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Project Number: HN001046-B

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT– 559 ANAMBAH ROAD, GOSFORTH

FINAL 29/08/2024

REPORT TO: THIRD.I ANAMBAH PTY LTD C/- VARA CONSULTING
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Executive Summary

Heritage Now Pty Ltd (Heritage Now) was engaged by Vara Consulting and Barr Planning (on behalf of Third I Anambah Pty Ltd) to provide an Aboriginal Cultural Heritage Assessment in relation to a Development Application being prepared for a residential development at 559 Anambah Road, Gosforth. This includes the residential development, as well as a proposed access road.

The proposed residential development is located at 559 Anambah Road, 5.5km north-west of the centre of Rutherford, in the Maitland Local Government Area. The proposed new access road (River Road) is located immediately south of the residential development within a public road reserve, extending for 2.5 km to the existing River Road residential area in Windella.

This proposed residential development portion of the Project Area was surveyed in December 2023 by Heritage Now and Mindaribba Land Council. This survey identified three artefact sites along the creek terrace of a first order drainage line which runs through the Project Area. As a result, the entire creek terrace was identified as a sensitive landform and an area of Potential Archaeological Deposit.

A subsequent survey was undertaken in July 2024 by Heritage Now and Mindaribba Local Aboriginal Land Council for the proposed River Road Access Route. There are several previously recorded sites south of the Project Area. AHIMS 37-6-3568 has surface artefacts and potential archaeological deposit (PAD), the PAD partially overlaps the road corridor. AHIMS 37-6-3555 PAD and AHIMS 37-6-3572 are outside the road corridor. No new sites were identified in the Road River Access Route.

Heritage Now provides the following recommendations:

AHIMS Site	Recommendations
AHIMS 37-6-4425 Anambah AFT-01 **AHIMS 37-6-4428** Anambah AFT-02 **AHIMS 37-6-4427** Anambah AFT-03	The surface artefacts are within the riparian zone and are at risk of impact from re-vegetation and stabilisation works to the riparian corridor. An exclusion zone is to be established around the artefact sites prior to the commencement of ground disturbing works to reduce inadvertent impacts to sites. If sites cannot be avoided than an AHIP for the collection of the surface artefacts is required and no ground disturbing works are to undertaken in these areas without further archaeological investigation, as per the below recommendation.
Anambah Road Potential Archaeological Deposit	The area of Potential Archaeological Deposit will be impacted by the residential development. Archaeological testing is required to be undertaken in the development / ground disturbance footprints to identify if salvage excavation under an Aboriginal Heritage Impact Permit is warranted.
AHIMS 37-6-3568 Anambah SAC 11 and Potential Archaeological Deposit 27	The area of Potential Archaeological Deposit partially extends into the River Road Access Route. It can likely be avoided by the roadworks, but if it cannot be avoided, then an Aboriginal Heritage Impact Permit for community collection and salvage within the Project Area is required.
AHIMS 37-6-3555 Anambah IF 8 and Potential Archaeological Deposit 23	The surface artefacts and Potential Archaeological Deposit are outside the River Road access route will not be directly impacted by development. The current fence line needs to remain in place to avoid the risk of inadvertent impacts. If the fence needs to be

	removed during works than an exclusion zone will need to be established.
All Sites General mitigation methods	All Aboriginal sites within the residential development and access road are to be clearly marked on all relevant construction drawings, along with buffers and fencing, as relevant. All on-site personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. This may be done through an onsite induction or other suitable format.

Acronyms and Definitions

Acronym/Term	Definition
Aboriginal object	Aboriginal object means 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 (as per *NPW Act 1974*).
Aboriginal place	Any place declared to be an Aboriginal place under Section 84 of the NPW Act.
ACHA	Aboriginal Cultural Heritage Assessment
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System (register for Aboriginal sites in NSW)
AHIP	Aboriginal Heritage Impact Permit (as per NPW Act 1974)
AR	Archaeological Report
A Horizon	The top layer of mineral soil in a soil profile. It is usually broken into A_1 and A_2 soils, with the former tending to have a relatively high dark organic content, while the latter is paler.
B Horizon	The B horizon underlies the A horizon of a soil profile, and is generally a high-clay content soil.
BP	Before Present
DCS	NSW Department of Customer Service
DECCW	Department of Environment, Climate Change and Water, NSW (became the Office of Environment and Heritage in 2011, a role now assumed by Heritage NSW).
EP&A Act	Environmental Planning and Assessment Act (1979)
ESD	Ecologically Sustainable Development
Ex situ	At a location that is different from the original location. Often refers to conserving Aboriginal objects at a location different from its original location.
FGS	Fine Grained Silicious
GDA	Geocentric Datum of Australia
HLRV	Historical Land Records Viewer
Holocene	Geological epoch (period) typically defined as the time period that commenced approximately 11,700 years ago and is the current period of geological time. This period is generally warmer and wetter than the preceding Pleistocene period.

Acronym/Term	Definition
IMT	Indurated Mudstone / Tuff
In situ	In situ, Latin for “in the place”, refers to an artefact that has not been moved from its original resting place or the place where it was deposited.
LALC	Local Aboriginal Land Council (Land Council under the Aboriginal Land Rights Act 1983)
LEP	Local Environmental Plan
LGA	Local Government Area
OEH	Office of Environment and Heritage, NSW (Now Heritage NSW)
ORALRA	Office of the Registrar. Aboriginal Land Rights Act (1983)
Non-perennial	In terms of waterways, it means a waterway that is usually partially or fully dry for part of the year.
NPW Act	National Parks and Wildlife Act 1974
NSW	New South Wales
PAD	Potential Archaeological Deposit
Perennial	In terms of waterway, it means a waterway that has year-round water.
Pleistocene	Geological epoch (period) is typically defined as the time period that commenced approximately 2.6 million years ago and lasted until approximately 11,700 years ago. This period spans the world's recent period of repeated glaciations. The late Pleistocene, in which humans began occupying Australia, is generally colder and dryer than the Holocene.
RAPs	Registered Aboriginal Parties (Aboriginal organisations and individuals who were consulted for the Project following Aboriginal Cultural Heritage Consultation Requirements for Proponents)
SCP	Spatial Collaboration Portal (Government platform for delivery of NSW spatial datasets provided by DCS Spatial Services)
SU	Survey Unit

Version Control

Version	Revision Description	Reviewed by	Date	Approved by	Date Approved
Draft	Draft for Client	Tessa Boer-Mah, Director and Principal Heritage Consultant	23/07/2024	Tessa Boer-Mah, Director and Principal Heritage Consultant	23/07/2024
Final	Final for client	Tessa Boer-Mah, Director and Principal Heritage Consultant	27/08/2024	Tessa Boer-Mah, Director and Principal Heritage Consultant	27/08/2024

Contents

Tables

Figures

Plates

1 Introduction

Heritage Now Pty Ltd (Heritage Now) was engaged by Vara Consulting and Barr Planning (on behalf of Thirdi) to provide an Aboriginal Cultural Heritage Assessment (ACHA) in relation to a Development Application being prepared for a residential development at 559 Anambah Road, Gosforth. There are two main elements to this masterplan:

1) A proposed residential development
2) A proposed new access road

This report is a combination of an Aboriginal Cultural Heritage Assessment (ACHA) and an Archaeological Report (AR)[1] as per Heritage NSW guidelines. This ACHA follows an earlier Aboriginal Due Diligence Assessment which examined the area of the proposed residential development. A robust survey of this area was undertaken as part of this assessment with Les Draper of Mindaribba Local Aboriginal Land Council (LALC), which was successful in identifying three, hitherto unknown, artefact sites and two sensitive landscape areas (Heritage Now 2024, 21–24). Accordingly, a survey of this particular section of the Project Area will not be repeated as part of this assessment but rather the data re-presented and re-considered. A survey of the access road and interchange areas was also undertaken.

The key objectives of this assessment are to identify cultural heritage values through consultation with Registered Aboriginal Parties (RAPs), and provide recommendations to manage and protect Aboriginal objects and values identified during the assessment.

1.1 Project Area

The Project Area is located c.5.5km north-west of the centre of Rutherford, c.4.3km to the north-east of Lochinvar and c.9.5km north-west of the centre of Maitland (Figure 1). The Hunter River is located *c.*820m to the north-west. The development sits in the Maitland Local Government Area (LGA) and within the boundary of the Mindaribba LALC. The project address for the residential development area is 559 Anambah Road, Gosforth, which encompasses Lot 55 DP874170 and Lot 177 DP874171 (Figure 2). This section of the Project Area is c.69.6ha in size. The Project Area also includes a planned access road (Figure 2), which runs through the middle of the residential area within an existing public road reserve and along what is currently an existing trackway, ultimately connecting the development to River Road in Windella. This road development section of the project extends for *c.*2.5km from the southern edge of the residential area to a connection with the northern end of River Road to the south. The Road corridor is 20m wide and covers an area of *c.*5.38ha (beyond the residential development area).

[1] Although it is recommended in the *Code of Practice* that an Archaeological Report should be a stand-alone technical report, due a test excavation not occurring, a combined report is assessed as appropriate for this project. The technical aspect of the report, documenting the archaeological survey, is found in Section 5.

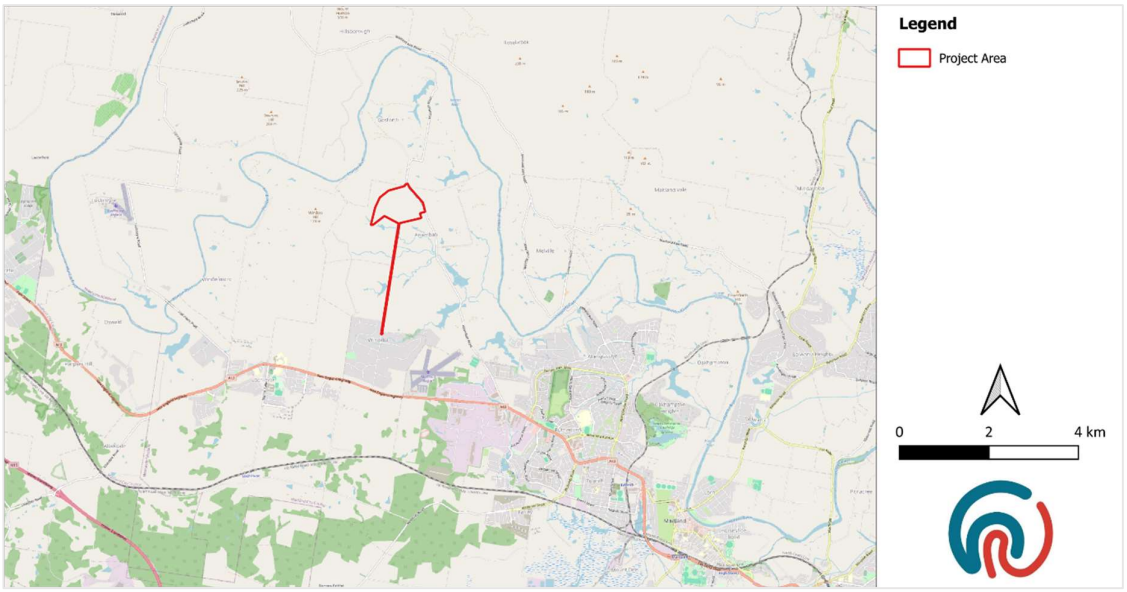

Figure 1. The Project Area in a regional context. (Source: Open Street Map with Heritage Now additions)

