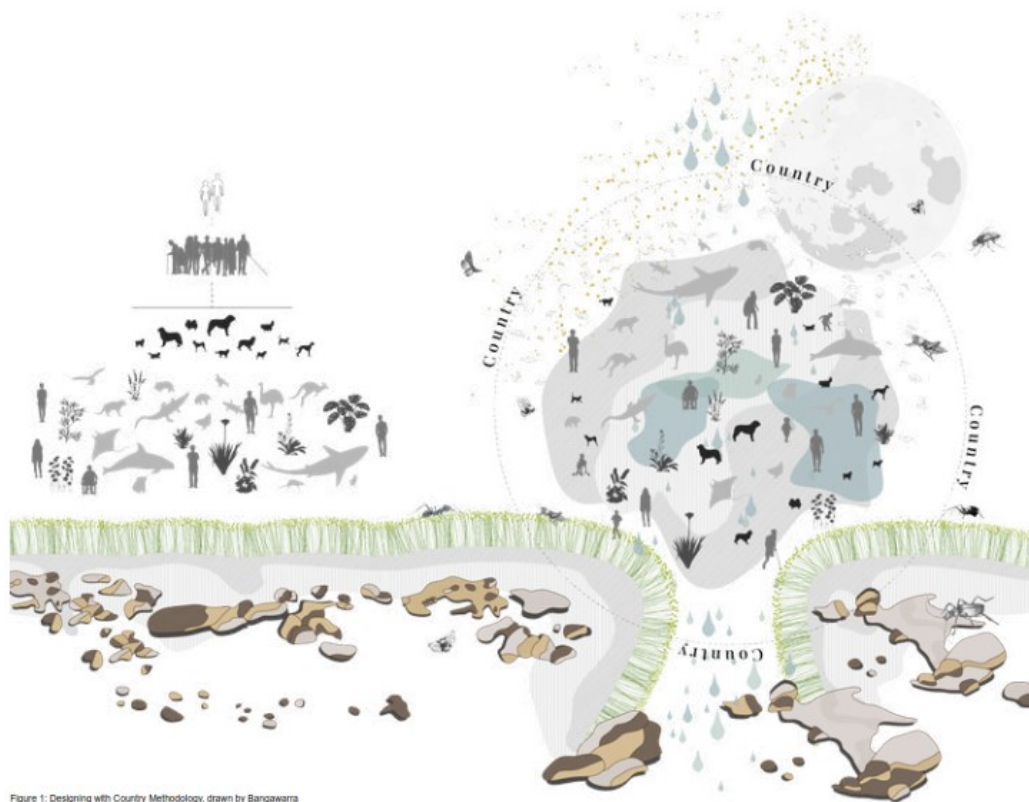


Figure 1: Designing with Country Methodology, drawn by Bangawarra

WESTERN DESIGN PARADIGM (LEFT)

On the left is the Western approach to design which is hierarchical, privileging people first (and certain times of young, healthy and able bodies are designed for as the priority) then animals (again, valuing some animals as useful and others as less so) and landscape is the surface upon which design is enacted

DESIGN WITH COUNTRY

On the right is Bangawarra's diagram of designing with Country, which reflects all of the priorities in this document. All things are interconnected. Water, stones, ants and people are equally considered part of both the ecologies we design for and the architecture, urban space and landscapes we create.

Figure 91 Designing with Country methodology. (source: Bangawarra 2022, figure 1).



Figure 92 Dedicated pedestrian circulation and connections to the pedestrianised green loop. (source: Bangawarra, figure 3).

11.2.2 Potential Aboriginal heritage impact

The development at Bradfield City Centre will include the construction of residential and commercial buildings across the majority of the study area. The construction process is expected to involve large-scale earthworks, grading, and the building of above and below-ground structures. The works are likely to cause a high level of disturbance, impacting both surface and subsurface archaeological remains located within these areas. Known Aboriginal sites which will be impacted (Figure 93) comprise B 17 (AHIMS ID 45-5-2779), B 18 (AHIMS ID 45-5-2620), B 22 (AHIMS ID 45-5-2640), B 23 (AHIMS ID 45-5-2641), B 38 (AHIMS ID 45-5-2628), ACAS02 (AHIMS ID Pending), BCC Isolated Artefact 3 (AHIMS ID 45-5-5590), and part of ACIF01 (AHIMS ID 45-5-5480). These sites have all been determined to hold low scientific significance.

Two small parks, Ridge Park and Larger Central Park, have been proposed. The construction process required to establish the parks is unknown but will likely involve ground disturbance works and revegetation. No surface or subsurface archaeological remains were identified within the proposed locations of these parks.

Thompsons Creek Park will stretch along the bank of Thompsons Creek and Moore Gully. The area is expected to be restored to a wetland that incorporates the existing landscape features and waterways. The method for revegetation has not been confirmed but is likely to include the planting of both seedlings and mature trees. The existing waterway, Moore Gully, will be maintained and its course unchanged. Boardwalks and tracks are expected to be installed to allow the public to access the waterway.

The developments within the Thompsons Creek Park will impact both surface and subsurface archaeological remains. Known Aboriginal surface artefacts which will be impacted comprise B19 (AHIMS ID 2621), B 20 (AHIMS ID 2622), B 21 (AHIMS ID 45-5-2639), ACAS01 (AHIMS ID 45-5-5481), BCC Isolated Artefact 1 (AHIMS ID 45-5-5588), and BCC Isolated Artefact 2 (AHIMS ID 45-5-5589). These sites have all been determined to hold low scientific significance.

The development of Thompsons Creek Park will also impact the revised extents of Thompsons Creek (AHIMS ID 45-5-5491), Moore Gully (AHIMS ID 45-5-5492), and a majority of ACIF01 (AHIMS ID 45-5-5480). ACIF01 has been determined to hold low scientific significance. Moore Gully has been determined to hold low scientific value, with the exception of TP 114 and its immediate surroundings, which hold moderate scientific value. Thompsons Creek has been determined to hold moderate scientific value, with the addition of TP 15 and its immediate surroundings, which also hold moderate scientific value.

In its present form, the Masterplan for Bradfield City Centre is flexible and can accommodate the protection of in situ artefacts associated with TP 114. A 50 m buffer (Figure 94) surrounding the test pit has been proposed to capture the potential extent of additional archaeological remains associated with the assemblages. As a result of this conservation approach, Moore Gully (AHIMS ID 45-5-5492) will only be partially impacted. The Masterplan for Bradfield City Centre cannot offer protection for additional artefacts surrounding TP 15. As a result, all of Thompsons Creek (AHIMS ID 45-5-5491) will be impacted. Due to the nature of the site and its significance, additional salvage works would be required to understand the full impact to the archaeology in this area.

The majority of the study area has been subject to the clearance of native vegetation, which has compromised the aesthetic value and some areas. However, based on proximity to features such as waterways, trees, and remnant, intact landforms in the margins, the study area is considered to be of moderate aesthetic value. [REDACTED]

[REDACTED]. While not considered archaeological sites, the Masterplan allows the protection of the [REDACTED] and retention of the existing waterways reduces the impact to Aboriginal cultural heritage.

A summary of the assessed impact is provided in Table 13 below.

Table 13. Impact to known Aboriginal archaeological remains.

Site name/number	Type of harm	Degree of harm	Consequence of harm
B17 (AHIMS ID 45-5-2779)	Direct	Total	Total loss of value
B 18 (AHIMS ID 45-5-2620)	Direct	Total	Total loss of value
B 19 (AHIMS ID 45-5-2621)	Direct	Total	Total loss of value
B 20 (AHIMS ID 45-5-2622)	Direct	Total	Total loss of value
B 21 (AHIMS ID 45-5-2639)	Direct	Total	Total loss of value
B 22 (AHIMS ID 45-5-2640)	Direct	Total	Total loss of value
B 23 (AHIMS ID 45-5-2641)	Direct	Total	Total loss of value
B 38 (AHIMS ID 45-5-2628)	Direct	Total	Total loss of value
ACAS01 (AHIMS ID 54-4-5481)	Direct	Total	Total loss of value
ACAS02 (AHIMS ID Pending)	Direct	Total	Total loss of value
BCC Isolated Artefact 1 (AHIMS ID 45-5-5588)	Direct	Total	Total loss of value
BCC Isolated Artefact 2 (AHIMS ID 45-5-5589)	Direct	Total	Total loss of value
BCC Isolated Artefact 3 (AHIMS ID 45-5-5590)	Direct	Total	Total loss of value
ACIF01 (AHIMS ID 54-5-5480)	Direct	Total	Total loss of value
Moore Gully (AHIMS ID 45-5-5492)	Direct	Partial	Partial loss of value
Thompsons Creek (AHIMS ID 54-5-5491)	Direct	Total	Total loss of value

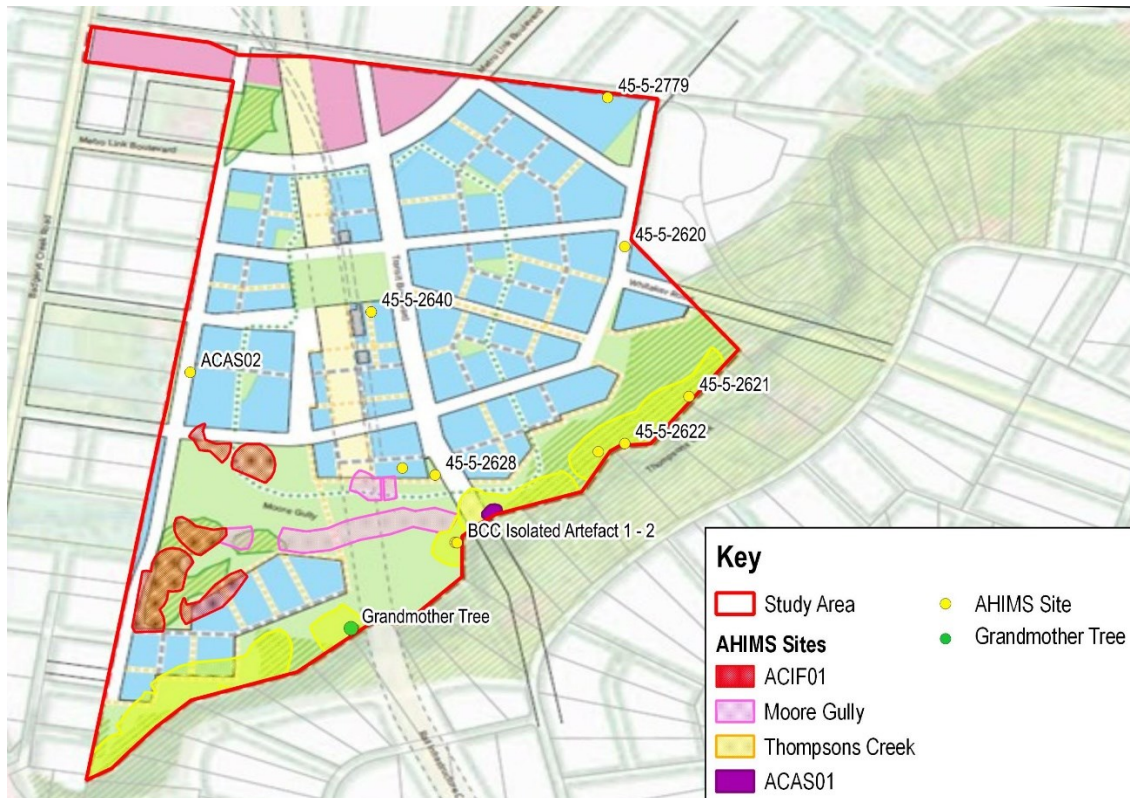


Figure 93 Impacts to identified Aboriginal archaeological remains within the study area. Source: Western Parkland City Authority (December 2021).



Figure 94 Buffer zones surrounding TP 15 and TP 114.

11.3 MANAGEMENT AND MITIGATION STRATEGY

11.3.1 Guiding principles

Where possible, cultural heritage should be conserved and protected in situ. However, where conservation is not practical, measures should be implemented to mitigate against the loss of archaeological value. These mitigation measures are based on the assessed significance of the site against the proposed impacts.

In accordance with the requirements of the *Code of Practice*, this report has only assessed the scientific values of identified Aboriginal sites. An assessment of social, aesthetic, and historic significance would be included in an ACHAR prepared in accordance with the *Guide* and the Consultation Requirements. As a result, the final recommendations for management and mitigation would be included in the ACHAR.

11.3.2 Aboriginal Heritage Impact Permit

Several areas of Aboriginal archaeology, including both surface and subsurface isolated artefacts and artefact scatters, have been identified across the study area. An AHIP will be required to authorise harm to the known, registered AHIMS sites. These comprise:

- B 17 (AHIMS ID 45-5-2779);
- B 18 (AHIMS ID 45-5-2620);
- B 19 (AHIMS ID 45-5-2621);
- B 20 (AHIMS ID 45-5-2622);
- B 21 (AHIMS ID 45-5-2639);
- B 22 (AHIMS ID 45-5-2640);
- B 23 (AHIMS ID 45-5-2641);
- B 38 (AHIMS ID 45-5-2628);
- ACAS01 (AHIMS ID 54-4-5481);
- ACAS02 (AHIMS ID Pending);
- BCC Isolated Artefact 1 (AHIMS ID 45-5-5588);
- BCC Isolated Artefact 2 (AHIMS ID 45-5-5589);
- BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
- ACIF01 (AHIMS ID 54-5-5480);
- Thompsons Creek (AHIMS ID 45-5-5491); and
- Moore Gully (AHIMS ID 45-5-5492)—Partial.

An AHIP is also required to relocate the 136 Aboriginal cultural artefacts collected during the test excavation program. Part 11.3, below, outlines potential options for artefact relocation.

Finally, the test excavation program has indicated it is highly likely that additional Aboriginal archaeology in the form of background scatters will be present across the entire study area. An AHIP will be required to authorise harm to these unidentified artefacts.

11.3.3 Protected areas

The Thompsons Creek site (AHIMS ID 45-5-5491) and Moore Gully site (AHIMS ID 45-5-5492) each included one area which was identified as a location of on-site occupation by Aboriginal people in the Pleistocene to large Holocene period. These were TP 15 and TP 114, respectively. Extent Heritage recommends conservation of these areas.

Based on the present Masterplan, the area surrounding TP 114 (Moore Gully, AHIMS ID 45-5-5492) will not be impacted. A buffer of 50 m has been proposed around the test pits to allow additional associated Aboriginal archaeology to remain in situ. As a result, an AHIP is not required to allow harm these areas.

Two options for protection of the archaeological remains are proposed. Firstly, the identified areas associated with TP 114 can be built up with introduced clean soil fill. As a result, future ground disturbance work in the area will not impact the natural soil profile, which contains Aboriginal archaeological remains. Secondly, revegetation associated with the establishment of the Thompsons Creek Parkland can be completed by planting seed or utilising seed

matting. By planting seeds, the root systems can establish themselves through the intact soil profile in a natural way. This will cause less disruption to the subsurface archaeology than the planting of seedlings, young, or mature trees which involve excavating holes in which to install the plants.

Based on the proposed Masterplan, the area surrounding TP 15 (Thompsons Creek, AHIMS ID 45-5-5491) will be impacted by the proposed development. Any future developments which will impact TP 15 or TP 114 will require additional archaeological investigation in the form of a salvage excavation program. An AHIP would be required to authorise these works.

11.3.4 Aboriginal Cultural Heritage Assessment Report

An ACHAR was prepared in accordance with the *Guide*. An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. the *Guide* (OEH 2011, 10) provides guidelines, in accordance with the Burra Charter (Australia ICOMOS 2013a; 2013b) for significance assessment with assessments being required to consider the following criteria:

- Social values: Does the area have a strong or special association with a particular community or cultural group for social, cultural, or spiritual reasons?
- Historic values: Is the area important to the cultural or natural history of the local area and/or region and/or state?
- Scientific values: Does the area have the potential to yield information that will contribute to an understanding of the cultural and natural history of the local area and/or region and/or state?
- Aesthetic values: Is the area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?

The Aboriginal archaeology within the study area holds low to moderate scientific value (Part 9, page 81). The Aboriginal objects identified during the surface survey and recovered as part of the test excavation program are representative of the regional Cumberland Plain context. The assemblages were typical of Pleistocene to late Holocene deposits in the area.

A full significance assessment has been outlined in Part 11 of the ACHAR (Extent Heritage 2022). The study area is considered to have social and cultural significance for Aboriginal stakeholders. The connection between the cultural landscape, community and culture has been highlighted repeatedly and underpins the cultural and social Aboriginal values of the place. The importance of retaining this landscape to ensure intergenerational equity and access to culture is also critical. The study area also holds moderate aesthetic significance due to the presence of landscape features including waterways. [REDACTED]

11.3.5 Unexpected finds

Any unexpected Aboriginal objects identified within the study area remain protected under the National Parks and Wildlife Act. If unexpected Aboriginal objects are uncovered during construction, work should cease, and a qualified archaeologist, Heritage NSW-DPC, and Gandangara LALC should be informed to determine whether further Aboriginal heritage assessment or permit approvals are required.

Note: It is an offence to harm Aboriginal objects without an Aboriginal Heritage Impact Permit (AHIP) approval from Heritage NSW. Work must not recommence at the location of the discovery site until any necessary permits under the National Parks and Wildlife Act have been approved by Heritage NSW and all permit conditions have been completed.

11.3.6 Discovery of human remains

If any suspected human skeletal remains are identified during development, the *Coroners Act 2009* requires that all works should cease, and the NSW Police and the NSW Coroner's Office be notified for further advice.

Interpreting the age and nature of skeletal remains is a specialist field and an appropriately skilled archaeologist or physical anthropologist should be engaged to inspect the discovery site and recommend an appropriate course of action in accordance with the requirements of the Coroners Act and the National Parks and Wildlife Act.

Should the skeletal material prove to be of Aboriginal ancestry and greater than 100 years old, you must notify Heritage NSW-DPC and Gandangara LALC. You must also notify the Commonwealth Minister for the Environment, under the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

Note: Traditional Aboriginal burials (older than 100 years) are protected under the National Parks and Wildlife Act, and must not be disturbed unless in accordance with specific approvals provided by Heritage NSW-DPC.

12. Recommendations

The following recommendations are made based on the identified potential for Aboriginal heritage impact and the statutory requirements of the *Code of Practice* (DECCW 2010b):

Ref	Recommendation	Timeframe	Responsible
Aboriginal Cultural Heritage			
1	An AHIP is required to authorise harm to the Aboriginal sites identified and registered with AHIMS that are located within the study area. These sites cannot be impacted until an approved AHIP has been obtained, and all impacts must conform with the AHIP conditions.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Heritage NSW
2	The area surrounding TP 15 and TP 114, comprising a buffer of 50 m, should be protected from harm. If these areas are not able to be protected, a salvage excavation program would be required to fully understand the extent and significance of the Aboriginal archaeological remains in the area. An AHIP would be required to authorise the salvage excavations.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA
3	Aboriginal representatives must be given an opportunity to collect the surface artefacts identified across the study area prior to the commencement of construction works.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Extent Heritage
4	An appropriate Keeping Place or reburial site must be determined to house the Aboriginal objects. The location of this Keeping Place must be chosen in consultation with the RAPs and Gandangara LALC.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPS, GLALC and Extent Heritage
5	If unexpected Aboriginal objects are uncovered during construction, work should cease, and a qualified archaeologist, Heritage NSW-DPC, and the Gandangara LALC should be informed to determine whether further Aboriginal heritage assessment or permit approvals are required.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA, RAPS, GLALC and Extent Heritage
6	If suspected human remains are located during any stage of the proposed works, work should stop immediately, and the NSW police and Coroner's Office should be notified. Heritage NSW-DPC, Gandangara LALC and the Commonwealth Minister for the Environment should be notified if the remains are found to be those of an Aboriginal person and greater than 100 years old.	Prior to relevant Planning Approval (SSDA/DA/CDC)	WPCA and Contractor

13. Conclusion

13.1 KEY FINDINGS

Through the completion of background research, database searches, field survey and test excavations, a total of sixteen Aboriginal sites were identified within the study area:

- B 17 (AHIMS ID 45-5-2779);
 - B 18 (AHIMS ID 45-5-2620);
 - B 19 (AHIMS ID 45-5-2621);
 - B 20 (AHIMS ID 45-5-2622);
 - B 21 (AHIMS ID 45-5-2639);
 - B 22 (AHIMS ID 45-5-2640);
 - B 23 (AHIMS ID 45-5-2641);
 - B 38 (AHIMS ID 45-5-2628);
 - ACAS01 (AHIMS ID 54-4-5481);
 - ACAS02 (AHIMS ID Pending);
 - BCC Isolated Artefact 1 (AHIMS ID 45-5-5588);
 - BCC Isolated Artefact 2 (AHIMS ID 45-5-5589);
 - BCC Isolated Artefact 3 (AHIMS ID 45-5-5590);
 - ACIF01 (AHIMS ID 54-5-5480);
 - Thompsons Creek (AHIMS ID 45-5-5491); and
 - Moore Gully (AHIMS ID 45-5-5492).
- The test excavation program investigated three PADs—ACIF01 (AHIMS ID 45-5-5480), Moore Gully (AHIMS 45-5-5492), and Thompsons Creek (AHIMS ID 45-5-5491)—and one comparative area expected to have low potential for Aboriginal archaeology, Northern Transect.
 - No Aboriginal archaeological remains were identified in the Northern Transect during the test excavation program.
 - The investigation of ACIF01 (AHIMS ID 45-5-5480) revealed Aboriginal archaeological remains comprising low-density background scatter consistent with Pleistocene to late Holocene assemblages identified across the Cumberland Plain. The assemblage holds low scientific value.
 - The investigation of Thompsons Creek (AHIMS ID 45-5-5491) revealed Aboriginal archaeological remains comprising low-density background scatter and limited on-site manufacturing consistent with Pleistocene to late Holocene assemblages identified across the Cumberland Plain. The assemblage holds moderate scientific value due to the high levels of reduction.
 - One test pit within the Thompsons Creek site, TP 15, contained a moderate density of Aboriginal objects consistent with a location of on-site manufacturing and occupation. Additional subsurface archaeological remains may be located in the vicinity of the test pit. The artefact assemblage holds moderate scientific value, which may increase if additional archaeological investigations reveal additional associated objects and/or features.
 - The investigation of Moore Gully (AHIMS ID 45-5-5492) revealed Aboriginal archaeological remains comprising low density background scatter and limited on-site manufacturing consistent with Pleistocene to late Holocene assemblages identified across the Cumberland Plain. The assemblage holds low scientific value.

- One test pit within the Moore Gully, TP 114, site contained a moderate density of Aboriginal objects consistent with a location of on-site occupation. Additional subsurface archaeological remains may be located in the vicinity of the test pit. The artefact assemblage holds moderate scientific value, which may increase if additional archaeological investigations reveal additional associated objects and/or features.
- All surface artefacts identified within the study area during the surface survey and test excavation program have been determined to hold low scientific value.
- Based on the current Masterplan, all identified Aboriginal sites will be impacted by the proposed development. Moore Gully (AHIMS ID 45-5-5492) will only be partially harmed, with the protection of TP 114.

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APPENDIX 1 – LEGISLATION

A.1 Commonwealth Legislation

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSHPA) was enacted at a federal level to preserve and protect areas (particularly sacred sites) and objects of particular significance to Aboriginal Australians from damage or desecration. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (sections 9 and 10). This can include the preclusion of development.

As well as providing protection to areas, it can also protect objects by Declaration, in particular Aboriginal skeletal remains (section 12). Although this is a Federal Act, it can be invoked on a state level if the state is unwilling or unable to provide protection for such sites or objects.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for the protection of natural and cultural heritage places. The Act establishes (amongst other things) a National Heritage List (NHL) and a Commonwealth Heritage List (CHL). Places on the NHL are of natural or cultural significance at a national level and can be in public or private ownership. The CHL is limited to places owned or occupied by the Commonwealth which are of heritage significance for certain specified reasons.

Places listed on the NHL are considered to be of state and local heritage value, even if state or local various heritage lists do not specifically include them.

The heritage values of places on the NHL or the CHL are protected under the terms of the EPBC Act. The Act requires that the Minister administering the EPBC Act assess any action which has, will have, or is likely to have, a significant impact on the heritage values of a listed place. The approval (or rejection) follows the referral of the matter by the relevant agency's minister.

Native Title Act 1993

The *Native Title Act 1993* provides recognition and protection for native title. The Act established the National Native Title Tribunal to administer native title claims to rights and interests over lands and waters by Aboriginal people. The Tribunal also administers the future act processes that attract the right to negotiate under the Native Title Act.