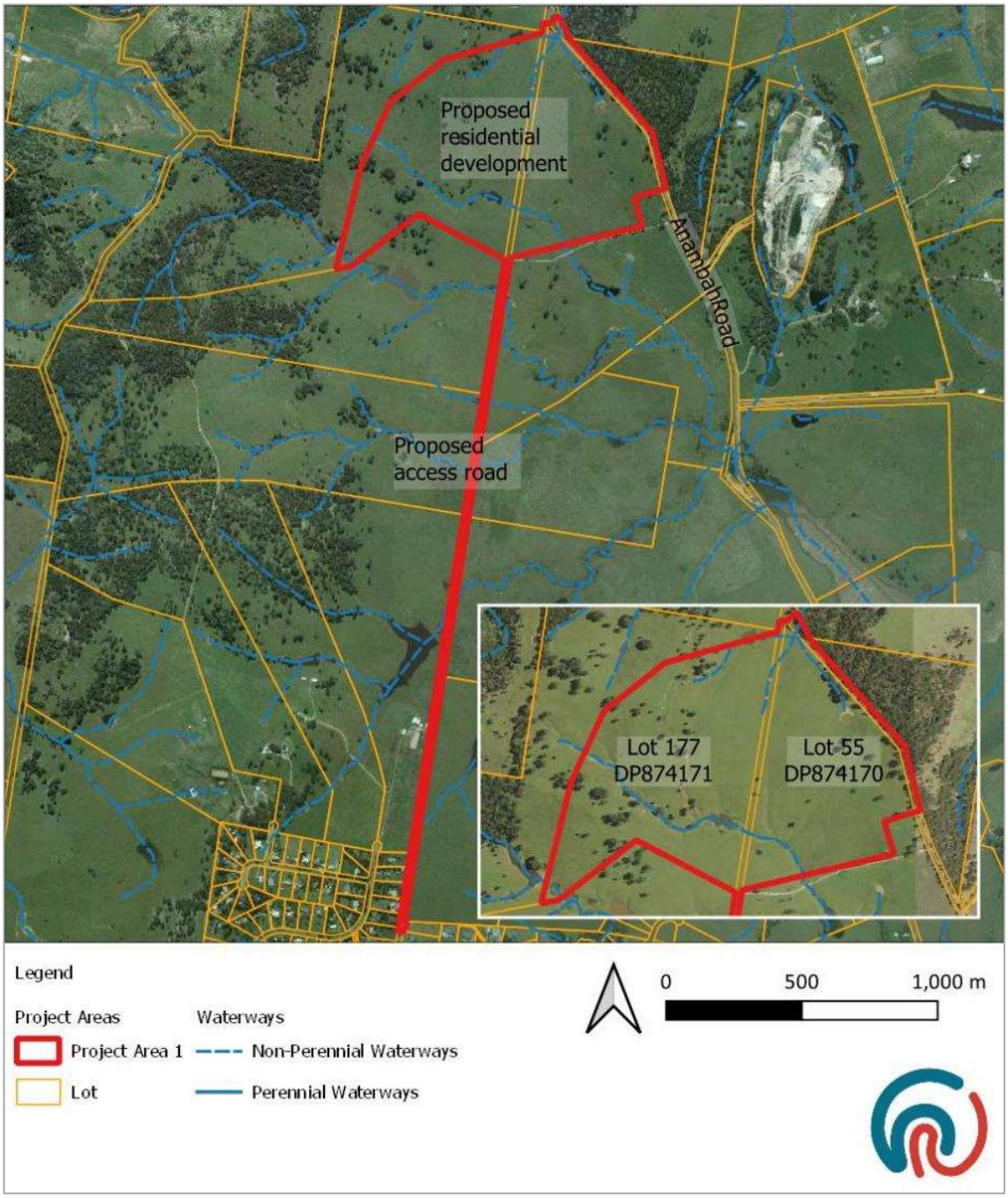

Figure 2. The Project Area showing the proposed residential development and access road areas. (Source: SCP with Heritage Now additions)

1.2 Overview of Project Proposal

The Project Area is proposed for a staged subdivision into approximately 900 residential allotments and open space areas, which will eventually lead to ground disturbing activities. The development will also include a new access road, connecting the new development to River Road. All of these

elements of work will involve vegetation clearance, landscaping, and cut and fill associated with construction and the installations of services, roads, and stormwater.

1.3 Project Methodology

This ACHA report was prepared in accordance with, but not limited to, the National Parks and Wildlife Act 1974, the National Parks and Wildlife Regulations 2009, the Environmental Planning and Assessment Act 1979, the Maitland Local Environmental Plan, and the State Environmental Planning Policies. The following guidelines and codes of practice have been used in preparing this ACHA report:

- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010a).
- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010b)

In accordance with the guidelines this report has outlined the:

- Project Area and proposed activity (project proposal) (Section 1.2 and 8.1)
- Aboriginal consultation process (Section 3 and Appendix 1),
- relevant background information (Section 4.1 and 5),
- assessment of cultural heritage values (Section 7),
- impact assessment, including consideration of avoidance and / or mitigating harm (Section 8), and
- recommendations (Section 9).

1.4 Authorship and Copyright

This report was produced by the Heritage Now team. The report was written by Daniel Hounsell (Senior Heritage Consultant), Crystal Phillips (Heritage Consultant) and Tiffany Jones (Heritage Consultant) with input from Jacqueline Chua (Heritage Officer). Technical input and quality review was provided by Jenna Weston (Senior Heritage Consultant) and Tessa Boer-Mah (Principal Heritage Consultant).

2 Legislative Context

This section provides an outline of the Acts, Regulations and guidelines under which this assessment was undertaken. It is for information purposes only and should not be taken as legal advice.

2.1 Native Title Act 1993 (Cth)

The Native Title Act 1993 recognises and protects the native title rights and interests of Aboriginal people and Torres Strait Islanders. The Act established the National Native Title Tribunal as an independent body to administer native title claims. It also authorises the making and registration of Indigenous Land Use Agreements about the use and management of land or waters.

A search of the National Native Title Tribunal registers of native title information was undertaken on 12th April 2024. There are no relevant entries for the Project Area on the Register of Native Title Claims, National Native Title Register, or Register of Indigenous Land Use Agreements.

2.2 National Parks and Wildlife Act 1974

This Act contains the provisions for protecting Aboriginal objects in NSW. Aboriginal objects are protected regardless of whether they are in their original context (location) or not, and it is an offence to harm an Aboriginal object regardless of whether you know it is an Aboriginal object or not. Protection under Section 86 of the Act is as follows:

- s86(1) A person must not harm or desecrate an object that the person knows is an Aboriginal object.
- s86(2) A person must not harm an Aboriginal object.
- s86(3) A person must not harm or desecrate an Aboriginal place.

Penalties for harming Aboriginal objects or places range from $80,000–$800,000 for individuals and $330,000–$1,650,000 for corporations, and may also include imprisonment. Under Section 87, there are certain defences from prosecution. These include that harm was authorised under an Aboriginal Heritage Impact Permit (AHIP) and actions were in accordance with the AHIP; that due diligence was exercised in relation to Aboriginal object/s; and/or that the activity was classified as low impact.

Under Section 89A, an Aboriginal object must be reported to Heritage NSW within a reasonable timeframe unless they have previously been recorded and submitted to the Aboriginal Heritage Information Management System (AHIMS). Penalties for failure to report an Aboriginal object start from $16,500 for individuals and $33,000 for corporations.

2.3 National Parks and Wildlife Regulations 2019

This Regulation provides a framework for exercising due diligence and outlines codes of practice in respect to Aboriginal objects (Section 57), as well as defences for carrying out certain low-impact activities (Section 58). The Regulation also outlines requirements for Aboriginal consultation (Section 60), particularly in relation to an Aboriginal Heritage Impact Permit. Under the Regulation, the following codes of practice are recognised, amongst others:

- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010c),

- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council 2010)*, and*
- *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW* (DECCW 2010b).

2.4 Aboriginal Land Rights Act 1983

This Act provides land rights to Aboriginal people through the Local Aboriginal Land Councils. It details a process for claiming unused Crown land in NSW and for enabling land use. It also allows for agreements to permit traditional hunting, fishing and gathering. The Office of the Registrar, Aboriginal Land Rights Act 1983 (NSW) (ORALRA), registers land claims and maintains the Register of Aboriginal Land Claims and Register of Aboriginal Owners.

Elements of the Project Areas are designated as Crown Road Reserve land, the current use of one element (the interchange) and planned use of the other (as an access road) makes a claim against the land under this act highly unlikely.

2.5 Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment (EP&A) Act provides triggers for undertaking environmental and heritage assessments as part of the wider land-use planning framework. This Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part 3 which governs the preparation of planning instruments, Part 4 which relates to development assessment provisions for local government (consent) authorities and Part 5 which relates to activity approvals by governing (determining) authorities. Planning decisions within Local Government Areas (LGAs) are guided by Local Environmental Plans (LEPs). Each LGA is required to develop and maintain an LEP that includes Aboriginal and historical heritage items which are protected under the EP&A Act and the NPW Act.

2.6 Maitland Local Environmental Plan (LEP) 2011

The Maitland LEP (2011) requires development consent to demolish, disturb, excavate or develop land on which an Aboriginal object is located or that is within an Aboriginal place of significance. Council must consider the effect of a proposal on an Aboriginal Place and any Aboriginal object located within an area of works. Council must inform the local Aboriginal community about the application where impacts to Aboriginal cultural heritage may occur. Protected heritage under the LEP is listed in Schedule 5. There are no Aboriginal sites in the Project Area listed on the LEP.

3 Aboriginal Consultation

This section documents the Aboriginal Consultation that was undertaken for the project in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (OEH, formerly DECCW 2010b) and will be referred to as the 'Aboriginal Consultation Requirements'. The four stages of Aboriginal consultation were undertaken and additional documentation is available in Appendix 1 .

3.1 Stage 1

In accordance with Stage 1 of the Aboriginal Consultation Requirements, requests for information on knowledge holders were sent to the Heritage NSW Office, the Mindaribba LALC, the Registrar of Aboriginal Owners, Native Title Services, Maitland City Council and the Hunter office of Local Land Services. The National Native Title Tribunal only accepts searches of Crown land for Aboriginal knowledge holders. There is no Crown land in the Project Area.

Based on information collected from government agencies, expressions of interest were sent to the knowledge holders inviting them to become a Registered Aboriginal Party for the project on 7 May 2024.

A public notice was placed in the Maitland Mercury local newspaper on 26 April 2024.

As a result of the expressions of interest invitations and the public notice, 16 Aboriginal representatives nominated to become Registered Aboriginal Parties for the Project (Table 1).

Table 1. List of RAPs consulted for the Project.

Organisation/Individual	Representative Name/s
A1 Indigenous Services	Carolyn Hickey
Aliera French Trading	Aliera French
Culturally Aware	Tracey Skene
D F T V Enterprises	Derrick Vale Snr
Didge Ngunawal Clan	Paul Boyd
Gomery Cultural Consultants	David Horton
Guthers Aboriginal Corporation	Trystan Treloar
Hunter Traditional Owner	Paulette Ryan
Individual	Clarissa Swan
Kawul Pty Ltd Trading as Wonn1 Sites	Arthur Fletcher
Long Gully Cultural Services	Ethan Trewlynn
Mindaribba LALC	Tara Dever

Murra Bidgee Mullangari Aboriginal Corporation	Darleen Johnson-Carroll
Ungooroo Aboriginal Corporation	Estelle Germishuizen
Wallangan Cultural Services	Maree Waugh
Yarrawalk, on behalf of the Wonnarua PBC	Scott Franks

3.2 Stages 2 and 3

In accordance with Stages 2 and 3 of the consultation process, details of the project and the assessment methodology were sent out to the RAPs and opportunities for feedback were provided, as summarised in Table 2. Opportunities for feedback were also provided during the fieldwork.

Table 2. Responses to assessment methodology and project information from RAPs, and responses (when relevant) by Heritage Now.

Organisation/Individual and representative name	Comment	Heritage Now response
Long Gully Cultural Services - Ethan Trewlynn	24/5/2024 Email – Agrees with methodology	Acknowledged
Didge Ngunawal Clan – Paul Boyd	24/5/2024 Email – Agrees with methodology	Acknowledged
Culturally Aware - Tracey Skene	27/5/2024 Email – Agrees with methodology	Acknowledged
Murra Bidgee Mullangari Aboriginal Corporation - Darleen Johnson-Carroll	3/6/2024 Email – Agrees with methodology	Acknowledged
A1 Indigenous Services - Carolyn Hickey	10/6/2024 Email – Agrees with methodology	Acknowledged

3.3 Stage 4

The draft report was sent to the Registered Aboriginal Parties and 28 days provided for comment.

Organisation/Individual and representative name	Comment
Didge Ngunawal Clan – Paul Boyd	Agrees with report recommendations – Phone – 27/08/2024
Kawul Pty Ltd Trading as Wonn1 Sites – Arthur Fletcher	Agrees with report recommendations – Phone – 27/08/2024
Murra Bidgee Mullangari Aboriginal Corporation - Darleen Johnson-Carroll	Agrees with report recommendations – Phone – 27/08/2024
Yarrawalk, on behalf of the Wonnarua PBC – Scott Franks	Agrees with report recommendations – Phone – 27/08/2024

Long Gully Cultural Services - Ethan Trewlynn	Agrees with report recommendations – Phone – 28/08/2024

3.4 Summary

As a result of the Aboriginal consultation process 16 Registered Aboriginal Parties were identified. Feedback from the Aboriginal consultation was incorporated into the assessment of significance and the development of heritage management and mitigation strategies for the Project.

4 Environmental and Heritage Context

This section outlines the environmental and heritage context for the Project Area.

4.1 Environmental Context

This section provides the environmental context for the assessment of past Aboriginal occupation in the Project Area, focusing on whether there were any landscape features that were likely to indicate the presence of Aboriginal objects (DECCW 2010c, 10).

4.1.1 Geology and Soils

The underlying geology can provide information on stone resources available to Aboriginal people. Soil characteristics can provide information on potential archaeological deposits.

As shown in (Figure 3), the Project Area is primarily within the Lochinvar Formation of the Dalwood Group, consisting of basalt, siltstone, and sandstone; while a portion in the north-west area is on carboniferous undifferentiated geology composed of tuff and ignimbrite interbedded with conglomerate, sandstone and shale. The north-west corner of the Project Area is located over an area of Carboniferous, undifferentiated, tuff and ignimbrite interbedded with conglomerate, sandstone and shale (Hawley, Glen, and Baker 1995).

The most common stone artefact materials known to have been used by Aboriginal people of the Hunter Valley in the past include silcrete, indurated mudstone/ tuff (IMT), fine grained silicious (FGS), chert and quartz. As some silcrete outcrops appear to occur naturally within part of the Project Area, it is possible that any artefacts of this material present within the Project Area, may have been sourced and produced locally. Suitable quality sandstone exposures in this region could also have provided natural exposures suitable for grinding axes and other tools, whilst outcrops of this may have acted as shelter sites.

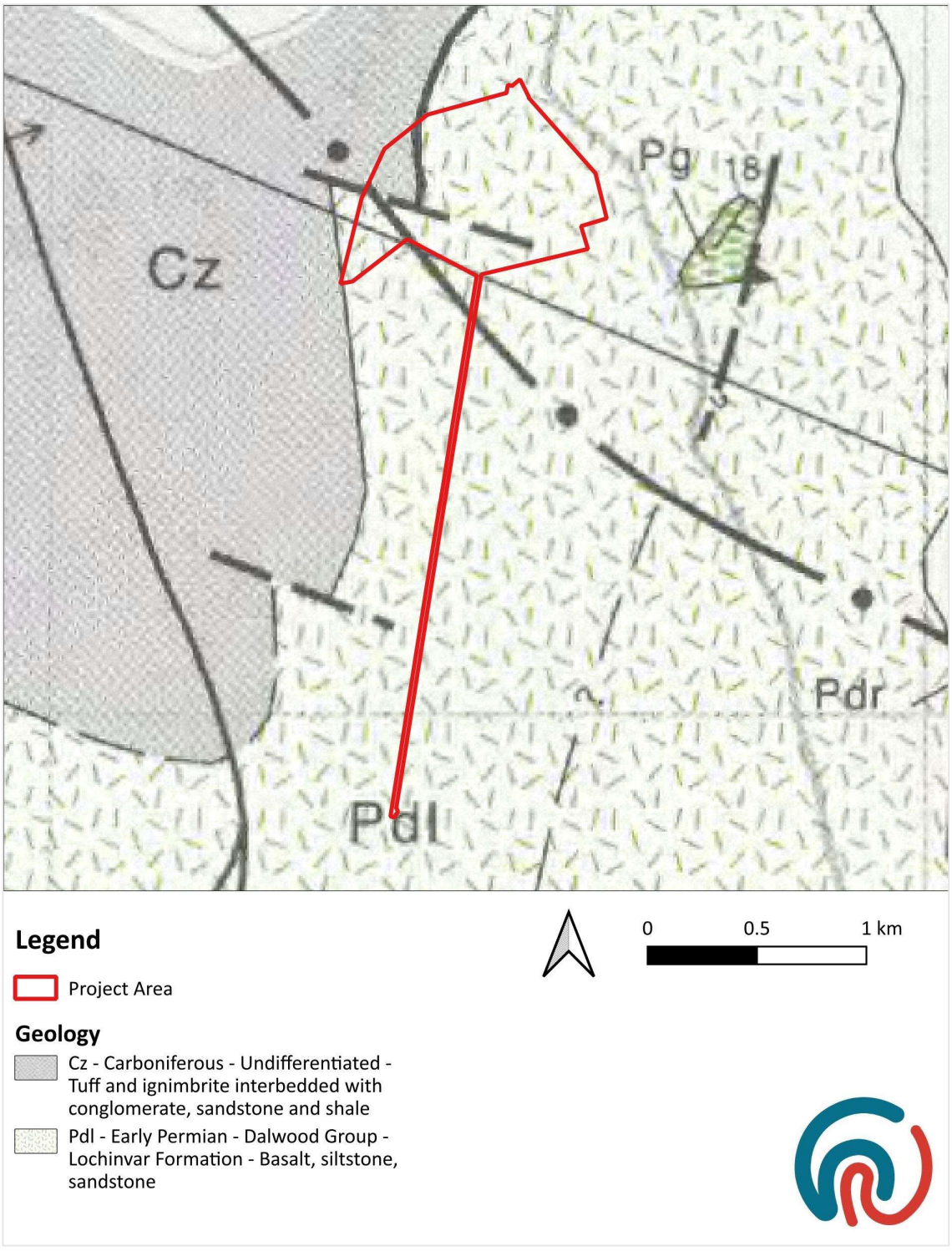

Figure 3. Geological landscape of the Project Area and surrounding region. (Source: Newcastle Coalfield 100K Geological Sheet and SIX Maps aerial with Heritage Now additions)

All of the residential development section of the Project Area, and the northern part of the proposed new road, are located on the erosional Rothbury Soil Landscape (Figure 4) that is typically found over undulating and rolling low hills south and south-east of Singleton. Locally, the upper slope sections of the Project Area are likely to consist of up to 10cm of a dark brown, fine sandy loam topsoil (A_1 horizon) overlying up to 20cm of brown fine sandy loam to clayey loam (A_2 horizon), over B Horizon clay. The lower slope sections of the Project Area are likely to consist of up to 15cm of dull yellowish brown loamy sand (A horizon), over B Horizon clay.

The southern half of the proposed new road lies over the erosional Branxton Soil Landscapes. This is commonly found across undulating low hills and rises with many small creeks flats. Locally, the landscape is likely to consist of *c.*25cm of dark reddish brown, fine sandy loam, topsoil (A^2 horizon) overlying a reddish brown, medium clay with a strong structure (B horizon).

All of these landscapes are examples of duplex soil landscapes. Archaeological deposits within duplex soils are generally limited to A horizon soils, as B horizon soils often predate human occupation (Hughes, Spooner, and Questiaux 2014, 36). Furthermore, B horizon clay soils (or bedrock) form a compact barrier through which artefacts typically do not penetrate. Therefore, if these soils have not been subject to erosion or stripping, and depending on the landform upon which they are located and in consideration of surrounding archaeological indicators, soils in the Project Area are predicted to consist of:

- c.15-30cm of potential artefact bearing deposit within the Rothbury Soil Landscape
- c.25cm of potential artefact bearing deposit within the Branxton Soil Landscape

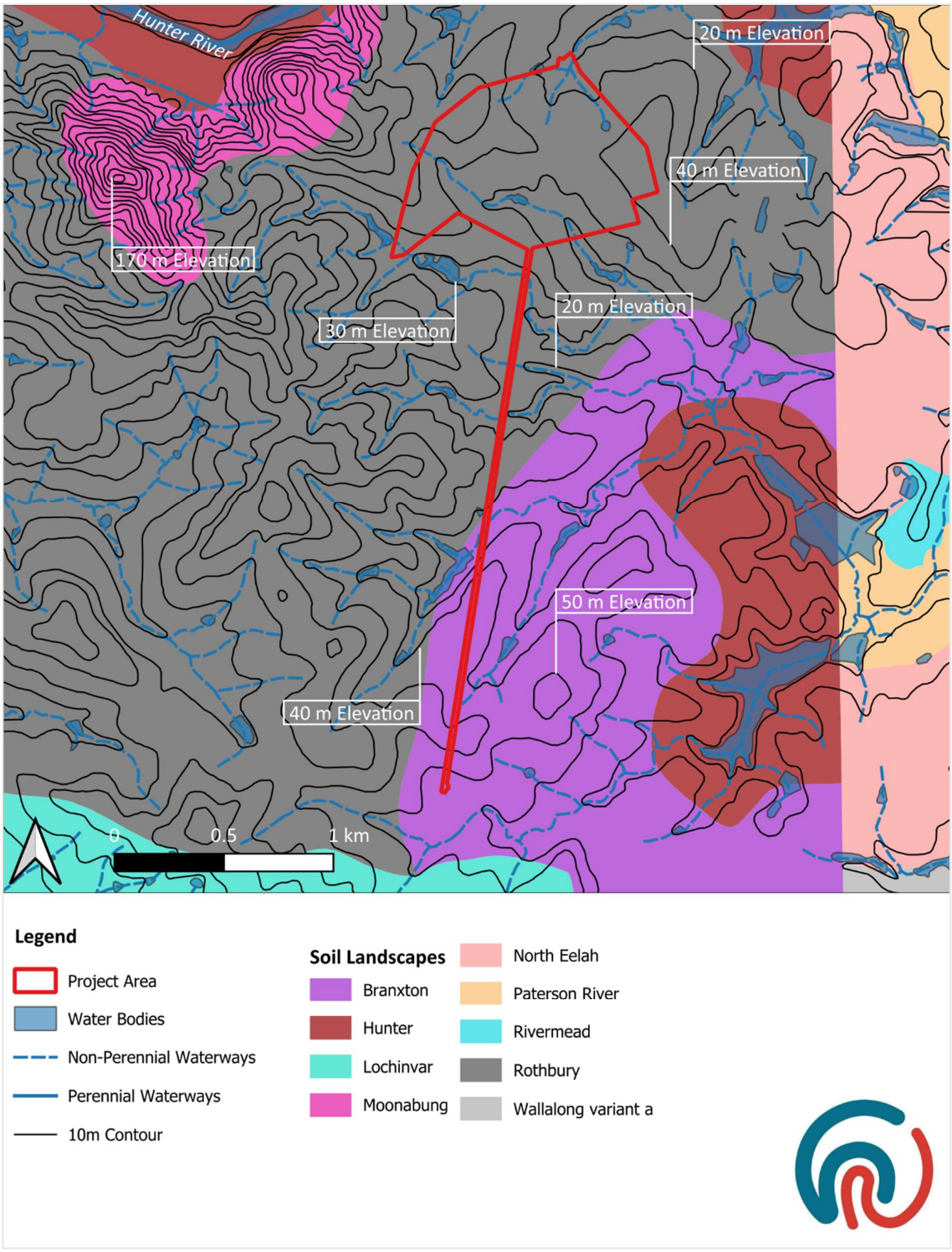

Figure 4. Soil landscape of the Project Area and surrounding region. (Source: Soil Landscapes based on Kovak and Lawrie (1991) topography from NSW SCP and SCP aerial with Heritage Now additions)

4.1.2 Topography, Hydrology and Landforms

Access to fresh water is known as a primary consideration for Aboriginal people when selecting camp site locations. Studies from the Hunter Valley (Peter Kuskie 2015; Peter Kuskie and Kamminga 2000) demonstrate that areas within 300m of wetlands and fresh water are considered to have been ideal locations for camping and focused occupation (i.e. repeated visits, visits of longer duration). Conversely, areas further than 300m from wetlands and/or water sources were outside the primary or secondary resource zones and are likely to only have had low to very low intensity use for hunting and / or gathering during the course of the normal daily round, or for transitory movement. The sensitivity of locations near to waterways, in terms of the preference of such locations to be used for Aboriginal campsites, is reflected in the Due Diligence Code of Practice, which considers areas within 200m of water archaeologically sensitive. Ridge lines, ridge tops, headlands, cliffs, rock shelters and caves are also considered sensitive locations, as per the Due Diligence Code of Practice (DECCW 2010c, 12).