The Act also provides for Indigenous Land Use Agreements (ILUA). An ILUA is an agreement between a Native Title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the Native Title Act in 1998. They allow people to negotiate flexible, pragmatic agreements to suit their particular circumstances.

An ILUA can be negotiated over areas where Native Title has, or has not yet, been determined. They can be part of a native title determination, or settled separately from a Native Title claim. An ILUA can be negotiated and registered whether there is a Native Title claim over the area or not.

A.2 NSW State Legislation

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals. The relevant sections of the EP&A Act are:

- Part 3A: A single assessment and approval system for major development and infrastructure projects (*Note: Part 3A has now been repealed and replaced with Part 4 [Division 4.1]*).
- Part 4: Development that requires consent under consideration of environmental planning instruments.
- Part 5: An assessment process for activities undertaken by Public Authorities and for developments that do not require development consent but an approval under another mechanism.

Where Project Approval is to be determined under Part 4 (Division 4.1) of the Act, further approvals under the *National Parks and Wildlife Act 1974* (NPW Act), are not required. In those instances, management of Aboriginal heritage follows the applicable Aboriginal assessment guidelines (the Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation, July 2005) and any relevant statement of commitments included in the Development Approval.

National Parks and Wildlife Act 1974

The NPW Act provides blanket protection for Aboriginal objects (material evidence of Indigenous occupation) and Aboriginal places (areas of cultural significance to the Aboriginal community) across New South Wales. An Aboriginal object is 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.

An Aboriginal place is any place declared to be an Aboriginal place by the Minister for the Environment, under section 84 of the Act.

It is an offence to disturb Aboriginal objects or places without a permit authorised by Heritage NSW-DPC. In addition, anyone who discovers an Aboriginal object is obliged to report the discovery to Heritage NSW-DPC.

The operation of the NPW Act is administered by Heritage NSW-DPC. With regard to the assessment of Aboriginal cultural heritage, Heritage NSW-DPC has endorsed the following guidelines:

- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010c),
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b),
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010a), and
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011).

Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* allows for the transfer of ownership to a Local Aboriginal Land Council of vacant Crown land not required for an essential purpose or for residential land. These lands are then managed and maintained by the Local Aboriginal Land Council.

APPENDIX 3 – ARTEFACT ANALYSIS REPORT

Bradfield City Centre Aboriginal Archaeological Test Excavation – Lithic Analysis Report

Author: Rebekah Hawkins

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1. Introduction

This report provides analysis undertaken by Rebekah Hawkins (Extent Heritage) of a stone artefact assemblage excavated from the Bradfield City Centre site between 5 November and 12 November 2021.

The following research questions have been developed to help determine the scientific value of the artefact assemblage and assess the extent and significance of the Aboriginal heritage resource in the study area.

- Source information: What raw material resources were used; where did they come from; and what does this tell us about Aboriginal use of the region in the past?
- Stone reduction technology: How was the stone worked and used? Does this change over time? Can the function of the site be inferred from the artefact assemblage? What does this tell us about Aboriginal occupation, use, settlement and activities undertaken through time in this region?
- Post-depositional influences: What post-depositional influences have impacted on the assemblage, and what does this tell us about the integrity and significance of the site?
- Site chronology: When was the site occupied? Was the assemblage the product of repeated occupations or a single event? Is there spatial patterning in the assemblage, and what does this tell us about repeated use, activities and/or occupation of the region through time?
- Site area patterning: Are there any differences in the assemblages recovered from Areas 1, 2 and 3? Do the differences indicate different uses of the landscape or different preservation of the assemblages?

2. Analysis Methods

To explore the proposed research questions a methodology was applied to the assemblage for analysis. The artefacts were cleaned when required and individually analysed, with data entered into the software program E4 loaded with a configuration file written for this specific purpose. This program prompts the user to record all relevant attributes through a series of menus based on the artefact type (e.g., core, complete flake, complete tool etc.) which is then stored in a Microsoft Access database. In this way a comprehensive typological, technological, and metrical analysis of the excavated assemblage was undertaken. The location of the artefacts was recorded by spit and excavation square. Analysis was aided by the use of a 10x hand lens and a standard digital vernier calliper. Measurements were made in millimetres to one decimal place and weights were recorded using digital scales to 0.01g. A definition of the terms used for the artefact types and their attributes can be found in Appendices A-D of this report and the lithic catalogue is provided in Appendix E.

3. Artefact Analysis

3.1 General Results

The testing program involved the placement of 204 500 mm x 500 mm test pits (TP) across the site with the first test pit (TP 1) dug in 50 mm spits and all subsequent units excavated in 100 mm spits. A total of 51m² was excavated with an average depth of 30cm in the shallow duplex Blacktown soils and South Creek alluvial deposit. Excavations continued down to the B Horizon clay and excavated soils were wet sieved through a 3mm mesh. All identifiable and potential Aboriginal objects recovered from the sieves were bagged and labelled with information identifying their provenance.

A total of 135 Aboriginal objects (a low density of 2.7 artefacts/m²) and one piece of possible ochre were recovered from 60 of the 204 test pits (29.4%). Overall, two test pits recovered moderate (greater than or equal to 10 artefacts) artefact densities (TP15 and TP114) while the remainder of test pits recovered low densities of artefacts (<10). Table 1 displays the distribution of artefacts by test pit. The following analysis is based on the in-situ stone artefact assemblage only, not inclusive of the piece of ochre and the artefact without context (ID: 135).

Overall, the assemblage is dominated by flakes and flake fragments (n=108, 80.6%) with moderate rate of tools (n=10, 7.5%), including several standardised backed artefacts. There are a low number of cores (n=4, 3%) and weathered shatter (n=4, 3%). Table 2 displays the breakdown of the assemblage composition.

The assemblage is dominated by silcrete (n=92, 68.7%). Indurated mudstone/chert (IMT) is the second most dominant material (n=22, 16.4%), followed by milky quartz (n=11, 8.2%) with smaller frequencies of silicified wood (n=4, 3%), volcanic (n=2, 1.5%), chalcedony (n=1, 0.7%), chert (n= 1, 0.7%) and fine-grained siliceous (n=1, 0.7%). Table 3 displays the breakdown of the raw material composition.

Table 1. Test pit artefact densities.

Test Pit	Artefact Count	Test Pit	Artefact Count	Test Pit	Artefact Count
11	1	60	3	121	1
15	10	64	2	122	2
16	1	65	2	129	1
17	2	67	1	134	1
19	1	68	2	135	1
21	1	70	1	137	2
22	5	71	1	138	3
24	9	81	1	141	1
27	5	85	2	144	1

Test Pit	Artefact Count	Test Pit	Artefact Count	Test Pit	Artefact Count
29	2	86	1	148	2
35	2	87	1	158	1
36	3	90	3	162	1
38	1	91	2	169	1
39	3	94	2	172	2
40	2	100	2	173	1
41	1	112	2	174	1
43	6	113	1	182	1
44	1	114	11	200	1
45	3	115	4	205	1
55	2	116	4	Total	134

Table 2. Assemblage composition.

Artefact class	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
<i>Cores</i>								
CORE	4	3.0	31.6	11.8	20.2	26.0	81.0	45.0
COREFRAGMENT	3	2.2	17.7	6.3	2.0	1.6	5.9	3.3
<i>Tools</i>								
COMPTOOL	1	0.7	18.6		1.1		1.1	0.6
PROXTOOL	2	1.5	17.8	5.5	1.2	0.8	2.4	1.3
MEDTOOL	5	3.7	16.9	6.5	1.2	1.3	6.2	3.4
<i>Flakes</i>								
COMPFLAKE	27	20.1	16.6	8.8	1.3	2.0	34.5	19.2
COMPSPLIT	4	3.0	16.9	4.4	1.2	0.8	4.9	2.7
PROXFLAKE	22	16.4	11.4	4.5	0.5	0.8	11.6	6.5
PROXSPLIT	2	1.5	12.8	4.2	0.2	0.1	0.4	0.2
DISTFLAKE	20	14.9	13.4	5.6	0.5	0.7	10.1	5.6
MEDFLAKE	14	10.4	12.7	4.5	0.4	0.4	5.7	3.2
BROKSPLIT	8	6.0	9.3	3.5	0.2	0.2	1.8	1.0
<i>Other</i>								
ANGULARFRAG	17	12.7	14.9	5.4	0.7	0.8	11.7	6.5
Spall	1	0.7	16.8		0.6		0.6	0.3

Artefact class	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
Weathered Shatter	4	3.0	15.6	6.0	0.5	0.5	1.9	1.1
Total	134	100.0					179.8	100.0

Table 3. Assemblage raw material frequencies.

Raw material	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
Silcrete	92	68.7	14.7	6.6	1.0	1.7	92.2	51.2
IMT	22	16.4	13.6	7.1	0.6	1.0	13.8	7.6
Milky quartz	11	8.2	11.9	4.4	0.5	0.8	5.3	3.0
Silicified wood	4	3.0	15.3	6.0	0.7	0.6	2.6	1.4
Volcanic	2	1.5	20.9	0.3	3.1	1.3	6.2	3.4
Chalcedony	1	0.7	16.9		0.5		0.5	0.3
Chert	1	0.7	11.2		0.2		0.2	0.1
Fine-grained siliceous	1	0.7	48.4		59.1		59.1	32.9
Total	134	100.0					179.8	100.0

3.2 Vertical distribution

Majority of the artefacts were recovered from spits 1-2 (0-20 cm, n=117, 88%), with few recovered from spits 3-5 (30-50 cm, n=16, 12%). Therefore, cultural material, when present, is mostly found between 0-20 cm (Table 4). Additionally, one artefact (ID27, TP 19), had an ambiguous spit context and was removed from the vertical distribution analysis, consequently 133 artefacts are included in this analysis.

Table 4. Artefact density by spit.

Spit	Depth (cm)	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
1	0-10	66	49.6	15.5	7.3	1.2	2.0	80.8	100.0
2	10-20	51	38.3	13.7	6.9	1.7	8.2	84.6	104.8
3	20-30	13	9.8	15.0	7.1	1.0	1.2	13.3	16.5

Spit	Depth (cm)	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
4	30-40	2	1.5	8.9	3.0	0.1	0.0	0.2	0.2
5	40-50	1	0.8	9.4		0.2		0.2	0.2
Total		133	100.0					179.1	221.8

3.3 Spatial distribution

Spatially, the artefact counts are low, reflective of background scatter and some discrete areas of moderate activity (TP 15 and TP 144, Table 1).

Across the study area there are three registered PADs—ACIF01 (AHIMS ID 45-5-5480, Area 1), Moore Gully (AHIMS ID 45-5-5492, Area 2) and Thompsons Creek (AHIMS ID 45-5-5491, Area 3). Area 3 had the highest artefact count (n=83, 61.9% of the overall assemblage, 3.5 artefacts/m²), followed by Area 2 (n=35, 26.1% of the overall assemblage, 3.7 artefacts/m²), with the least amount in Area 1 (n=16, 11.9% of the overall assemblage, 1.1 artefacts/m²).

Table 5. Artefact densities by AHIMS site.

Area	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
1	16	11.9	16.3	7.4	1.0	1.2	15.4	8.6
2	35	26.1	16.7	6.3	1.4	1.7	47.4	26.4
3	83	61.9	13.5	7.1	1.4	6.6	117.0	65.1
Total	134	100.0					179.8	100.0

The remainder of the analysis will be undertaken with the assemblage separated into these three AHIMS areas in order to understand the nature of each PAD.

3.4 Post-depositional influences

Post-depositional influences analysis assesses the integrity of the site by investigating the extent of disturbance to the artefacts after deposition. The integrity of the site impacts the significance and research potential of the assemblage. Analysis of the vertical distribution of the artefacts, artefact breakage, the presence of conjoins and findings from optically stimulated luminescence (OSL) analysis can reveal high or low integrity of the assemblage.

3.4.1 Vertical distribution – size analysis

Vertical distribution analysis can reveal the influence of post-depositional disturbances such as bioturbation, ploughing activities and other historical earthworks, and erosion on the assemblage, potentially highlighting the movement or conflation of artefacts vertically. This analysis is also useful in identifying the chronology of the artefacts, as peaks in densities may reflect peaks in occupation.