As shown in Figure 4, the residential development portion of the Project Area lies c.800m to the south-east of the Hunter River, which at this point has become fresh water (and is fed by freshwater tributaries). This portion of the Project Area contains a slight valley and two ridge lines. The valley runs on a north-west to south-east alignment through the southern section of the Project Area, sloping downwards towards the south-east (from c.50m AHD to c.20m AHD). A first order non-perennial creek flows through this valley, connecting to the Hunter River c.2.6km to the south-east of the Project Area.

To the north of the valley, a moderately steep (south facing) slope ascends, over a distance of c.320m, to a height of c.50m AHD. This high point is part of a ridge line which follows the alignment of the valley floor through the Project Area. This south facing slope is lined with a number of well-established run off channels, which feed the non-perennial creek that flows through the valley. Northward, beyond the ridge line, the ground descends to c.25m AHD over a distance of c.300m, creating a steep slope. Three first order non-perennial water courses flow northwards down this north facing slope. Just beyond the Project Area, these join, forming a second order non-perennial water course which flows into the Hunter River c.1.7km north-east of the Project Area.

South of the valley floor, the ground steeply ascends to a height of c.50m over a distance of c.170m; this high point is part of a second ridge line which follows the alignment of the valley floor through the Project Area. Beyond this ridge line, the ground descends steeply (to c.32m AHD over a distance of c.190m). This leads to the floor of another shallow valley through which a second order non-perennial water course flows. Only a very small part of this second valley floor lies within the Project Area, in its south-west corner.

Ridge lines may have been used as pathway to resources and camp sites, this being a common practice of Aboriginal people in the past. Gentle slopes leading from these ridge lines towards a water source were often also utilised as camp sites. The majority of the valley side slopes within the Project Area could be considered too steep to be desirable as campsite locations. However, elevated areas adjacent to the middle and southern creeks may have been suitable for camping.

The proposed new access road follows an undulating route across the moderately steep slide slopes of four main hills. The route varying in height from 24m AHD towards its southern end, up to 51m AHD toward its northern end. Many of these slopes are bisected by drainage / run off channels and as a result, the northern half of the route of the proposed new road crosses two second order non-

perennial water courses and one first order non-perennial water course. The southern end of the route crosses a slightly more substantial perennial second order stream. All of these water courses flow roughly west to east, ultimately flowing into the Hunter River at a point *c.*2.4km to the west of the southern end of the proposed new road route. As with the residential area, much of the landscape through which this route runs would have been considered too steep for camping. However gentler areas of topography do exist – typically towards the lower end of the slopes over which this route runs, and often associated with a water course. Such locations may have been considered more suitable for camping.

4.1.3 Flora and Fauna

This section is intended to give a general overview of the flora and fauna that may have been used by Aboriginal people in the past. The information is supplied for understanding the past Aboriginal use of the landscape and is not intended for ecological assessment purposes.

Past Aboriginal people are likely to have encountered vegetation similar to Hunter-Macleay Dry Sclerophyll Forests, Northern Hinterland Wet Sclerophyll Forests and Coastal Valley Grassy Woodlands in and around the Project Area.

Hunter-Macleay Dry Sclerophyll Forests consist of dry open eucalypt forest, including spotted gum, narrow-leaved ironbark, grey box, grey gum, grey ironbark turpentine, silver-stemmed wattle, forest oak, coffee bush, gorse bitter pea, peach heath, large mock-olive, narrow-leaved geebung, muttonwood, yellow burr-daisy, slender tick-trefoil, kidney weed, white root, poison rock fern, barbed wire grass, wiry panic, weeping grass and kangaroo grass.

This vegetation community would have provided a variety of foods and raw materials for Aboriginal occupation in the area. The fruits of plants such as the geebung and coffee bush produce edible fruits, and the timbers of eucalypts could be used to create tools, vessels and canoes (Brayshaw 1987). The gum (kino) of the spotted gum could be used as a pigment, and when mixed in a drinking solution could assist with bladder infections. The nectar of the spotted gum flowers could be used as a sweetener (Caton and Hardwick 2018, 249). The narrow-leaved geebung has edible fruit as well as seeds. The juice and flesh of unripe fruit were used for treating burns, scratches and rashes. The ripe fruit on the ground also attracted possums, bandicoots and wallabies (Caton and Hardwick 2018, 267). The cooked leaves of the poison rock fern could be used to treat parasitic infections and intestinal worms and the leaves could also be made into a poultice for treating eczema and ringworm (Caton and Hardwick 2018, 311).

Common fauna in the area may have included parrots, cockatoos, galahs, flying foxes, bats, possums, wallabies, gliders, reptiles and birds. These faunae could have provided a source of food and their hides could have been used as a resource to make clothing.

Northern Hinterland Wet Sclerophyll Forests consist of tall, open, dry eucalypt forests to 40m with a diverse array of species, an open understorey of both mesophyllous and sclerophyllous shrubs and a continuous grassy groundcover. They occur on moderately fertile soils derived from siltstones and metasediments where mean annual rainfall exceeds 1000mm.

The canopy is dominated by tallowwood, blackbutt, grey gum, grey ironbark, and turpentine. Common shrubs include forest oak present as small trees. Smaller shrubs include coffee bush, dogwood, *Leucopogon lanceolatus,* narrow-leaved orange bark, large mock-olive, white dogwood, narrow-leaved geebung, yellow pittosporum, prickly shaggy pea, elderberry panax, *and* tree heath.

Common scramblers include giant water vine*, Hibbertia dentata, H. scandens* (climbing guinea flower), wonga wonga vine, and sarsaparilla.

Common forbs include *Amperea xiphoclada,* broome spurge, rusty tick-trefoil, slender tick-trefoil, blue flax lily, *Geranium homeanum, Glycine clandestina,* white root, *Vernonia cinerea,* bracken. Dense swards of blady grass and *Lomandra longifolia* (spiny-headed mat-rush) may be present.

The Northern Hinterland Wet Sclerophyll Forests would have also provided habitat to a variety of species that could have also provided a food resource to Aboriginal people including a variety of wallabies, possums, bats, birds, and reptiles. Possum fur was also used to create clothing (Solling 2014).

Coastal Valley Grassy Woodlands (Keith 2004) are open forests and woodlands 20 – 35m tall with scattered or clumped shrubs. Dense ground cover contains a diverse range of grasses, scramblers and herbs. Common trees include rough barked apple and forest red gum. Spotted gum, narrow leaved ironbark, narrow leaved stringy bark and grey box also occur. The most common shrub is blackthorn. Others include hickory wattle, black wattle, gorse bitter pes, egg and bacon pea, dogwood, prickly beard heath and white dogwood. Scramblers such as wombat berry may be found. Prostrate forbs species include slender tick-trefoil, kidney weed, native geranium, stinking pennywort, white root. Erect species include common woodruff, blue trumpet, large tick-trefoil, Australian bluebell, and poison rock fern. Dominant tussock grasses include purple wiregrass, threeawn speargrass, barbed wire grass, paddock lovegrass and kangaroo grass.

Some of these species would have been used by Aboriginal people as raw materials for implements and weaving, as well as food and medicine. The hardwoods of eucalypts can be used to create tools such as digging sticks, clubs, throwing spears, shields, and boomerangs as well as vessels for carrying and collecting food (Nash 2004, 7–8). The seed heads of kangaroo grass were collected and used to produce flour to bake into damper (Nash 2004).

Fauna that inhabited these woodlands are likely to have included possums, bats, quolls, wallabies, snakes, and birds. These would have provided local Aboriginal people with food resources as well as hair and skin for clothes.

4.1.4 Land Use

Land is considered disturbed if it has been the subject of human activity that has changed the land's surface, being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure, roads, trails and tracks, vegetation clearance, construction of buildings, structures and utilities and other impacts involving earthworks (DECCW 2010c, 18).

Early maps of the Parish of Gosforth (1885) show a planned north – south aligned connecting Anambah Road (to the north) with the New England Highway (to the south), running through Windella. This proposed new access road sits along the route of this earlier proposed road, which also bisects the residential development portion of the Project Area (Figure 5). This Road is a designated public road (Road 20.115 wide) known as River Road. However, only the final (southernmost) 1.2km of this road was ever laid as a formal bitumen road (ending in a cul-de-sac), the remaining 3.3km never being anything more than a semi formal dirt track. The Road divides a series of plots which run along it on either side (to the east and west of it), four of which sit within the current Project Area. What is now Lot 55 DP874170 is labelled as Lots 8 and 11 (to the east), owned by John K Mackay, and what is now Lot 177 DP874171 is labelled as Lots 9 and 10 (to the

west), owned by Michael Drinan. Winder's Hill, the site of a modified tree (AHIMS 37-6-4248), 1.7km to the west of the Project Area, is also marked on this map.

Historic images date back to 1958, which show that the Project Area was cleared scrub land being used as pasture (Figure 6), which is much as it is today. By 1966, a small residential property / farmstead has been constructed to the immediate south-east of the proposed residential portion of the Project Area, off Anambah Road, and by 1970, hedge lines have been established leading away from the property to the west and north-west. These hedge lines run along, and up to, the boundary of the Project Area, but do not appear to cross into it (Figure 7). The hedges appear to mark the starting lengths of two dirt tracks which lead away from the property. By 2009, the dirt track which leads west from the property appears to have been formalised into a more established and visible gravel track. It can be seen running west from the property, along the southern boundary of the current Project Area, crossing a creek and then turning south to head towards Windella. By 2010, the residential property to the south-east of the Project Area has been abandoned and demolished and the hedge line which headed north-west away from it removed. The gravel track remains as does the hedge line which marks the eastern end of it. This hedge is much reduced by 2013 and is gone by 2015.

Based on this background information, the residential development and new access road elements of the Project Area are considered to have been subject to some disturbance, associated with clearance of forest vegetation and use as pasturage, with some dirt tracks also being established. It is possible that such disturbance may have had only a minimal impact upon the survival and visibility of archaeological sites.