On site reduction of stone produces a range of artefact sizes, creating several small artefacts between 1 mm and 6.3 mm as defined by Shott (1994). Experimental reduction indicated that these small artefacts could account for between 71.9% and 99.7% of the assemblage. It would be unlikely that these small pieces of stone would have been picked up and used due to their size, however the proportion of these small artefacts in an assemblage can vary based on the material type, size of the core and the method of reduction to name a few (Shott 1994, 84-5). Due to their small size, the movement of water and wind across the site is more likely to remove these smaller artefacts than larger artefacts (Baker 1978). Artefact size (maximum dimension [mm] and weight [g]) analysis enables an examination of the artefact size by depth to understand the movement of the artefacts post-deposition.

Area 1 does not display any major vertical distribution patterning, with similar numbers of artefacts and similar sizes through the spits. Additionally, the small artefacts, while few, are found throughout the sequence.

The Area 2 assemblage has higher numbers of artefacts within the upper two spits, with very few in the spit 3. The artefact size does decrease through the sequence, showing some possible size sorting, possibly relating to post-depositional influences.

Area 3 shows a sharp decrease vertically in artefact numbers, including in artefacts smaller than 10 mm. There are much higher numbers of smaller artefacts within this area than the other areas, possibly reflective of higher rates of preservation and/or higher levels of onsite manufacturing.

Table 6. A1 Vertical distribution size analysis.

Spit	Depth (cm)	Count	%	Mean length (mm)	Max	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	artefacts <10mm
1	0-10	6	37.5	17.2		8.2	0.9	1.3	5.5	1
2	10-20	5	31.3	14.5		5.7	0.9	1.2	4.6	1
3	20-30	5	31.3	16.9		9.1	1.1	1.3	5.3	1
Total		16	100.0						15.4	3

Table 7. A2 Vertical distribution size analysis.

Spit	Depth (cm)	Count	%	Mean length (mm)	Max	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	artefacts <10mm
1	0-10	19	54.3	18.6		6.8	1.9	2.1	36.1	2
2	10-20	12	34.3	15.5		4.5	0.8	0.8	9.1	1
3	20-30	4	11.4	11.5		4.9	0.6	0.7	2.2	2
Total		35							47.4	3

Table 8. A3 Vertical distribution size analysis.

Spit	Depth (cm)	Count	%	Mean length (mm)	Max	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	artefacts <10mm
1	0-10	41	50.0	13.9		7.0	1.0	2.1	39.2	16
2	10-20	34	41.5	13.0		7.7	2.1	10.1	70.9	13
3	20-30	4	4.9	16.1		6.6	1.4	1.7	5.8	1
4	30-40	2	2.4	8.9		3.0	0.1	0.0	0.2	1
5	40-50	1	1.2	9.4			0.2		0.2	1
Total		82							47.4	3

3.4.2 Artefact breakage

Specific types of breakage can occur during knapping and post-deposition, allowing breakage due to post-depositional disturbance to be identified. Complete and proximal splits only occur during knapping (Holdaway and Stern 2004), therefore acting as indicators of on-site manufacture. Marginal and medial breaks can occur due to post-depositional disturbance such as trampling and ploughing. The rate at which the artefacts were covered by sediment and the softness of the raw material also affects the breakage patterns. High rates of medial and marginal breaks reflect higher rates of post-depositional disturbance.

Within the Area 1 assemblage, no complete or proximal splits were recorded. The complete flake to broken flake ratio is 1.25. Within the Area 2 assemblage, there are 2 complete splits (8% of flakes) and 2 proximal splits (8% of flakes), reflective of on-site manufacture. The complete flake to broken flake ratio is 0.5. Within the Area 3 assemblage, there are 2 complete splits (3.2% of flakes), again reflective of on-site manufacture. The complete flake to broken flake ratio is 0.33.

Overall, Area 1 displays the least evidence of breakage, followed by Area 2, with Area 3 displaying the highest breakage rates. This may be due to higher rates of post-depositional influences such as ploughing or earthworks associated with the RAAF base.

Table 9. Area 1 flake numbers.

Flake type	Count	%
Complete flake	5	55.6
Proximal flake	3	37.5
Medial flake	1	12.5
Total	8	100

Table 10. Area 2 flake numbers.

Flake type	Count	%
Complete flake	7	28
Complete split flake	2	8
Proximal split flake	2	8
Proximal flake	5	20
Distal flake	2	8
Medial flake	7	28
Total	8	100

Table 11. Area 3 flake numbers.

Flake type	Count	%
Complete flake	15	23.8
Complete split flake	2	3.2
Proximal flake	12	19.0
Distal flake	15	23.8
Medial flake	11	17.5
Broken split flake	8	12.7
Total	63	100.0

3.4.3 Conjoins

Identification of artefacts that conjoin can indicate how far artefacts have moved since their original deposition (Way 2018). Artefacts that conjoin over a large vertical depth indicate major disturbance, while conjoins over the same or adjacent spits indicate lower amounts of post-depositional disturbance.

A systematic conjoining program was not applied to the assemblage. However, during the course of the cataloguing, two conjoin sets were identified (Table 12). It is likely that if more time was allocated to conjoining more conjoin sets would be apparent within and between spits.

Table 12. Identified conjoins.

Conjoining artefact IDs	Area	Test pit	Spit
76 and 102	2	114	1
74 and 80	3	65	1

3.4.4 Presence of historical fill and bioturbation

Modern material was identified within spit 1 (a maximum depth of 100 mm) of test pits 44, 205-209, and 203. Artefacts were recovered within test pit 44 (n=1, spit 3) and test pit 205 (n=1, spit 2). All trenches with modern material were identified in Area 3.

A majority of the trenches presented evidence of bioturbation in the form of rootlets, small roots, and insect burrows. Only trenches with evidence of moderate to heavy bioturbation are listed in the table below. The trenches most affected by bioturbation were primarily found around the thinly wooded forest of Area 1.

Eight trenches provided possible evidence of historical disturbance. In these test pits, B horizon clay or large pieces of ironstone were identified in the upper A soil horizons. The presence of this material suggests heavy churning of the ground. A possible interpretation is ploughing. However, this type of disturbance was not consistent between the trenches and was not found to be clustered in any one location. Evidence of historical disturbances was found across Areas 1 – 3, with a higher number of trenches affected in Area 3.

Table 13 lists the test pits with post-depositional disturbance and their artefact counts. The presence of artefacts even when disturbance has occurred may suggest that while the artefacts may have been disturbed, they still remain.

Table 13. Test pits with identified disturbance and their artefact counts.

Test pit	Area	Artefact count	Nature of disturbance
26	3	0	historical disturbance - associated with radio towers(?)
30	3	0	tree roots
37	3	0	historical disturbance
39	3	3	historical disturbance
44	3	1	modern material and burnt-out tree root
49	3	0	historical disturbance
50	3	0	historical disturbance

Test pit	Area	Artefact count	Nature of disturbance
98	2	0	tree roots
104	2	0	historical disturbance
205	3	2	modern material
206	3	0	modern material
207	3	0	modern material
208	3	0	modern material
209	3	0	modern material
110	2	0	tree roots
111	2	0	historical disturbance
116	2	4	tree roots
171	1	0	historical disturbance
177	1	0	tree roots
178	1	0	tree roots
179	1	0	tree roots
199	1	0	tree roots

3.4.5 Summary of post-depositional influences

Area 1 had the lowest flake breakage ratio and no vertical size patterning, indicating possibly higher levels of integrity compared to the other areas. However, the assemblage is small and so any findings are limited. preliminary.

The Area 2 assemblage displays complete and proximal splits, indicating on-site manufacture and discard of artefacts. There is some possible size sorting through the sequence. The flake breakage ratio is higher than Area 1.

Area 3 had a high number of small artefacts and possible size sorting patterning through the sequence. However, the high number of small artefacts may be linked to the high flake breakage ratio.

The presence of some conjoins and artefacts within disturbed test pits indicates that, while there is definite disturbance across the site, some assemblage integrity remains.

3.5 Procurement of raw materials analysis

The following detailed analysis of the assemblage investigates the Lithic Procurement research questions outlined in Section 1.1. Investigation into the procurement of raw material centres on two aspects: the types of cortex present on the artefacts and their cortex levels (0%, 1-25%, 26-50%, 51-75%, 76-99%, 100%). The cortex (or weathered exterior of the parent rock) provides information about the type of stone sources used (i.e. a primary or secondary source). Cortex

is generally irregular and is often required to be removed prior to the production of useable flakes. Generally, artefacts with a rough cortex were acquired from a primary source (an *in-situ* geological outcrop). Artefacts with a smooth or water-rolled cortex originate from a secondary source (e.g. a cobble from a waterway, including the associated alluvial deposits). The amount of cortex on an artefact often indicates the distance artefacts were transported from the source (Hiscock and Mitchell 1993:12-17). A high percentage of cortex on an artefact indicates that the source of stone was nearby while artefacts with less cortex or no cortex were transported further from the source. Often at the source of the material the cortex is removed (decertification) in order to increase the volume of useable material transported elsewhere.

Area 1

The Area 1 assemblage reflects a preference for silcrete (n=7, 43.8%) followed closely by IMT (n=5, 31.3%), with small frequencies of chalcedony, chert, milky quartz and silicified wood (one artefact of each material, Table 14). Majority of the raw material types do not display any cortex (Table 15). Silcrete may have been procured from several different sources as it displays primary and secondary source cortex types. The low levels of cortex may indicate the artefacts travelled quite a distance from the material sources.

Table 14. Area 1 assemblage raw material frequencies.

Raw material	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
Silcrete	7	43.8	17.5	8.4	1.2	1.4	8.3	53.9
IMT	5	31.3	15.4	9.1	0.9	1.3	4.7	30.5
Chalcedony	1	6.3	16.9		0.5		0.5	3.2
Chert	1	6.3	11.2		0.2		0.2	1.3
Milky quartz	1	6.3	12.5		0.5		0.5	3.2
Silicified wood	1	6.3	19.9		1.2		1.2	7.8
Total	16	100.0					15.4	100.0

Table 15. Area 1 raw material cortex types and frequencies.

Raw material	No cortex	Smooth cortex	Rough cortex	Rind cortex	Total
Silcrete	3	1	2	1	7
IMT	5				5
Chalcedony			1		1
Chert	1				1
Milky quartz	1				1

Raw material	No cortex	Smooth cortex	Rough cortex	Rind cortex	Total
Silicified wood	1				1
Total	11	1	3	1	16

Area 2

The Area 2 assemblage is dominated by silcrete (n=31, 88.6%) with low frequencies of milky quartz and volcanic material (two artefacts of each material, Table 16). As with Area 1, majority of the assemblage does not display any cortex, with only some rough cortex on the silcrete, indicating higher rates of procurement from a secondary source (Table 17). There is less raw material diversity in Area 2 than Area 1.

Table 16. Area 2 assemblage raw material frequencies.

Raw material	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
Silcrete	31	88.6	16.4	6.4	1.2	1.7	38.2	80.6
Milky quartz	2	5.7	16.7	8.2	1.5	1.8	3.0	6.3
Volcanic	2	5.7	20.9	0.3	3.1	1.3	6.2	13.1
Total	35	100					47.4	100.0

Table 17. Area 2 raw material cortex types and frequencies.

Raw material	No cortex	Smooth cortex	Rough cortex	Rind cortex	Total
Silcrete	24	1	6		31
Milky quartz	1	1			2
Volcanic	2				2
Total	27	2	6	0	35

Area 3

The Area 3 assemblage is also dominated by silcrete (n=54, 65.1%) followed by IMT (n=17, 20.5%), with smaller frequencies of milky quartz, (n=8, 9.6%), silicified wood (n=3, 3.6%), and fine-grained siliceous (FGS, n=1, 1.2). Table 18 displays these raw material frequencies. Similarly to the other areas, majority of artefacts do not retain any cortex, likely indicating distance to the source (Table 19)

Table 18. Area 3 assemblage raw material frequencies.

Raw material	Count	%	Mean Max length (mm)	Std dev.	Mean Weight (g)	Std dev.	Weight Sum (g)	%
Silcrete	54	65.1	13.3	6.2	0.8	1.8	45.7	39.0
IMT	17	20.5	13.1	6.6	0.5	0.9	9.1	7.7
Milky quartz	8	9.6	10.6	3.0	0.2	0.2	1.8	1.6
Silicified wood	3	3.6	13.8	6.4	0.5	0.6	1.4	1.2
FGS	1	1.2	48.4		59.1		59.1	50.5
Total	83	100.0					117.0	100.0

Table 19. Area 3 raw material cortex types and frequencies.

Raw material	No cortex	Smooth cortex	Rough cortex	Rind cortex	Total
Silcrete	39	5	8	2	54
IMT	13	4			17
Milky quartz	7	1			8
Silicified wood	1			1	3
FGS	1				1
Total	61	10	8	3	83

3.5.1 Procurement summary

Overall, Area 1 displays the highest raw material diversity, while Area 2 displays the lowest. Silcrete is the preferred stone for use across all areas, with some IMT present in Area 1 and Area 3. During the Pleistocene and early Holocene, IMT was the preferred raw material type and its presence may reflect the mixing/conflation of older assemblages with mid-late Holocene artefacts. However, the size of the assemblage is small and limiting to strong conclusions. Additionally, artefacts across all areas display little cortex, possibly indicating that the raw material sources were at a distance to the study area, resulting in the removal of cortex at the source or in other areas closer to the sources. Both primary and secondary sources were used to source the materials, with silcrete generally sourced from primary sources such as outcrop while milky quartz and IMT were sourced from secondary sources such as riverbeds. In conclusion, these raw material types are reflective of those seen across the Cumberland plain.

3.6 Technological analysis

The following detailed analysis of the assemblage investigates the Stone Reduction Technology research questions outlined in Section 1.1. The assemblage composition and reduction strategies (core, complete flake, and tool analysis) are investigated in subsequent sections to

infer how the stone was worked and used and what the implications are for understanding Aboriginal occupation, use, settlement, and activities in the region.

3.6.1 Cores

The characteristics of cores can reflect raw material availability constraints (Andrefsky 1994), knowledge of raw material knapping qualities (Pargeter *et al.* 2018) and intent to produce specific flake shapes through reduction strategies (Holdaway and Stern 2004).

Area 1

No cores were recovered from Area 1.

Area 2

From Area 2, two cores were recovered (Table 20), one from test pit 45 (ID: 70, spit 1, Plate 1) and one from test pit 129 (ID: 117, spit 1, Plate 2). The small volcanic bipolar core displays crushing at both ends, a technique applied when the core reaches the limit of freehand reduction and/or to accommodate the flaking characteristics of the material. The unidirectional silcrete core appears to have fractured and the negative scars are small.

Table 20. Area 2 core attributes.

ID	Material type	Core type	Max. length (mm)	Weight (g)	Cortex %	Cortex type	Scar number
70	Volcanic	Bipolar	20.70	4	0	n/a	3-5
117	Silcrete	Unidirectional	28.38	7.8	0	n/a	3-5



Plate 1. Volcanic core ID70 TP45 Spit 1.



Plate 2. Silcrete core ID117 TP129 Spit 1.

Area 3

Within the Area 3 assemblage, two cores were identified (Table 21), one from test pit 38 (ID: 6, spit 2, Plate 3), and one from test pit 81 (ID: 100, spit 1, Plate 4). The FGS core is multidirectional, with more than 10 negative scars and three platforms, showing rotation of the

core as it was reduced. It is the largest core in the assemblage and no other artefacts were found in the test pit with this core. The silcrete unidirectional core has only one scar and 1-25% rough white rind cortex.

Table 21. Area 3 core attributes

ID	Material type	Core type	Max. length (mm)	Weight (g)	Cortex %	Cortex type	Scar number
6	FGS	Multidirectional	48.44	59.1	0	n/a	>10
100	Silcrete	Unidirectional	29.04	10.1	1-25	white rind	1-2



Plate 3. FGS core ID6 TP38 Spit 2.



Plate 4. Silcrete core ID100 TP81 Spit 1.

Core analysis summary

Few cores were recovered within this assemblage, reflecting low on-site reduction rates and/or the removal of cores to other sites and/or the removal of cores post-deposition. Overall, the cores are generally small and have likely been discarded as they are not efficiently producing flakes. The complete flake analysis will further elucidate the nature of the reduction on-site.

3.6.2 Complete flake analysis

Complete flakes retain information that can be reflective of reduction strategies, the types of activities occurring on the site and the attributes of the core removed from the site.

Platform types can provide an insight into the extent of reduction a core has experienced prior to the removal of the flake. If a platform is cortical the core was still undergoing initial reduction where cortex was still present on the core surface. Plain platforms are those that only have one scar and generally occur earlier on in the core reduction sequence. Flaked platforms display more than one scar and occur later on in the core reduction sequence. Facetted platforms display deliberate small scars removed across the platform from the edge of the core and are representative of later stage reduction or deliberate platform shaping.

Flake terminations can reflect the different stages of the reduction sequence and are related to increasing platform thickness (Holdaway and Stern 2004, 132). Termination types are also related to the extent of control that the knapper applies. Step and hinge terminations reflect a suboptimal angle between the core and the hammerstone. The assumed optimal termination is a feather termination which reflects the force from the knapper moving easily through the material without changing direction due to flaws. Higher rates of step, hinge, plunge and axial terminations reflects the increased difficulty controlling the direction of force and may be related to the end of the core's lifespan.

Platform preparation involves the removal of small flakes initiating from the platform and extending down the dorsal face of the flake. This removal of the overhang on the core resulting from the removal of previous flakes improves the angle of the platform and improves flake shape control. Consequently, larger flakes with smaller platforms are produced with less curvature and smaller bulbs (Flenniken and White 1985:135).

Area 1

The Area 1 assemblage recovered five complete flakes with an average length of 18.2mm (Table 22). The two silcrete complete flakes are elongated in form, with one having a faceted platform (Table 23). These characteristics are often associated with backed artefact manufacture.

Table 22. Area 1 complete flake attributes.

ID	Test pit	Spit	Material	Length (mm)	Width (mm)	Thickness (mm)	Platform width (mm)	Platform thickness
125	148	3	IMT	5.46	8.16	2.01	5.02	1.28
75	158	1	Silcrete	32.05	13.47	7.82	11.7	7.25
93	162	1	Silcrete	18.46	5.85	2.17	3.46	2.24
99	169	3	IMT	23.43	20.95	7.26	14.75	2.6
79	182	2	Milky quartz	11.55	12.04	3.66	0	0
Average				18.2	12.1	4.6	7.0	2.7

Table 23. Area 1 complete flake attributes continued.

ID	Weight (g)	Termination	Platform type	Flake form
125	0.1	Abrupt	Uni	Expanding
75	3.4	Feather	Cortical	Elongated
93	0.2	Step	Facetted	Elongated
99	3.3	Feather	Uni	Indeterminate
79	0.5	Feather	Crush	Inteterminate

Area 2

Excavations within Area 2 recovered seven complete flakes, majority manufactured on silcrete, with one milky quartz complete flake (Table 24). There are several small flakes (ID: 108, 107 and 30) that would have been produced from on site manufacture as they are unlikely to have been selected for use and transport due to their size. An average length of 17.1mm, with majority displaying feather terminations, uniform platforms and a mix between elongated and indeterminate flake forms (Table 25).

Table 24. Area 2 complete flake attributes.

ID	Test pit	Spit	Material	Length (mm)	Width (mm)	Thickness (mm)	Platform width (mm)	Platform thickness
108	114	1	Silcrete	9.3	8.18	2.14	7.06	1.68
107	114	1	Silcrete	9.27	6.11	2.71	5.84	2.56
84	114	1	Silcrete	17.37	14.32	6.19	8.06	2.12
96	114	1	Silcrete	35.55	17.28	8.46	13.88	6.04
30	116	3	Silcrete	9.58	8.26	1.73	4.08	1.69
142	134	1	Silcrete	22.64	11.18	3.94	5.65	2.26
130	135	2	Milky quartz	16.27	22.5	7.33	11.13	4.56
Average				17.1	12.5	4.6	8.0	3.0

Table 25. Area 2 complete flake attributes continued.

ID	Weight (g)	Termination	Platform type	Flake form
108	0.2	Feather	Uni	Indeterminate
107	0.1	Feather	Uni	Elongated
84	1.5	Feather	Uni	Indeterminate
96	5.1	Platform	Uni	Elongated
30	0.1	Feather	Uni	Indeterminate
142	1	Feather	Uni	Elongated
130	2.8	Axial	Cortical	Indeterminate

Area 3

Area 3 recovered the highest number of complete flakes, majority manufactured on silcrete with a small average length of 13.1mm (Table 26). There are a range of termination types, platform types and flake forms. In particular there are bipolar flakes, platform rejuvenation flakes and backing flakes, indicating different core reduction techniques and the on-site manufacture of backed artefacts.

Table 26. Area 3 complete flake attributes.

ID	Test pit	Spit	Material	Length (mm)	Width (mm)	Thickness (mm)	Platform width (mm)	Platform thickness
10	15	2	Silcrete	20.85	12.22	3.75	6.86	3.24
115	15	2	Silcrete	14.91	4.06	3	n/a	n/a
28	15	2	Silcrete	11.35	13.92	4.31	7.01	2.61
34	15	2	Silcrete	8.37	4.11	0.83	n/a	n/a
1	22	1	Milky quartz	16.11	7.44	6.99	n/a	n/a
20	24	1	Silicified wood	8.19	9.47	2.59	2.57	1.5
19	24	2	Silcrete	11.22	4.9	1.76	3.27	1.17
72	29	2	Silcrete	10.42	9.95	4.82	n/a	n/a
46	39	1	Silcrete	35.21	25.42	10.44	10.04	2.82
57	43	1	Silcrete	4.92	9.31	2.14	n/a	n/a
106	44	3	Milky quartz	13.24	5.19	5.17	n/a	n/a
92	64	2	Silcrete	11.94	12.9	3.31	n/a	n/a
105	68	2	Silcrete	5.06	7.23	2.95	n/a	n/a
77	85	3	IMT	19.21	24.74	11.98	13.5	7.66
111	90	1	Silcrete	5.5	8.48	1.25	n/a	n/a
Average				13.1	10.6	4.4	2.9	1.3

Table 27. Area 3 complete flake attributes continued.

ID	Weight (g)	Termination	Platform type	Flake form
10	0.8	Feather	Uni	Elongated
115	0.1	Hinge	Crush	Platform Rejuvenation

ID	Weight (g)	Termination	Platform type	Flake form
28	0.6	Feather	Cortical	Indeterminate
34	0.05	Feather	Crush	Elongated
1	0.7	Feather	Bipolar	Elongated
20	0.2	Hinge	Gull wing	Indeterminate
19	0.1	Hinge	Uni	Elongated
72	0.4	Feather	Missing	Indeterminate
46	8.5	Cortical	Uni	Indeterminate
57	0.1	Axial	Missing	Backing flake
106	0.3	Feather	Focal	Elongated
92	0.4	Abrupt	Crush	Indeterminate
105	0.1	Axial	Focal	Backing flake
77	3.8	Step	Cortical	Expanding
111	0.1	Feather	Crush	Expanding

Complete flake analysis summary

Overall, the complete flake analysis indicates that Area 3 had the highest range of reduction techniques and on-site backed artefact manufacture. Techniques such as a bipolar core reduction and platform rejuvenation were identified from the complete flake analysis. Area 2 and 3 included several small complete flakes, likely associated with on-site manufacture as these flakes would not have been transported due to their size.

3.6.3 Tool analysis

Tools are identified from retouch or from usewear damage (i.e. utilised flake) and their presence in an assemblage can reflect different activities occurring on site. During manufacture, the knapper may discard the tool due to breakage or an unfavourable outcome. During use tools may break, lose their efficiency or are no longer useful and are therefore discarded there and then, potentially reflecting the location of use. Tools may also undergo maintenance and also be discarded if the maintenance outcome isn't favourable.

Area 1

Area 1 recovered three tools, two backed artefacts and one IMT scraper fragment (Table 28). Backed artefact 119 (Plate 5) is trapezoidal and comparatively thick and stocky with retouch along the entire chord. Comparatively backed artefact 56 (Plate 7) is small and triangular with retouch along the entire chord. The IMT scraper fragment (ID: 50, Plate 6) displays recent breaks and usewear.

Table 28. Area 1 tool characteristics.

ID	Test pit	Spit	Material type	Tool type	Max. length (mm)	Weight (g)	Cortex %	Cortex type
119	141	2	Silcrete	Backed artefact	21.68	3.1	0	n/a
50	172	1	IMT	Scraper		0.4	0	n/a
56	172	1	Silcrete	Backed artefact		0.1	0	n/a



Plate 5. Silcrete trapezoidal backed artefact ID119 TP141 Spit 2



Plate 6. IMT scraper fragment with recent break ID50 TP172 Spit 1.



Plate 7. Silcrete triangular backed artefact ID56 TP172 Spit1.