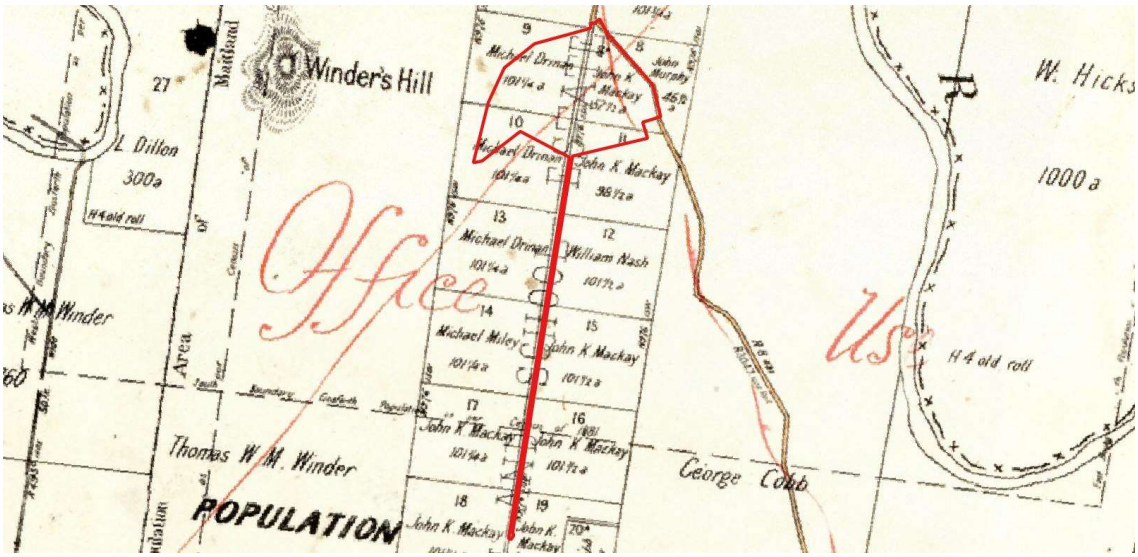

Figure 5. Parish of Gosforth 1885 showing the Project Area. (Source: HLRV Historical Parish Maps)

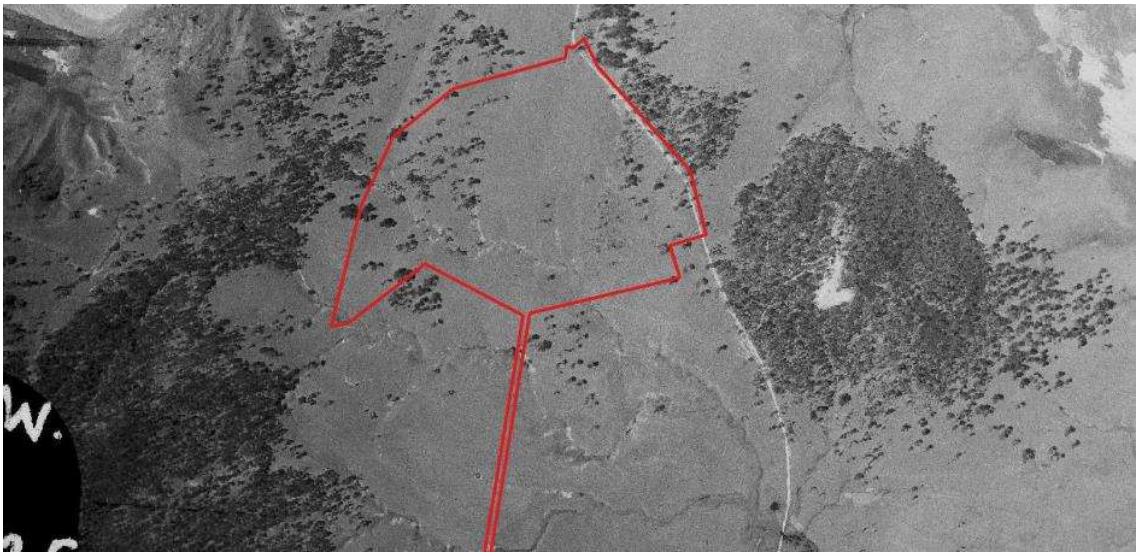

Figure 6. Project Area in 1958. (Source: NSW Government Historical Imagery)

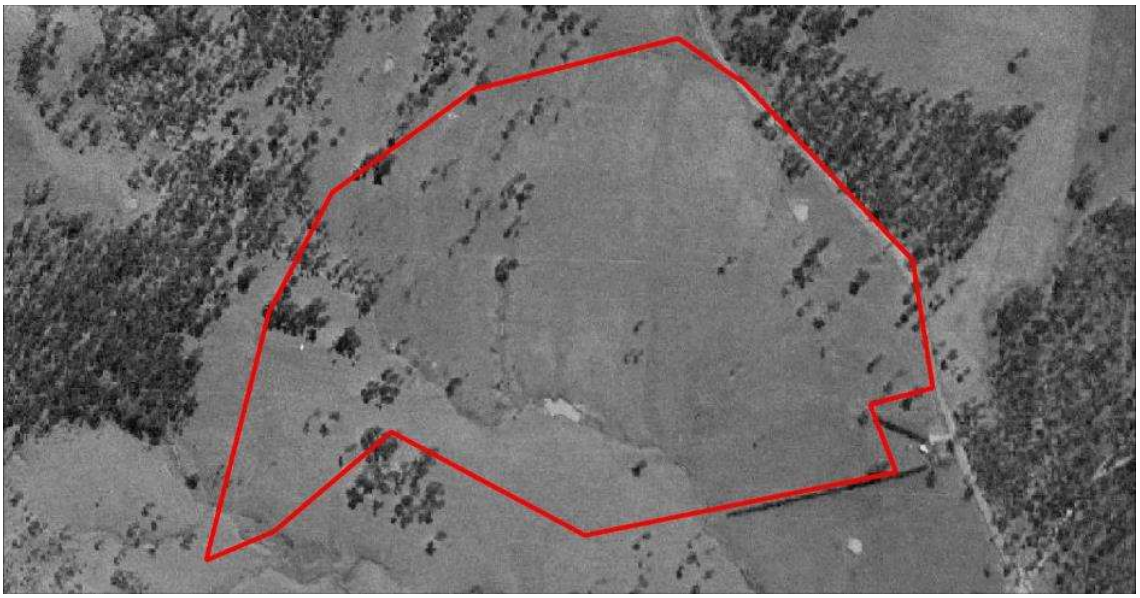

Figure 7. Northern portion of Project Area in 1970, showing hedges and formation of track. (Source: NSW Government Historical Imagery)

4.1.5 Synthesis

The Project Area contains a number of landscape features which may have been attractive to Aboriginal people in the past. Much of the Project Area would have previously been forested, and it contains a number of waterways, which may have provided valuable resources; whilst the ridge lines and gentle slopes present in the Project Area may have been utilised for pathways and campsites. Such campsites are likely to have been temporary or transitory in nature near to non-perennial water sources, with more permanent camp sites being established closer to more reliable, perennial, water sources – such as the Hunter River.

The geology of the Project Area contains sandstone. Sandstone exposures, particularly near water sources, were often utilised as tool grinding sites, whilst sandstone overhangs, particularly near ridge lines, were often used as shelters and art sites.

The historical land use of the Project Area suggests varying levels of disturbance. The area of the residential development and new access road has being somewhat disturbed by vegetation clearance, pastoral use and the establishment of dirt tracks.

5 Heritage Context

A review of the archaeological, ethno-historical and post-contact history of an area provides contextual information for Aboriginal sites within the local and regional landscape. Previous archaeological research undertaken in the region, as well as a review of environmental factors, can inform predictive models for the locations of Aboriginal sites. Predictive models can be further refined by the consideration of the post-contact land use of the area which may identify potential sources of post-depositional disturbances that may have occurred.

5.1 Historical Records

Historical records indicate that the Project Area is within the boundaries of Wonnarua (alternative spellings include Wanaruah, Wanarua, Wanarruwa and Wonaruah) Country (Tindale 1940). The traditional lands of the Wonnarua people have been documented as extending to the Upper Hunter River from a few miles above Maitland, and westwards to the Dividing Range (Tindale 1974). Early historical records indicate that the Wonnarua were part of a nexus of tribes in the Newcastle and Hunter River District (Threlkeld 1974, 3). These tribes were interconnected, with clear distinctions between coastal groups and those further inland (Threlkeld 1974, 4) (Irish 2017).

Boundaries between neighbouring groups were often defined by waterways or mountains. Economic, social, and religious links between various groups were noted by some of the early European observers. Wollombi Brook, the McDonald River and the Boree Track were all noted by McCarthy in 1939 as travel routes for Aboriginal people from the Upper Hunter to the Central Coast (Brayshaw 1987, 41), while Threlkeld noted in the 1830s that "Communications between distant tribes, although, perhaps hundreds of miles may intervene, are much more frequent than is commonly imagined by Europeans" (Threlkeld 1974, 42).

The Wonnarua people subsisted on the natural resources around them by using their detailed and in-depth knowledge of the seasonal availability of plants and animals. Their varied diet included a large range of fish, shellfish, animals, reptiles, birds, insects and plants. Some European observers, like pastoralist Robert Dawson, when recording the traditional life of Aboriginal people in the Hunter Valley in 1831, recognised that: *"The forest in its natural state, affords them everything necessary for their subsistence"* (Brayshaw 1987, 42).

In 1898, J.W. Fawcett wrote of the Wonnarua: *"In choosing the site (for their camps), proximity to fresh water was one essential, some food supply a second, whilst a vantage ground in case of attack from an enemy was a third"* (Brayshaw 1987, 42).

Aboriginal people responded to early European settlement in the Hunter Valley at Maitland (then Wallis Plains) in 1818, and Singleton (then Patrick Plains) in the early 1820s, in complex and varied ways (Dunn 2020, 116). There were violent confrontations, particularly in the 1820s, which were usually triggered by Aboriginal people raiding farms after being prevented from accessing land claimed by colonial settlers. This in turn led to reprisal attacks. The farm raids were spurred by the fact that traditional food sources were steadily put under strain as the colonial population increased and more land was taken up in the Hunter Valley. Violence was also caused by the abduction of Aboriginal women, as well as indiscriminate killings (Dunn 2020, 116–17).

Aboriginal people had to make profound cultural changes to survive. They served as guides, and often worked on the early colonial farms (although rarely on fair and equal terms to the non-Aboriginal workers) (Dunn 2020, 116–17).

Despite these general associations and historical records of Aboriginal sites in the Hunter region, there are no known specific historical records which reference the Project Area. This is not to suggest that Aboriginal people did not have a presence in this particular area, just that local histories often pay little attention to the Aboriginal history of the locality (OEH 2011).

5.2 Archaeological Background

Australia and New Guinea were connected as a single continental landmass called Sahul and have been occupied by humans for at least 65,000 years (Clarkson et al. 2017). Eastern NSW has been occupied from at least 50,000 years ago (A. N. Williams et al. 2017). The earliest archaeological evidence of occupation in the Hunter region are radiocarbon dates obtained from charcoal at a site in Fal Brook, north of Singleton (Koettig 1987). The artefacts within the deposit were dated to the Pleistocene, approximately 34,590 years Before Present (BP). More locally, charcoal fragments recovered from hearth at open camp site 'OGC 1', near Cessnock (c.20km to the south-west of the Project Area), have been dated to 1,145 BCP (A. Williams and Ulm 2014). Most of the archaeology in the Hunter region is dated to the Holocene (the last 10,000 years).

5.2.1 Aboriginal Heritage Information Management System (AHIMS)

Aboriginal sites recorded in NSW are registered with geographic co-ordinates in the AHIMS and are protected under the National Parks and Wildlife Act 1974. Data in AHIMS can provide information on Aboriginal site patterning as well as showing if Aboriginal sites occur in the Project Area.

The AHIMS was searched on 24 April 2024 for coordinates GDA, Zone 56, Eastings 355413 to 362413 and Northings 6378958 to 6385958 (Attachment 1). The search produced a result of 106 sites (Appendix 2).

Approximately 83% of the total number of sites include stone artefacts, which often dominate the archaeological record because they are preserved well in comparison to other materials such as bone implements, clothing, ornamentation, medicinal supplies, woven goods, and wooden weapons used by Aboriginal people. One third of the total number of sites include PAD. A modified tree, an

art site, an Aboriginal Ceremony and Dreaming site and a stone quarry were also recorded in the region (Table 3).

The definitions of the site features identified in the AHIMS search is summarised in Table 4.

Table 3. AHIMS site types.

Site Types	Count	Percent
Artefact	68	64.15%
PAD	18	16.98%
Artefact + PAD	16	15.09%
Artefact + Aboriginal Ceremony and Dreaming	1	0.94%
Modified Tree	1	0.94%
Artefact + PAD + Stone Quarry	1	0.94%
Artefact + PAD + Art	1	0.94%
Total	**106**	**100%**

The majority of the sites identified in the search are valid (79%), usually meaning that they have not been subject to an AHIP. Of the remainder, 14 sites have been completely salvaged / destroyed, seven sites have been partially salvaged / destroyed, and 1 previously recorded PAD was later identified as not being archaeological sites (as such, these were not included in Table 3). The status of sites identified in the search is summarised in Table 4.

Table 4. Site status.

Site Types	Salvaged/ Destroyed	Partially Salvaged/ Destroyed	Valid	Not a Site
Artefact	14	2	52	
PAD		2	15	1
Artefact + PAD		3	13	
Artefact + Aboriginal Ceremony and Dreaming			1	
Modified Tree			1	
Artefact + PAD + Stone Quarry			1	
Artefact + PAD + Art			1	
Total	14	7	84	1
Percent	**13.21%**	**6.60%**	**79.25%**	**0.94%**

Table 5. Aboriginal site features description, as per OEH 2012 unless otherwise referenced.

Site Features	OEH 2012 Description
Aboriginal Ceremony and Dreaming	Previously referred to as mythological sites, these are spiritual/story places where no physical evidence of previous use of the place may occur, e.g., natural unmodified landscape features, ceremonial or spiritual areas, men's/women's sites, dreaming (creation) tracks, marriage places etc.
Art	Art is found in shelters, overhangs and across rock formations. Techniques include painting, drawing, scratching, engraving, pitting, conjoining, abrading and the use of a range of binding agents and the use of natural pigments obtained from clays, charcoal and plants.
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.

Modified Tree	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.
Potential Archaeological Deposit (PAD)	An area where sub-surface stone artefacts and/or other cultural materials are likely to occur (DECCW 2010b, 38).
Stone Quarry	Usually, a source of good quality stone which is quarried and used for the production of stone tools.

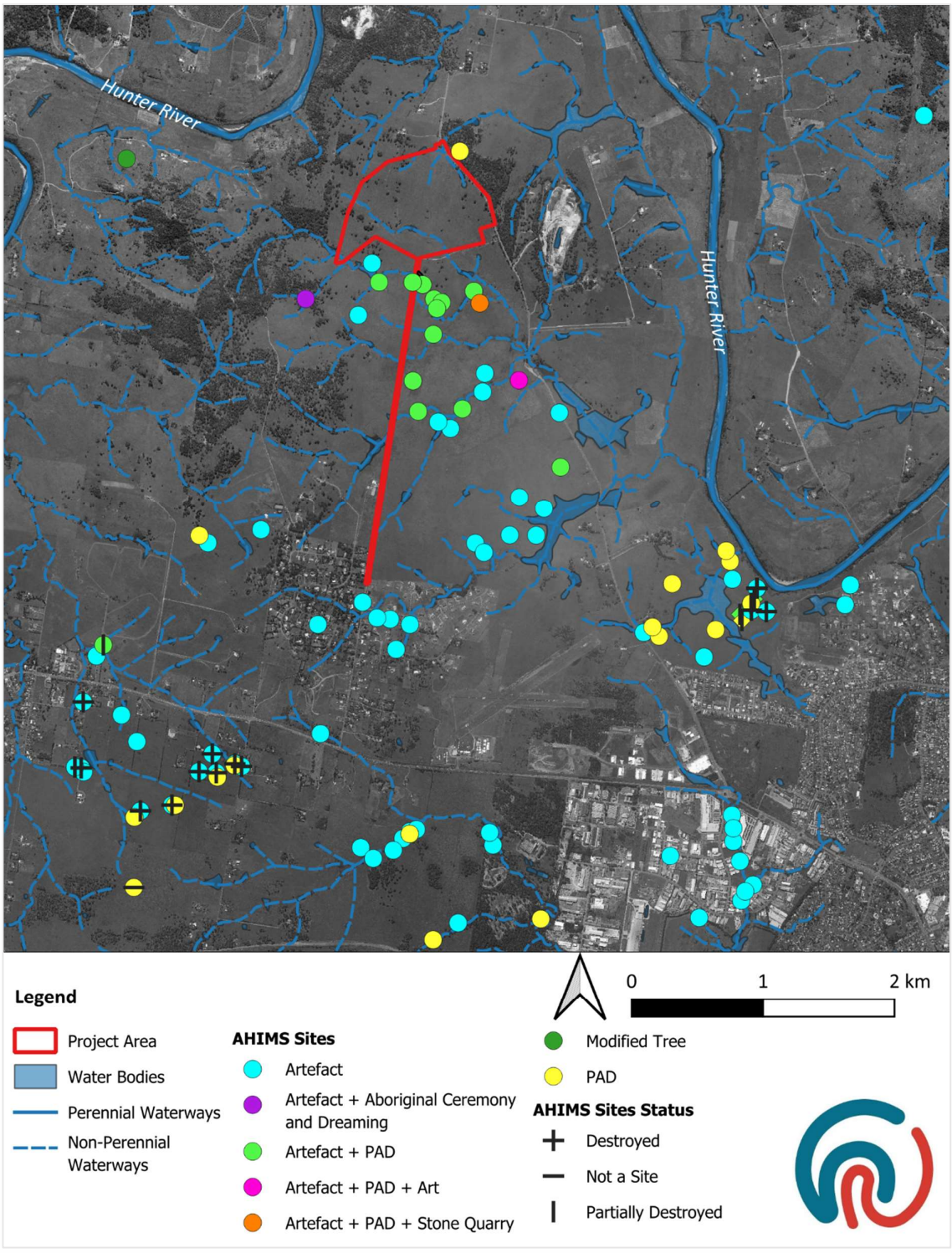

Figure 8. AHIMS search results. (Source: SCP with Heritage Now and AHIMS additions)

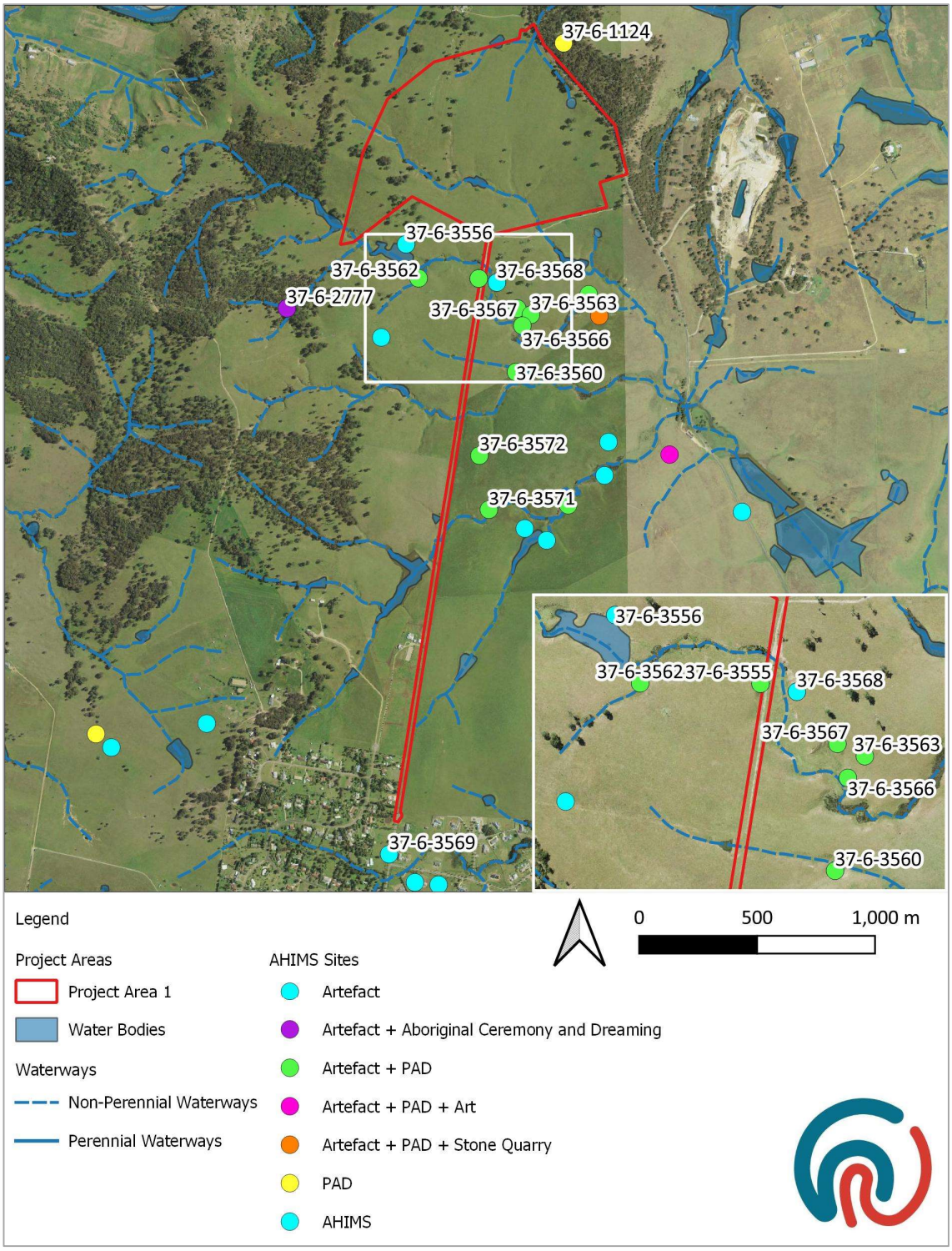

Figure 9. Details of AHIMS sites in closest proximity to the proposed residential development and access road. (Source: SCP with Heritage Now and AHIMS additions)

As shown in Figure 9 there are fifteen AHIMS sites (comprising artefacts and PADs) within 300m of the Project Area. Details from the relevant AHIMS site cards are outlined below and have been

somewhat separated out based on their spatial relationships to the individual elements of the Project:

5.2.1.1 The Residential Development

AHIMS 37-6-1124 (PAD 1 Rutherford)

This PAD site is registered c.80m to the north of this part of the Project Area, having been recorded by Mary Dallas Consulting Archaeologists (MDCA) in 2003. While the registered location is within an area of woodland just to the north of Anambah Road, no further information is currently available, as there is no copy of the AHIMS site card, and no available reports are directly associated with the site. Given the proximity of the registered site the survey undertaken by Heritage now in 2023 as part of the Aboriginal Due Diligence Assessment aimed to establish whether the PAD was likely to extend into this part of the Project Area. The survey concluded that that this AHIMS site was unlikely to extend into the Project Area due to changes in landform between the two sides of Anambah Road, and previous land use including construction of the road and dams. No surface artefacts were found in the vicinity of this previously recorded site.

AHIMS 37-6-3556 (Anambah IF 9)

This site is located c.140m to the south of the Project Area and was recorded in 2013. It consists of a single silcrete flake found on the bank of a dam. No evidence of this extending into the Project Area was noted during site the survey undertaken by Heritage now in 2023, as part of the Aboriginal Due Diligence Assessment.

5.2.1.2 The New Access Road

AHIMS 37-6-3562 (Anambah SAC 4 and PAD 22)

This site is located c.290m to the south of the Project Area and c.255m to the west of the New Access Road. It was recorded in 2013. The site consists of a yellow / brown chert flake with possible backing, a yellow mudstone flake and a yellow silcrete flake, located on the eroded bank of a dam. An area a PAD was identified in association with these artefacts, on a flat area (c.35m x 25m) to the south of the dam.

AHIMS 37-6-3573 (Anambah SAC 16 and PAD 18)

This artefact scatter and PAD site was recorded in 2013, and although the registered location places the site c.160m to the south of the residential development area and 6m to the west of the line of the proposed new access road, the site card identifies it as being located further to the east – 413m to the east of the line of the proposed new access road and 165m south of the residential development area. The site consists of a PAD (c.28m x 27m) on an area of elevated flat land above a modern dam. One possible red silcrete flake was recorded on the surface, on a lower slope near the dam, and test excavation of the PAD yielded two further stone artefacts (although their material and typology was not recorded on the AHIMS site card).

AHIMS 37-6-3555 (Anambah IF 8 and PAD 23)

This isolated find and PAD site is located c.180m to the south of the residential development area and 6m to the west of the line of the proposed new access road. It was recorded in 2013 and is located on a raised flat adjacent to a creek. The PAD is recorded as approximately 28m x 26m in size, and a single yellow silcrete flake was found in association with it, on the heavily eroded bank of the creek.