Area 2

Two tools were identified within the Area 2 assemblage, one backed artefact and one utilised flake medial flake (Table 29). All tools were manufactured/selected on silcrete. Backed artefact ID 129 and utilised flake 120 were recovered from the same test pit (112). Backed artefact 129

(Plate 8) is trapezoidal and displays retouch along a portion of the chord, similar shaping to backed artefact 119 in Area 1. Utilised flake 120 (Plate 9 is a medial flake with limited usewear and no retouch along one lateral edge.

Table 29. Area 2 tool characteristics.

ID	Test pit	Spit	Material type	Tool type	Max. length (mm)	Weight (g)	Cortex %	Cortex type
129	112	1	Silcrete	Backed artefact	21.68	1.8	1-25	Rough
120	112	2	Silcrete	Utilised	23.59	2.1	0	



Plate 8. Silcrete trapezoidal backed artefact ID129 TP112 Spit 1.



Plate 9. Silcrete medial flake with limited usewear ID120 TP112 Spit 2.

Area 3

Area 3 recovered three tools, one scraper and one backed artefact, both manufactured on silcrete (Table 30). The scraper is a complete flake with retouch along the distal end from ventral to dorsal (Plate 10). The backed artefact is elongated in shape and is a medial flake with retouch along one transverse break (Plate 11).

Table 30. Area 3 tool characteristics.

ID	Test pit	Spit	Material type	Tool type	Max. length (mm)	Weight (g)	Cortex %	Cortex type
25	24	2	Silcrete	Scraper	18.61	1.1	0	n/a
12	91	3	Silcrete	Backed artefact	16.6	0.5	0	



Plate 10. Silcrete scraper with usewear ID 25 TP24 Spit 2.



Plate 11. Silcrete elongated backed artefact ID12 TP91 Spit 3.

Tool analysis summary

Overall, the tool types present in the assemblage reflect occupation of the site during the mid-late Holocene, when backed artefact use increased. The tool rates are low; however it appears that some manufacture of backed artefacts occurred on site, particularly in Area 3. Some scrapers are present, though in low numbers so it is inconclusive if on-site processing of materials was undertaken. Tool rates across the three areas are similar and the backed artefact shapes vary between trapezoidal, triangular and elongated.

3.7 Ochre

The small piece of possible ochre was recovered from test pit 54 in Area 3 in spit 2. The piece is cream and 11.53mm. Further analysis is required to understand if this is definitely ochre.

4. Discussion

The discussion focuses on answering the research questions posed in section **1. Introduction**.

- Post-depositional influences: What post-depositional influences have impacted on the assemblage, and what does this tell us about the integrity and significance of the site?

Area 1 had the lowest flake breakage ratio and no vertical size patterning, indicating possibly higher levels of integrity compared to the other areas. However, the assemblage is small and so any findings are limited. The Area 2 assemblage displays complete and proximal splits, indicating on-site manufacture and discard of artefacts. There is some possible size sorting through the sequence. The flake breakage ratio is higher than Area 1. Area 3 had a high number of small artefacts and possible size sorting patterning through the sequence. However, the high number of small artefacts may be linked to the high flake breakage ratio. The presence of some conjoins and artefacts within disturbed test pits indicates that, while there is definite disturbance across the site, some assemblage integrity remains.

- Source information: What raw material resources were used; where did they come from; and what does this tell us about Aboriginal use of the region in the past?

Overall, Area 1 displays the highest raw material diversity, while Area 2 displays the lowest. Silcrete is the preferred stone for use across all areas, with some IMT present in Area 1 and Area 3. During the Pleistocene and early Holocene, IMT was the preferred raw material type and its presence may reflect the mixing/conflation of older assemblages with mid-late Holocene artefacts. However, the size of the assemblage is small and limiting to strong conclusions. Additionally, artefacts across all areas display little cortex, possibly indicating that the raw material sources were at a distance to the study area, resulting in the removal of cortex at the source or in other areas closer to the sources. Both primary and secondary sources were used to source the materials, with silcrete generally sourced from primary sources such as outcrop while milky quartz and IMT were sourced from secondary sources such as riverbeds. In conclusion, these raw material types are reflective of those seen across the Cumberland plain.

- Stone reduction technology: How was the stone worked and used? Does this change over time? Can the function of the site be inferred from the artefact assemblage? What does this tell us about Aboriginal occupation, use, settlement and activities undertaken through time in this region?

Few cores were recovered within this assemblage, reflecting low on-site reduction rates and/or the removal of cores to other sites and/or the removal of cores post-deposition. Overall, the complete flake analysis indicates that Area 3 had the highest range of reduction techniques and on-site backed artefact manufacture. Techniques such as a bipolar core reduction and platform rejuvenation were identified from the complete flake analysis. Area 2 and 3 included several small complete flakes, likely associated with on-site manufacture as these flakes would not have been transported due to their size. Overall, the tool types present in the assemblage reflect occupation of the site during the mid-late Holocene, when backed artefact use increased. The tool rates are low; however it appears that some manufacture of backed artefacts occurred on site, particularly in Area 3. Some scrapers are present, though in low numbers so it is

inconclusive if on-site processing of materials was undertaken. Tool rates across the three areas are similar and the backed artefact shapes vary between trapezoidal, triangular and elongated.

- Site chronology: When was the site occupied? Was the assemblage the product of repeated occupations or a single event? Is there spatial patterning in the assemblage, and what does this tell us about repeated use, activities and/or occupation of the region through time?

Considering the raw material and tool types present in the assemblage, it is likely that the assemblage reflects occupation during the mid-late Holocene. While silcrete is the dominant raw material type, the presence of IMT within the assemblage may reflect occupation during the Pleistocene – early-Holocene. The assemblage is the product of repeated occupations across the site, due to the spatial patterning. However, the site artefact density remains low, with few cores and in some areas is indicative of background scatter expected across the Cumberland Plain. The small nature of the flakes and presence of backing flakes and complete split flakes indicates on site reduction was occurring. It is likely that backed artefacts were manufactured here.

- Site area patterning: Are there any differences in the assemblages recovered from Areas 1, 2 and 3? Do the differences indicate different uses of the landscape or different preservation of the assemblages?

While overall the artefact densities across the three areas are low there are slight differences in the assemblage characteristics. The Area 1 assemblage may have been less disturbed over time compared to the other two areas and displays more raw material variability. Silcrete is the preferred raw material across all sites and few cores were recovered with the main tool type being backed artefacts. Area 3 displays on site manufacture of backed artefacts and the smallest artefact size. There may be some patterning reflective of different uses of the landscape, likely related to the proximity to water courses. However, the post-depositional influences such as disturbance due to the RAAF base is likely to be a major factor in the recovered assemblage characteristics, causing breakage and likely loss of artefacts.

5. Conclusion

In conclusion, the assemblage recovered from test excavations at Bradfield City Centre include 135 Aboriginal stone objects and one piece of possible ochre. The density of artefacts across the site is low and generally reflective of background scatter, with some areas of moderate intensity (TP15 and TP144). It is likely that post-depositional influences such as RAAF base activity has compromised the assemblage, however cultural material remains across the site, reflecting occupation, manufacture of tools and use of the area. The assemblage appears to be reflective of occupation during the mid-late Holocene, with possible earlier occupation reflected in the use of IMT. Stone reduction technology aligns with that seen across the Cumberland plain, with the manufacture of backed artefacts in particular. There is some possible area patterning identified that has likely been influenced by the post-depositional influences.

6. References

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Appendix A: Recorded artefact attributes

Term	Attributes
Technological class	Artefact type (e.g. core, complete flake, longitudinal split, flake fragmentation, retouch, angular fragments/lithic fragments, other (axe, grindstone etc)
Material	Raw Material type (silcrete tuff, chert, quartz, quartzite etc)
Colour	Raw Material colour
Cortex	Percentage of cortex (if on a flake – amount on the dorsal surface of a flake)
Cortex Type	Type of cortex (rough/terrestrial, water-rolled/tabular)
Platform Type	Unifacial, crushing/missing, Flaked (>2 flake scars), Facetted (3 or more small, systematic flake removals), Cortical (with cortex), n/a
Initiation Type	Bending, hertzian, bipolar, wedging, unclear
Termination Type	Feather, hinge, step, overshoot, step
Tool Type	Select the type of tool – usewear, concave scraper, convex scraper, straight scraper, elouera (backed artefact), notched scraper, endscraper, saw, stepped scraper, drill, backed (generic), Bondi point, thumbnail scraper, denticulate, burin, geometric microlith, nosed scraper
Maximum Dimension	All artefacts (in size groupings)
Length Complete Flake	Axial length of the complete flake/complete tool (in mm to 1 dp)
Weight	Weight of the artefact in grams to 1dp
Complete and Broken Flakes	Attributes
Form	Form of the flake – Indeterminate, Expanding, Block (angular Fragment), Blade, N/A, Platform Rejuvenation Flake (tablet), Bipolar, Errillure, Ridge straightening flake, elongated flake. These attributes reflect core reduction strategies.
Complete Flakes	Showing intensity of retouch or systematic core preparation
Flake Scars	The number of flake scars on the dorsal surface of the flake
Overhang removal	Exterior platform preparation indicates systematic core reduction (complete flakes and proximal flakes)
Scar Direction	The direction of the dorsal flake scars – 1 (initiated from the platform only), 90 (initiated at right angles to the platform), 180 (initiated at the distal end of the flake), radial (initiated from 90 and 270 degrees from the platform)
Complete Tools	(examines measures of curation)
Retouch Edge	The number of retouched quadrants (on complete tools only)

Term	Attributes
Retouch Type 1, 2, 3, 4	Select the retouch type for quadrants 1, 2, 3 and 4
Cores	Identifying technological strategies and intensity of reduction
Core Type	Unidirectional, bidirectional, bifacial, multiplatform, prismatic, burin-blade core, test, bipolar
Core Body	Core body form – block, flake, nodule, non-diagnostic
Core Section	Core cross section – square, rectangular, lenticular, conical, non-
Scar Form	Elongated, expanding, blade, mixed
Core Platform No.	Number of platforms on the core
Step Termination	Number of step terminations on the core
Hinge Termination	Number of hinge terminations on the core
Core scar Length	Length of the longest core scar
Core scar Width	Width of the longest core scar at maximum
Number of Core Scars	Number of core scars
Metrical Attributes	(in mm to 1 dp)
Length Complete Flake	Axial length of the complete flake/complete tool
Width	Maximum width of the complete flake/tool/core
Thickness	Maximum thickness of the complete flake/tool/core at mid-point
Core Length	Maximum length from the working platform
Platform width	Platform width – proximal and complete flakes and tools
Platform Thickness	Platform thickness – proximal and complete flakes and tools (and complete splits)
Weight	Weight of the artefact in grams to 1dp

Appendix B: General artefact abbreviations

Artefact class abbreviations	
AXEFRAG	axe fragment
ANGULARFRAG/TL	block/angular fragment/TL
MEDFLAKE	broken flake
MEDTOOL	broken tool
COMPFLAKE	complete flake
COMPSPLIT/TL	complete split/tool
COMPTOOL	complete tool
COREFRAG/TL	core fragment/tool
DISTFLAKE	distal fragment
DISTTOOL	distal tool
HAMSTONE	hammer stone
CF	heat fracture cobble
PROXFLAKE	proximal flake
PROXTOOL	proximal tool
FGS	cryptocrystalline quartz
SWOOD	silicified wood
VOL	volcanic
ELONG	elongated
EXPAND	expanding
INDETER	indeterminate
PLATREJUV	platform rejuvenation
RIDGESTRAT	ridge straightening
SPLITPEB	split pebble

Appendix C: Backed artefact abbreviations

Backed artefact abbreviations	
GEOM	geometric microlith
BONDI	Bondi point

Appendix D: Core abbreviations

Core abbreviations	
BIDIR	bi-directional
BURINBL	burin-blade
MULTI	multi-directional
SUBPRIS	sub-prismatic
UNIDIR	uni-directional