AHIMS 37-6-3568 (Anambah SAC 11 and PAD 27)

This artefact scatter and PAD site is located c.140m to the south of the residential development area and 50m to the east of the line of the proposed new access road and was recorded in 2013. An area of PAD was identified on a slightly sloped landform overlooking a creek, covering an area of c.110m x 22m. Initially c.10 surface silcrete artefacts were identified along the high eroded bank of the creek in this area, and subsequent test excavation yielded an additional 171 artefacts.

AHIMS 37-6-3567 (Anambah SAC 10 and PAD 26)

This artefact scatter and PAD site is located *c.*150m to the east of the line of the proposed new access road and was recorded in 2013. This PAD covers an area of *c.*56m x 12m on a very slightly sloped landform overlooking a creek. Two silcrete artefacts in an area of heavy erosion were identified during field survey on the creek bank, which had been terraced. 25 artefacts were recovered during test excavation of 9 pits within the PAD. The site retains moderate archaeological potential.

AHIMS 37-6-3566 (Anambah SAC 9 and PAD 25)

This artefact scatter and PAD site is located *c.*185m to the east of the line of the proposed new access road and was recorded in 2013. This PAD covers an area of *c.*55m x 21m on a low flat landform above a creek. More than 30 artefacts were identified in two exposures along the creek bank. 28 artefacts were identified from 12 pits during test excavation. The site retains moderate to high archaeological potential.

AHIMS 37-6-3563 (Anambah SAC 5 and PAD 20)

This artefact scatter and PAD site is located *c.*210m to the east of the line of the proposed new access road and was recorded in 2013. This PAD covers an area of *c.*256m x 55m on an elevated flat above a creek. The eastern half of the PAD had been ploughed and cropped within previous 10 years, and thus has some reduced integrity. SAC 5 was on the north side of PAD 20 in the eroded creek bank. More than 30 artefacts were identified in one exposure and more than 15 artefacts were identified in a second exposure during field survey. An additional 32 artefacts were recovered from 20 test pits during test excavation. This site retains moderate to high archaeological potential.

AHIMS 37-6-3560 (Anambah SAC 1 and PAD 21)

This artefact scatter and PAD site is located *c.*190m to the east of the line of the proposed new access road and was recorded in 2013. This PAD covers an area of *c.*115m x 25m on a low flat alluvial terrace above a creek. 14 artefacts were discovered at three locations within erosional areas on the margins of the creek bank during survey. Six artefacts were of silcrete, including a core. Three were of tuff, including a core, and five were mudstone (indurated tuff). Six test pits were excavated during test excavation and nine artefacts were recovered from these pits.

AHIMS 37-6-3572 (Anambah SAC 15 and PAD 16)

This artefact scatter and PAD site is located *c.*93m to the east of the line of the proposed new access road and was recorded in 2013. This PAD covers an area of *c.*320m x 70m on a large flat hilltop and slope to the east, with 270 degree views. The area of PAD had been ploughed and cropped within the previous 10 years, and thus had reduced integrity. A large silcrete core was identified on the flat

hilltop during field survey. Testing of 52 pits identified an additional 18 artefacts. This site retains moderate archaeological potential.

AHIMS 37-6-3571 (Anambah SAC 14 and PAD 15)

This artefact scatter and PAD site is located *c.*170m to the east of the line of the proposed new access road and was recorded in 2013. This PAD covers an area of *c.*75m x 21m across two elevated flats, on lower slopes, within the open depression of a second order creek. The area of PAD had been ploughed and cropped within the previous 10 years, and thus has reduced integrity. During the survey, a silcrete (heat treated) flake was identified within erosion scars adjacent to the creek. During test excavation of 13 pits across PAD 15, 25 additional artefacts were identified.

AHIMS 37-6-3569 (Anambah SAC 12)

This artefact scatter site is located *c.*140m to the south of the southern end of the proposed new access road and was recorded in 2013. This open site covered an area of *c.*5m x 1m across a disturbed urban landscape bank and contained four mudstone flakes. It was assessed as having no archaeological potential.

5.2.1.3 Other Sites

In addition to these sites, another site of interest sits more than 300m away from the main Project Area, but is of a rare enough site type, and of enough significance, that it is worth mentioning here.

AHIMS 37-6-2777 (Anambah SCA 3)

This is recorded as an Aboriginal Ceremony and Dreaming and artefact site, registered c.340m south-west of the Project Area. Although there are only limited details provided on the site card (there are no maps of the site, and the associated report appears not to have been lodged with AHIMS), it is described as containing over 100 artefacts in an erosion scour (50m x 10m) on the middle to upper reaches of a steep, small finger spur behind a high hilltop with commanding views. The artefacts were found in a very steep location, where artefacts would not normally be expected. No details were given regarding the nature or location of the Aboriginal Ceremony and Dreaming feature, but given the reference to a high hilltop, it is possible that the cultural importance may extend up to 1km to the north-west of the plotted location. It is also notable that the description of the site as given on the card does not precisely match the location of the site as recorded on the AHIMS database, thus the precise location of the site is somewhat uncertain.

5.2.2 Heritage Report Summaries

Heritage reports relevant to the Project Area have been summarised in this section to provide an understanding of the previous assessments that have been undertaken and the implications for Aboriginal site patterning.

Heritage Now (2024), Aboriginal Heritage Due Diligence Assessment Report

The Residential Development section of the Proposed Development was subject to survey as part of an Aboriginal Due Diligence Assessment on 8th December 2023. The survey involved a member of Heritage Now team and Les Draper of Mindaribba Local Aboriginal Land Council.

The Project Area was surveyed as one survey unit, comprising a series of valleys with sloped land either side of the valley, and ridge lines near the western boundary of the Project Area and the centre of the Project Area. There was thick grass cover across the majority of the Project Area, with

areas of exposure limited to erosion on slopes adjacent to the drainage and creek lines. As waterways are generally considered to have archaeological sensitivity, the survey targeted these areas of exposure. There was good visibility along the edge of a dam in the north-east of the Project Area. However, no artefacts were observed in this area. Some sandstone outcrops were noted along the north-south drainage line, and on the ridge line near the centre of the Project Area. However, there was no evidence of art, grinding grooves or stone arrangements.

Three surface artefact sites were identified during the survey, adjacent to the creek line running through the middle of the Project Area. The entire creek line, and the second order creek in the south-west corner of the Project Area, are assessed as being archaeologically sensitive, with potential for subsurface archaeological material. Further information on the results of the survey are provided in Section 0.

Godden, Mackay, Logan (2012), Anambah Investigation Area: Archaeological and Cultural Assessment Methodology Draft

This document presented the outline methodology for a proposed programme of Archaeological survey and test excavation within the Anambah Investigation Area, prior to proposed residential re-development of the area. The Anambah Investigation Area extended to *c.*484ha (Godden Mackay Logan 2012, 5) and appears to have some overlap with the current Project Area, but was primarily to the south of it. The supporting Aboriginal Cultural Heritage Assessment (ACHA) Report for this project is not available in AHIMS. Unfortunately, this document does not discuss the archaeological background to the proposed project, nor present any rationale for why the work is being undertaken (although this may have been covered in the ACHA report). Neither the detailed methodologies for each of the phases of the proposed works, nor the reports detailing the results of the work, are currently available from AHIMS, so it is unclear if the archaeological excavations took place or not.

ERM Mitchell McCotter (1999) Sand and Gravel Extraction at Gosforth

An archaeological survey was undertaken for a proposed sand and gravel quarry c.2km north of the Project Area. The area comprised 14ha located in a meander of the Hunter River, on a point bar over an area of land used for grazing at the time. It was considered that this area would have contained a variety of resources sought by Aboriginal peoples, including permanent water, extensive flats that would have attracted game and a source of fish, shellfish and water plant. The survey identified four artefacts in an exposure along an access track, comprising a grey silcrete core (broken), a grey silcrete flake and two mudstone flakes (ERM Mitchell McCotter Pty Ltd 1999, 67). It was recommended that modifications be made to protect potential Aboriginal sites, and that the quarry site be surveyed again, after extraction and prior to remedial earthworks (ERM Mitchell McCotter Pty Ltd 1999, 68).

Dallas and Kerr (1997) and Dallas (2003) Archaeological Survey/Subsurface Investigation, Rutherford

An archaeological survey and geotechnical excavations were undertaken for a proposed subdivision in Rutherford, approximately 2.4km to the south of the Project Area. Three stone artefact sites and a PAD were identified, comprising four stone artefacts located beneath a ridge crest, on the western edge of dam near a creek; one stone artefact identified at the base of a low spur near the beginning of a creek; one stone artefact identified from a surface scrape near geotechnical test pit 10; and a PAD identified on a point bar adjacent to an intermittent creek, where low-density archaeological material was predicted. All sites were considered to be of low archaeological significance, but test excavation of the PAD was recommended to determine whether archaeological deposits were present (Mary Dallas and Kerr 1997).

An updated archaeological assessment was conducted in 2003, in which the study area was inspected to assess the condition of the previously identified sites and PAD, and to assess whether there were any other potentially sensitive landforms (watercourses, hill crests and slopes). During the survey, an additional two isolated artefacts were identified. All sites were considered to be of low archaeological significance, but test excavation of the PAD would be required if the sites were to be impacted (Mary Dallas 2003).

Hamm (2008) Aboriginal Cultural Heritage Assessment of Lot71 DP714785, Anambah Road

A heritage assessment was undertaken for c.71ha of land proposed to be rezoned, located 2.65km to the south-east of the Project Area. The area was adjacent to the west bank of the Hunter River and set across what is known locally as Anambah Lagoon, a freshwater wetlands complex dominated by a series of gently undulating low hills and elongated sloping ridges, with drainage channels leading into the Hunter River. The area had been subject to prior survey (M Dallas 2003), which had identified four artefact sites and four PADs (Hamm 2008, 9). It was deemed that these would be the most likely site types to be encountered by the survey work undertaken as part of this report, but that scarred trees may also be present (Hamm 2008, 25).

The survey identified two additional artefact sites: a yellow tuff flake on the edge of a channel; and a broken yellow silcrete flake and broken red silcrete flake on a slope on the edge of the river terrace. An additional five PADs were also identified within the lot. It was recommended that a buffer zone be established around parts of the lagoon to protect known and suspected Aboriginal sites from harm.

Ruig (1996, 1997) Penn Park, Lochinvar

An archaeological survey was undertaken for a proposed rural residential subdivision, north of the New England Highway and west of River Road, approximately 3km to the south of the Project Area. Although the survey did not identify any Aboriginal sites, it was recommended that subsurface investigations be conducted, particularly around a creek line in the south-eastern portion of the study area (Ruig 1996). Test excavation was subsequently undertaken in this area, consisting of 44 test pits measuring 25cm x 100cm, spaced 5m apart (Ruig 1997, 8). Only two artefacts were found; a mudstone flake and a mudstone flaked piece, located 30m apart on the north bank (within 10m) of the creek. They were considered to represent a low-density archaeological deposit (of only 0.18 artefacts/m^2 excavated) and were assessed to be of low archaeological significance.

Mary Dallas Consulting Archaeologists (2010) Aboriginal Heritage Assessment and Management Plan: Portions of the Lochinvar Urban Release Area

MDCA undertook an Aboriginal Heritage Assessment of portions of the Lochinvar Urban Release Area comprising five study areas (A-E) totalling 238ha. The northernmost of the study areas (A and B) are located just over 3km to the south of the Project Area.