Appendix E: Catalogue

ID	pdf	Test pit	Spit	Depth	DATACLASS	Material	Colour	Fracture Int	DISTEND	CORTEX	CORTEXT	FORM	EXTPLAT	PLATTYPE	DORSAL	TOOLTYPE	RETEGE	CPLATNO	STEPT	HINGET	MAXLENGTH	MAXWIDTH	MAXTHICK	LENGTH	WIDTH	THICK	PLWID	PLTH	CORESCAR	CORSCARW	CORSCAR	WEIGHT	
138	1	138	1	0-10	ANGULARFRAG	SILCRETE	Red			26-50%	Rough						0	0			19	0	0	0	0	0	0	0	0	0		1	
29	1	138	3	20-30	ANGULARFRAG	SilicifiedWood	black/red			0%							0	0			19.9	0	0	0	0	0	0	0	0	0		1.2	
124	1	138	3	20-30	COREFRAGMENT	CHERT	lgrey			0%							0	0			11.24	0	0	0	0	0	0	0	0	0		0.2	
119	1	141	2	10-20	MEDTOOL	SILCRETE	Pink			0%		Indeterminate				BackedArtefact	3	0			23.23	0	0	0	0	0	0	0	0	0		3.1	
114	1	144	2	10-20	MEDFLAKE	Chalcedony	yellow			1-25%	Rough	Indeterminate					0	0			16.86	0	0	0	0	0	0	0	0	0		0.5	
131	1	148	2	10-20	PROXFLAKE	SILCRETE	red/brown			1-25%	whiteRind	Indeterminate	NO	Cortical			0	0			11.63	0	0	0	0	0	6.7	1.56	0	0		0.3	
125	1	148	3	20-30	CompFlake	IMT	lgrey	bending	ABRUPT	0%		Expanding	YES	Uni	0		0	0			8.16	0	0	5.46	8.16	2.01	5.02	1.28	0	0		0.1	
75	1	158	1	0-10	CompFlake	SILCRETE	red/brown	hertzian	FEATHER	1-25%	WRSsmooth	Elongated	NO	Cortical	0		0	0			32.05	0	0	32.05	13.5	7.82	11.7	7.25	0	0		3.4	
93	1	162	1	0-10	CompFlake	SILCRETE	red/brown	hertzian	STEP	0%		Elongated	NO	Facetted	0		0	0			18.46	0	0	18.46	5.85	2.17	3.46	2.24	0	0		0.2	
99	1	169	3	20-30	CompFlake	IMT	yellow	hertzian	FEATHER	0%		Indeterminate	YES	Uni	0		0	0			31.25	0	0	23.43	21	7.26	14.8	2.6	0	0		3.3	
56	1	172	1	0-10	MEDTOOL	SILCRETE	Red			0%		Indeterminate				BackedArtefact	3	0			9.9	0	0	0	0	0	0	0	0	0		0.1	
50	1	172	1	0-10	MEDTOOL	IMT	grey			0%		Indeterminate				SScraper	1	0			11.19	0	0	0	0	0	0	0	0	0		0.4	
38	1	173	3	20-30	ANGULARFRAG	IMT	Red			0%							0	0			14.02	0	0	0	0	0	0	0	0	0		0.5	
73	1	174	1	0-10	PROXFLAKE	IMT	yellow			0%		Indeterminate	NO	Uni			0	0			12.53	0	0	0	0	0	4.79	2.13	0	0		0.4	
79	1	182	2	10-20	CompFlake	MilkyQuartz	White	hertzian	FEATHER	0%		Indeterminate	NO	Crush	radial		0	0			12.49	0	0	11.55	12	3.66	0	0	0	0		0.5	
85	1	200	2	10-20	PROXFLAKE	SILCRETE	Red			51-99%	Rough	Indeterminate	NO	Cortical			0	0			8.45	0	0	0	0	0	3.98	2.85	0	0		0.2	
64	2	100	1	0-10	MEDFLAKE	SILCRETE	Red			0%		Indeterminate					0	0			14.74	0	0	0	0	0	0	0	0	0		0.7	
116	2	100	2	10-20	COMPSPLIT	SILCRETE	Red		FEATHER	1-25%	Rough	Indeterminate	NO	Missing			0	0			10.86	0	0	10.72	0	3.45	0	0	0	0		0.3	
129	2	112	1	0-10	PROXTOOL	SILCRETE	Pink			1-25%	Rough	Indeterminate	NO	GullWing		BackedArtefact	1	0			21.68	0	0	0	0	0	11.3	2.75	0	0		1.8	
120	2	112	2	10-20	MEDTOOL	SILCRETE	red/brown			0%		Indeterminate				Utilised	0	0			23.59	0	0	0	0	0	0	0	0	0		2.1	
110	2	113	2	10-20	ANGULARFRAG	SILCRETE	Red			0%							0	0			11.11	0	0	0	0	0	0	0	0	0		0.1	
102	2	114	1	0-10	PROXFLAKE	SILCRETE	Red			0%		Indeterminate	NO	Uni			0	0			13.45	0	0	0	0	0	8.17	5.11	0	0		0.6	
107	2	114	1	0-10	CompFlake	SILCRETE	yellow	hertzian	FEATHER	0%		Elongated	NO	Uni	N/a		0	0			9.33	0	0	9.27	6.11	2.71	5.84	2.56	0	0		0.1	
108	2	114	1	0-10	CompFlake	SILCRETE	Red	hertzian	FEATHER	0%		Indeterminate	NO	Uni	0		0	0			10.2	0	0	9.3	8.18	2.14	7.06	1.68	0	0		0.2	
76	2	114	1	0-10	DISTFLAKE	SILCRETE	Red		FEATHER	0%		Indeterminate					0	0			14.71	0	0	0	0	0	0	0	0	0		0.5	
78	2	114	1	0-10	DISTFLAKE	SILCRETE	Red		FEATHER	0%		Indeterminate					0	0			15.34	0	0	0	0	0	0	0	0	0		0.3	
84	2	114	1	0-10	CompFlake	SILCRETE	Red	hertzian	FEATHER	0%		Indeterminate	NO	Uni	0		0	0			17.93	0	0	17.37	14.3	6.19	8.06	2.12	0	0		1.5	
90	2	114	1	0-10	PROXFLAKE	SILCRETE	red/brown			0%		Elongated	NO	Uni			0	0			19.33	0	0	0	0	0	7.68	3.33	0	0		1.3	
96	2	114	1	0-10	CompFlake	SILCRETE	Red	hertzian	PLATFORM	0%		Elongated	NO	Uni	180		0	0			35.88	0	0	35.55	17.3	8.46	13.9	6.04	0	0		5.1	
101	2	114	2	10-20	ANGULARFRAG	SILCRETE	lgrey			0%							0	0			13.86	0	0	0	0	0	0	0	0	0		0.5	
89	2	114	2	10-20	DISTFLAKE	SILCRETE	Red		FEATHER	0%		Elongated					0	0			16.8	0	0	0	0	0	0	0	0	0		0.4	
95	2	114	2	10-20	PROXFLAKE	SILCRETE	yellow			0%		Elongated	NO	Facetted			0	0			18.29	0	0	0	0	0	0	6.43	2.58	0	0		1
11	2	115	2	10-20	PROXFLAKE	SILCRETE	Red			0%		Elongated	NO	Crush			0	0			9.73	0	0	0	0	0	0	0	0	0		0.1	
23	2	115	2	10-20	DISTFLAKE	SILCRETE	g/p		FEATHER	0%		Elongated					0	0			18.3	0	0	0	0	0	0	0	0	0		0.5	
36	2	115	2	10-20	MEDFLAKE	SILCRETE	red/pink			0%		Elongated					0	0			12.46	0	0	0	0	0	0	0	0	0		0.2	
5	2	115	2	10-20	PROXSPLIT	SILCRETE	Red			0%		Indeterminate					0	0			15.82	0	0	0	0	0	0	0	0	0		0.3	
112	2	116	1	0-10	ANGULARFRAG	SILCRETE	Red			26-50%	Rough						0	0			20.02	0	0	0	0	0	0	0	0	0		1.5	
113	2	116	1	0-10	PROXFLAKE	SILCRETE	yellow			1-25%	Rough	Indeterminate	NO	Flaked			0	0			22.55	0	0	0	0	0	0	8.83	3.08	0	0		3.8
24	2	116	3	20-30	PROXFLAKE	SILCRETE	Red	h																									

17	3	11	3	20-30	ANGULARFRAG	MilkyQuartz	White			0%						0	0			9.72	0	0	0	0	0	0	0	0	0	0	0	0.1
10	3	15	2	10-20	CompFlake	SILCRETE	red/pink	hertzian	FEATHER	1-25%	Rough	Elongated	NO	Uni	0		0	0		21.02	0	0	20.85	12.2	3.75	6.86	3.24	0	0	0	0	0.8
109	3	15	2	10-20	PROXFLAKE	SILCRETE	R/Y			0%		Indeterminate	NO	Uni			0	0		6.69	0	0	0	0	0	1.32	0.74	0	0	0	0	0.1
115	3	15	2	10-20	CompFlake	SILCRETE	Red	hertzian	HINGE	0%		PlatformRejuvenation	NO	Crush	radial		0	0		14.91	0	0	14.91	4.06	3	0	0	0	0	0	0	0.1
127	3	15	2	10-20	DISTFLAKE	SILCRETE	r/p		FEATHER	0%		Indeterminate					0	0		8.15	0	0	0	0	0	0	0	0	0	0	0	0.1
16	3	15	2	10-20	ANGULARFRAG	SILCRETE	Red			0%							0	0		8.65	0	0	0	0	0	0	0	0	0	0	0	0.2
22	3	15	2	10-20	BROKSPLIT	IMT	Pink			0%		Indeterminate					0	0		7.36	0	0	0	0	0	0	0	0	0	0	0	0.1
28	3	15	2	10-20	CompFlake	SILCRETE	R/Y	hertzian	FEATHER	51-99%	Rough	Indeterminate	NO	Cortical	180		0	0		13.89	0	0	11.35	13.9	4.31	7.01	2.61	0	0	0	0	0.6
34	3	15	2	10-20	CompFlake	SILCRETE	R/Y	hertzian	FEATHER	0%		Elongated	NO	Crush	N/a		0	0		8.37	0	0	8.37	4.11	0.83	0	0	0	0	0	0	0.05
4	3	15	2	10-20	DISTFLAKE	IMT	dgry		FEATHER	0%		Indeterminate					0	0		18.62	0	0	0	0	0	0	0	0	0	0	0	0.6
9	3	15	2	10-20	BROKSPLIT	SILCRETE	r/p			26-50%	Rough	Indeterminate					0	0		10.35	0	0	0	0	0	0	0	0	0	0	0	0.4
3	3	16	1	0-10	COREFRAGMENT	SILCRETE	red/brown			26-50%	WRSsmooth						0	0		23.74	0	0	0	0	0	0	0	0	0	0	0	3.3
15	3	17	1	0-10	MEDFLAKE	SILCRETE	Red			0%		Indeterminate					0	0		11.41	0	0	0	0	0	0	0	0	0	0	0	0.4
21	3	17	1	0-10	PROXFLAKE	SILCRETE	purple			0%		Indeterminate	NO	Uni			0	0		11.81	0	0	0	0	0	7.65	4.94	0	0	0	0	0.4
27	3	19	2?	10-20	PROXFLAKE	SILCRETE	Red			0%		Indeterminate	NO	Uni			0	0		15.56	0	0	0	0	0	8.01	2.68	0	0	0	0	0.7
91	3	205	2	10-20	ANGULARFRAG	SILCRETE	yellow			0%							0	0		12.19	0	0	0	0	0	0	0	0	0	0	0	0.2
33	3	21	1	0-10	ANGULARFRAG	SILCRETE	Red			26-50%	Rough						0	0		16.68	0	0	0	0	0	0	0	0	0	0	0	0.8
1	3	22	1	0-10	CompFlake	MilkyQuartz	White	hertzian	FEATHER	0%		Elongated	NO	Bipolar	0		0	0		16.11	0	0	16.11	7.44	6.99	0	0	0	0	0	0	0.7
2	3	22	1	0-10	MEDFLAKE	IMT	Cream			0%		Indeterminate					0	0		7.75	0	0	0	0	0	0	0	0	0	0	0	0.1
32	3	22	1	0-10	ANGULARFRAG	IMT	Cream			0%							0	0		24.81	0	0	0	0	0	0	0	0	0	0	0	0.6
8	3	22	1	0-10	ANGULARFRAG	IMT	Cream			0%							0	0		18.86	0	0	0	0	0	0	0	0	0	0	0	0.2
26	3	22	2	10-20	weatheredShatter	IMT	Cream			0%		Indeterminate					0	0		10.48	0	0	0	0	0	0	0	0	0	0	0	0.1
13	3	24	1	0-10	DISTFLAKE	SILCRETE	Pink		FEATHER	26-50%	Rough	Indeterminate					0	0		9.9	0	0	0	0	0	0	0	0	0	0	0	0.2
14	3	24	1	0-10	PROXFLAKE	SILCRETE	Red			26-50%	WRSsmooth	Indeterminate	NO	Crush			0	0		7.18	0	0	0	0	0	0	0	0	0	0	0	0.1
20	3	24	1	0-10	CompFlake	SilicifiedWood	Brown	hertzian	HINGE	0%		Indeterminate	NO	GullWing	0		0	0		10.4	0	0	8.19	9.47	2.59	2.57	1.5	0	0	0	0	0.2
7	3	24	1	0-10	PROXFLAKE	IMT	White			0%		Indeterminate	NO	Uni			0	0		7.01	0	0	0	0	0	1.99	1.37	0	0	0	0	0.1
19	3	24	2	10-20	CompFlake	SILCRETE	Pink	hertzian	HINGE	0%		Elongated	NO	Uni	radial		0	0		11.29	0	0	11.22	4.9	1.76	3.27	1.17	0	0	0	0	0.1
25	3	24	2	10-20	COMPTOOL	SILCRETE	red/pink		RETOUCHED	0%		Indeterminate	NO	Uni	0	SScraper	1	0		18.61	0	0	15.79	17.4	3.87	9.24	3.01	0	0	0	0	1.1
31	3	24	2	10-20	COMPSPLIT	SILCRETE	pink/cream		AXIAL	0%		Indeterminate	NO	Uni			0	0		18.97	0	0	13.29	0	7.7	0	0	0	0	0	0	1.4
55	3	24	2	10-20	COMPSPLIT	SILCRETE	pink/cream		AXIAL	0%		Indeterminate	NO	Uni			0	0		16.52	0	0	13.81	0	5.93	0	0	0	0	0	0	1
67	3	24	2	10-20	PROXFLAKE	SILCRETE	r/p			0%		Bipolar	NO	Crush			0	0		10.61	0	0	0	0	0	0	0	0	0	0	0	0.3
49	3	27	1	0-10	MEDFLAKE	SILCRETE	red/brown			0%		Indeterminate					0	0		10.39	0	0	0	0	0	0	0	0	0	0	0	0.2
61	3	27	1	0-10	PROXFLAKE	MilkyQuartz	White			100%	WRSsmooth	Indeterminate	NO	Uni			0	0		10.71	0	0	0	0	0	8.63	2.57	0	0	0	0	0.02
37	3	27	2	10-20	MEDFLAKE	SILCRETE	Pink			0%		Indeterminate					0	0		17.2	0	0	0	0	0	0	0	0	0	0	0	0.5
42	3	27	2	10-20	MEDFLAKE	SILCRETE	Pink			0%		Indeterminate					0	0		8.77	0	0	0	0	0	0	0	0	0	0	0	0.1
48	3	27	2	10-20	ANGULARFRAG	MilkyQuartz	White			0%							0	0		7.35	0	0	0	0	0	0	0	0	0	0	0	0.1
81	3	29	1	0-10	MEDFLAKE	SILCRETE	Red			100%	WRSsmooth	Indeterminate					0	0		16.5	0	0	0	0	0	0	0	0	0	0	0	1.2
72	3	29	2	10-20	CompFlake	SILCRETE	Red	hertzian	FEATHER	100%	WRSsmooth	Indeterminate	NO	Missing	0		0	0		10.79	0	0	10.42	9.95	4.82	0	0	0	0	0	0	0.4
41	3	35	1	0-10	Spall	SILCRETE	Red			0%		Potlid					0	0		16.76	0	0	0	0	0	0	0	0	0	0	0	0.6
47	3	35	1	0-10	PROXFLAKE	MilkyQuartz	White			0%		Indeterminate	NO	Crush			0	0		7.22	0	0	0	0	0	0	0	0	0	0	0	0.1
53	3	36	2	10-20	MEDFLAKE	SILCRETE	Red			0%		Indeterminate					0	0		7.34	0	0	0	0	0	0	0	0	0	0	0	0.1
59	3	36	2	10-20	DISTFLAKE	SILCRETE	Red		AXIAL	0%		Indeterminate					0	0		6.59	0	0	0	0	0	0	0	0	0	0	0	0.1
65	3	36	2	10-20	BROKSPLIT	SILCRETE	Red			0%		Indeterminate					0	0		17.46	0	0	0	0	0	0	0	0	0	0	0	0.7
6	3	38	2	10-20	CORE	FGS	grey			0%							0	3	<5	0	48.44	41.55	30.43	0	0	0	0	0	29.95	20.48	>10	59.1
40	3	39	1	0-10	weatheredShatter	SILCRETE	Pink			26-50%	Rough	Shatter					0	0		17.91	0	0	0	0	0	0	0	0	0	0	0	0.6
46	3	39	1	0-10	CompFlake	SILCRETE	g/p	hertzian	CORTICAL	26-50%	Rough	Indeterminate	NO	Uni	0		0	0		35.21	0	0	35.21	25.4	10.4	10	2.82	0	0	0	0	8.5
71	3	39	1	0-10	MEDFLAKE	SILCRETE	Red			0%		Indeterminate					0	0		9.16	0	0	0	0	0	0	0	0	0	0	0	0.1
52	3	40	1	0-10	DISTFLAKE	SILCRETE	red/pink		AXIAL	0%		Elongated					0	0		20.11	0	0	0	0	0	0	0	0	0	0	0	0.6
58	3	40	2	10-20	DISTFLAKE	SILCRETE	Red	hertzian	FEATHER	0%		Indeterminate	NO				0	0		7.85	0	0	0	0	0	0	0	0	0	0	0	0.1
68	3	41	1	0-10	BROKSPLIT	IMT	lgrey			0%		Indeterminate					0	0		8.1	0	0	0	0	0	0	0	0	0	0	0	0.1
45	3	43	1	0-10	PROXFLAKE	IMT	grey			0%		Indeterminate	NO	Uni			0	0		10.7	0	0	0	0	0	4.55	1.88	0	0	0	0	0.1
51	3	43	1	0-10	BROKSPLIT	IMT	Cream			0%		Indeterminate					0	0		6.23	0	0	0	0	0	0	0	0	0	0	0	0.05
57	3	43	1	0-10	CompFlake	SILCRETE	Red	hertzian	AXIAL	0%		BackingFlake	NO	Missing	radial		0	0		9.34	0	0	4.92	9.31	2.14	0	0	0	0	0	0	0.1
62	3	43	1	0-10	BROKSPLIT	SILCRETE	Red			0%		Indeterminate					0	0		7.34	0	0	0	0	0	0	0	0	0	0	0	0.1
63	3	43	1	0-10	COREFRAGMENT	SILCRETE	Red			0%							0	0		18.22	0	0	0	0	0	0	0	0	0	0	0	2.4
69	3	43	1	0-10	DISTFLAKE	SILCRETE	Pink	hertzian	FEATHER	0%		Indeterminate	NO				0	0		18.38	0	0	0	0	0	0	0	0	0	0	0	1.3

106	3	44	3	20-30	CompFlake	MilkyQuartz	White	hertzian	FEATHER	0%		Elongated		NO	Focal	0			0	0		13.24	0	0	0	13.24	5.19	5.17	0	0	0	0	0	0.3
87	3	55	2	10-20	weatheredShatter	IMT	pink/cream			26-50%	WRSmooth	Shatter							0	0		23.02	0	0	0	0	0	0	0	0	0	0	1.1	
81	3	55	4	30-40	DISTFLAKE	IMT	Cream		FEATHER	26-50%	WRSmooth	Indeterminate							0	0		10.99	0	0	0	0	0	0	0	0	0	0	0.1	
103	3	60	1	0-10	MEDFLAKE	IMT	Cream			0%		Indeterminate							0	0		6.84	0	0	0	0	0	0	0	0	0	0	0.1	
104	3	60	1	0-10	DISTFLAKE	SILCRETE	Red		FEATHER	0%		Elongated							0	0		11.55	0	0	0	0	0	0	0	0	0	0	0.1	
98	3	60	2	10-20	ANGULARFRAG	MilkyQuartz	White			0%									0	0		8.72	0	0	0	0	0	0	0	0	0	0	0.1	
86	3	64	2	10-20	DISTFLAKE	SILCRETE	Pink		FEATHER	1-25%	whiteRind	Elongated							0	0		11.82	0	0	0	0	0	0	0	0	0	0	0.1	
92	3	64	2	10-20	CompFlake	SILCRETE	Pink	hertzian	ABRUPT	0%		Indeterminate		NO	Crush	0			0	0		12.01	0	0	0	11.94	12.9	3.31	0	0	0	0	0	0.4
74	3	65	1	0-10	MEDFLAKE	SilicifiedWood	red/brown			1-25%	WCRIND	Indeterminate							0	0		21.15	0	0	0	0	0	0	0	0	0	0	1.1	
80	3	65	1	0-10	PROXFLAKE	SilicifiedWood	red/brown			26-50%	WCRIND	Indeterminate		NO	Cortical				0	0		9.89	0	0	0	0	0	5	4.15	0	0	0	0.1	
97	3	67	1	0-10	PROXFLAKE	SILCRETE	yellow			0%		Indeterminate		NO	Uni				0	0		5.71	0	0	0	0	0	4.92	2.12	0	0	0	0.1	
82	3	68	1	0-10	weatheredShatter	IMT	lgrey			0%		Shatter							0	0		10.99	0	0	0	0	0	0	0	0	0	0	0.1	
105	3	68	2	10-20	CompFlake	SILCRETE	Red	hertzian	AXIAL	0%		BackingFlake		NO	Focal	180			0	0		7.21	0	0	0	5.06	7.23	2.95	0	0	0	0	0	0.1
88	3	70	5	40-50	BROKSPLIT	IMT	yellow			0%		Indeterminate							0	0		9.35	0	0	0	0	0	0	0	0	0	0	0.2	
94	3	71	1	0-10	MEDFLAKE	SILCRETE	Red			0%		Indeterminate							0	0		16.7	0	0	0	0	0	0	0	0	0	0	0.4	
100	3	81	1	0-10	CORE	SILCRETE	R/Y			1-25%	whiteRind								0	1	0	0	29.04	26.6	16.32	0	0	0	0	0	10.63	9.69	1-2	10.1
77	3	85	3	20-30	CompFlake	IMT	g/p	hertzian	STEP	1-25%	WRSmooth	Expanding		NO	Cortical	0			0	0		25.1	0	0	0	19.21	24.7	12	13.5	7.66	0	0	0	3.8
18	3	85	4	30-40	DISTFLAKE	SILCRETE	Red		FEATHER	51-99%	Rough	Indeterminate							0	0		6.73	0	0	0	0	0	0	0	0	0	0	0.1	
35	3	86	3	20-30	DISTFLAKE	IMT	Cream		FEATHER	26-50%	WRSmooth	Indeterminate							0	0		16.51	0	0	0	0	0	0	0	0	0	0	1.6	
128	3	87	2	10-20	ANGULARFRAG	MilkyQuartz	White			0%									0	0		11.69	0	0	0	0	0	0	0	0	0	0	0.4	
111	3	90	1	0-10	CompFlake	SILCRETE	Cream	hertzian	FEATHER	0%		Expanding		NO	Crush	0			0	0		8.37	0	0	0	5.5	8.48	1.25	0	0	0	0	0	0.1
123	3	90	2	10-20	PROXFLAKE	SILCRETE	red/pink			0%		Elongated		NO	Uni				0	0		11.32	0	0	0	0	0	6.49	1.16	0	0	0	0.2	
141	3	90	2	10-20	DISTFLAKE	SILCRETE	red/brown		FEATHER	0%		Indeterminate							0	0		7.09	0	0	0	0	0	0	0	0	0	0	0.1	
133	3	91	1	0-10	DISTFLAKE	SILCRETE	R/Y		FEATHER	26-50%	WRSmooth	Elongated							0	0		28.02	0	0	0	0	0	0	0	0	0	0	2.8	
144	3	91	1	0-10	BROKSPLIT	SILCRETE	Pink			0%		Indeterminate							0	0		7.98	0	0	0	0	0	0	0	0	0	0	0.1	
139	3	94	1	0-10	PROXFLAKE	SILCRETE	red/brown			0%		Indeterminate		NO	Missing				0	0		13.89	0	0	0	0	0	0	0	0	0	0	0.6	
143	3	94	1	0-10	DISTFLAKE	SILCRETE	Red		PLUNGE	0%		Indeterminate							0	0		9.83	0	0	0	0	0	0	0	0	0	0	0.3	

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