The study noted that the vast majority of Aboriginal archaeology within the Hunter Valley area dates to less than 10,000 years ago, that most of the sites recorded in the AHIMS register (at this time) for the study area were open artefact scatter sites (85% of the known sites) and that, in the main, these were located along creek lines or on elevated flat ground above watercourses. Within study area B, AHIMS 37-6-1607 (an open campsite containing two artefacts) was noted. However, seven other sites had previously been recorded (Insite Heritage 2010), consisting of:

- Loci 1 (L1) – located on gentle slope (basal). An isolated artefact (silcrete flake) in an exposure of 30m x 30m.
- Loci 2 (L2) – located on a gentle slope (basal). Three artefacts (mudstone and silcrete flakes and a flaked piece) were identified along a drainage trench that was cut down slope exposing an area of 50m x 2m to a depth of 50cm.
- Loci 3 (L3) – located on a gentle slope (basal) above a confluence of minor watercourses. Seven artefacts located in an area of 40m x 15m consisting of four mudstone flakes and three mudstone flaked pieces.
- Loci 4 (L4) – located on a gentle slope (mid). Four artefacts located in an exposure around a dam (50m x 5m), comprising three mudstone flakes and one mudstone core.
- Three areas considered highly likely to contain subsurface archaeological material (PADs) were identified on the basal slopes adjacent to Lochinvar Creek, in the vicinity of tributary confluences and in association with the four loci of artefacts located in the northern portion of study area B.

MDCA concluded that unknown Aboriginal sites within the study area were likely to consist of low density, surface or subsurface artefact sites, indicative of small/temporary camp sites, which would be concentrated along creek lines (typically within 100m), particularly along the section of Lochinvar Creek near St Helena (1.6km to the south west of the Project Area) and along Stony Creek near West Rutherford (Mary Dallas Consulting Archaeologists 2010, 54–60).

A survey of the study area identified a variety of archaeological features. Most pertinently with reference to the Project Area, study area A contained a single PAD (PAD2), c.70m (east-west) x 130m (north-south) in size and located close to the western bank of Lochinvar Creek. Within study area B, the locations of Loci L1-L4 were confirmed and were noted to be located near creeks; however, MDCA disagreed with Insite Heritage's interpretation of the presence of PADs in this area (Mary Dallas Consulting Archaeologists 2010, 44–48). No other Aboriginal artefacts, sites or deposits were noted within this study area. The other study areas contained a variety of PADs and open artefact sites, indicative of camp sites.

It was recommended that an AHIP be obtained for PAD2 (and a number of other PADs) and that the surface artefacts in study area B be collected under an AHIP (Mary Dallas Consulting Archaeologists 2010, 84–85).

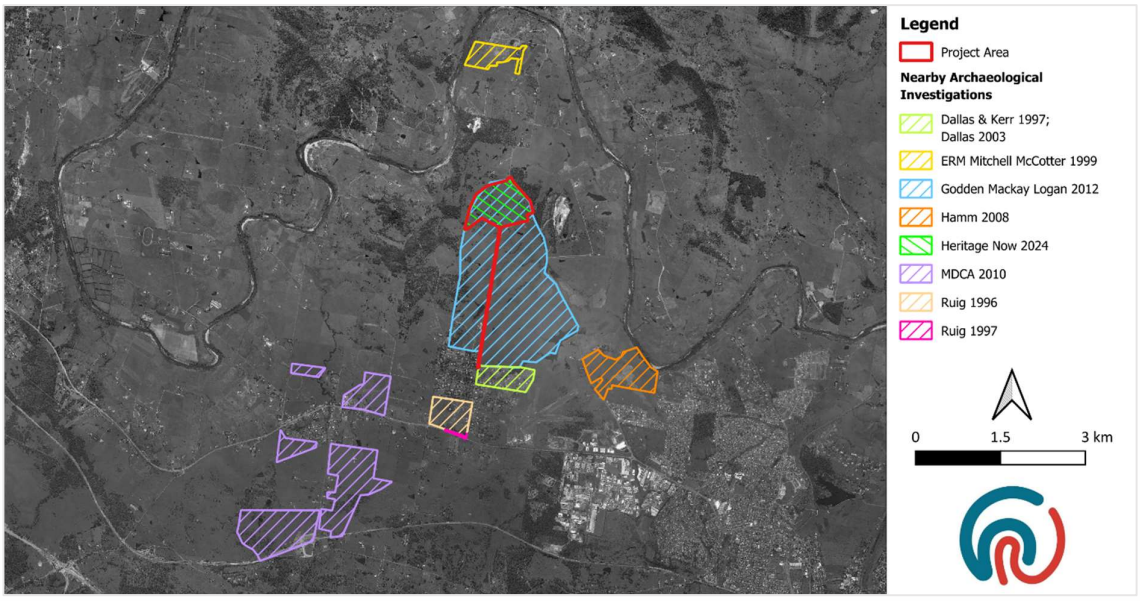

Figure 10. Nearby archaeological investigations discussed in Section 4. (Source: SCP aerial with Heritage Now and AHIMS additions)

5.3 Synthesis

A search of the AHIMS database indicates that there are fifteen previously recorded PAD and artefact sites within 300m of the Project Area (Figure 9). In addition, four new sites – discovered via survey undertaken as part of a preceding due diligence assessment – were located within the bounds of the proposed residential development section of the Project Area. These consisted of three artefact scatter sites and a PAD (see section 0).

The Project Area would likely once have been heavily forested. It lies over a broad valley and thus contains two ridge lines, and is bisected by a non-perennial water source, which would have flowed into the Hunter River to the east (see section 4.1). The resources provided by the forest combined with a nearby (if non-permanent) source of fresh water would likely have been attractive to Aboriginal people.

Ridge lines were often used as pathways and can be associated with low density, low artefact count, temporary / transitory campsites. Flatter areas and gentle slopes associated with water were often associated with more permanent camp sites. Sites tend to increase in density and complexity in relation to the permanence of the water source, and decrease with distance from it. Stone outcrops along upper slopes and ridge lines were often used as shelters and / or art sites, whilst exposures near water sources were often used as tool grinding sites.

Based on this heritage and environmental context, artefact scatters are considered to be the most likely site type to be encountered across the Project Area, some of which may be associated with PADs. These may occur along the ridge lines running through the Project Area and along more gently sloping areas of the valley sides. However, it is likely that larger, permanent camp sites would have favoured locations further to the east, west or north, being closer to the resources of the Hunter River. Any sandstone outcrops and exposures within the Project Area may have been utilised by Aboriginal people for shelter, art or tool grinding.

5.4 Artefact Density Predictive Modelling

Predictive models are based on upon the assumption that environmental factors provide distinctive sets of constraints that influence land use patterns (Kuskie 2015, p. 8). In the Hunter Valley, for instance, J.W. Fawcett in 1898 said of the Wonnarua, that when choosing the sites for their camps, access to fresh water was one essential and a food resource of secondary importance, whilst a vantage point in case of attack by an enemy was third (Brayshaw 1987, 42).

Artefact density is linked to different types of activities falling on a scale from long-term occupation to short-term transitory movement. Attenbrow (2006) built on earlier archaeological models to develop a model of occupation within the Australian context, identifying base camps, activity camps and transit camps. Base camps are similar to residential bases in that they were occupied for a longer period of time (several days or longer). Activity camps, conversely, are characterised by short periods of use, and are usually functionally specific. Activities that may take place at activity camps in Australia include hunting, artefact preparation, gathering of raw materials, and ceremonial activities (Attenbrow 2006, 220–21). 'Transit camp' refers to places that were used to camp for short periods, usually overnight, often when travelling between base camps or resource areas. Archaeologically, base camps are characterised by a larger archaeological context (in square metres), higher concentrations of stone artefacts, and a more diverse assemblage than transit and activity locations. Stone artefacts in these assemblages may show signs of tool manufacture and maintenance, skin working and food preparation (Attenbrow 2006, 221).

A clear trend has been identified in the Hunter Region in which higher artefact densities occur closer to wetlands and source of fresh water, indicating that these locations were a major focus of activity in the area (Kuskie 1994). Specifically, areas within 300m of wetlands and fresh water are considered to have been suitable sites for camping and focused occupation (i.e., repeated visits, visits of longer duration), whereas areas further than 300m from wetlands and / or water sources were outside the primary or secondary resource zones, and would only have had low to very-low intensity use for hunting / gathering during the course of the normal daily round, or for transitory movement (Kuskie 2015).

By combining Attenbrow's (2006) Australia-wide predictive model, with Kuskie's Hunter Valley regional model (Kuskie and Kamminga 2000; Kuskie 2015), archaeological sites in the Hunter Valley can be usefully interpreted as base camps (areas of high artefact density, usually within 300m of wetlands and fresh water and often re-occupied and re-visited), low-intensity use (gathering of resources and short stays), and transitory use (passing through). Artefact density and characteristics are the key determinant in the categorisation of type of occupation. Both studies also noted that open camp site locations tend to prefer flat or gently sloping topographies, tending to shy away from steeply sloping areas.

5.5 Summary of local and regional character of Aboriginal land use and its material traces

The Project Areas lies across an area which would once likely have been heavily forested, overlying the Lochinvar Formation of the Dalwood Group (basalt, siltstone, and sandstone). The proposed residential plot of the Project Area lies over a broad valley and contains two north-west to south-east ridge lines, and is bisected by two non-perennial water sources, which ultimately flow into the Hunter River to the east. The resources provided by the forest combined with the nearby (if non-permanent) source of fresh water would likely have been attractive to Aboriginal people.

Within the wider region around the Project Area artefact sites are by far the most common site types, typically associated with creek lines or other water sources. A quarry site (37-6-3564) is also known *c.*450m to the south-west of the proposed residential development element of the Project Area – near to a creek line and a suitable silcrete outcrop and a ceremonial / dreaming site (37-6-2777) is also known 300m to the south-west of the same section of the Project Area – also located less than 50m from a creek line.

Sixteen previously recorded AHMS PAD and artefact sites lie within 300m of the Project Area and the survey undertaken as part of the due diligence assessment (Heritage Now 2024) confirmed the presence of two surface artefact scatters sites (AFT01 and AFT02) within the proposed residential development element of the Project Area and a further scatter (AFT03) *c.*50m to the west of this area, all set on flat or gently sloping locations near to the creek line which runs through the middle of the Project Area. A total of eight artefacts were recovered from these sites, seven flakes and one core, made of either silcrete (four artefacts) or IMT (four artefacts including the core). The two creek lines running through this area were also assessed as archaeologically / culturally sensitive - as areas of Potential Archaeological Deposit (Anambah Road PAD).

5.6 Archaeological Predictions for the Project Area

The environmental and cultural setting of the Project Area (including the sites identified in the previous survey) appears to confirm the predictive models of both Attenbrow and Kuskie, in that the Aboriginal evidence in and around the Project Area is dominated by artefact scatters indicative of campsites of varying size, duration and intensity - focused on areas of gentle topography around water sources. Where specific resources are present (such as stone outcrops), specific site types appear to exploit these resources.

Accordingly, it is predicted that the Project Area is most likely to contain artefact scatter sites. They are predicted to be a lower density, reflecting temporary camps / transitory use of the environment, with larger sites more likely to occur in proximity to the Hunter River or other perennial / more significant water sources. The prior survey did not identify the presence of suitable outcrops which could be used as shelter sites, art sites, tool grinding sites or exploited for raw material from which to produce stone tools (quarried) within the proposed residential development of the Project Area, but given the underlying geology and topography there is the potential for these to be present within the other sections of the Project Area.

Table 6 describes the assessed likelihood of Aboriginal archaeological site features being present in the Project Area, on a scale of very low – very high likelihood.

Table 6. Likelihood of different sites features being preserved within the Project Area.

Site Features	Likelihood	Comment / Justification
Aboriginal Ceremony and Dreaming	Medium	Ceremonial site known in proximity to Project Area but no evidence / indication for such sites being present within the Project Area.
Aboriginal Resource and Gathering	Low	Rare site type for region.
Art	Low	Though there is potential for sandstone in the area, this is a rare site type and there are no previously recorded art sites in the vicinity.

Artefact	Very high	Most common site type for region, including sites known to be present within the Project Area. Typically located near to water sources.
Burial	Very Low	Rare site type for region, no historical references for burials in this area.
Ceremonial Ring	Very Low	Rare site type with low chance of preservation based on past land-use and clearing.
Conflict	Very Low	No specific historical or ethnohistorical documentation of conflict in the Project Area.
Earth Mound	Very Low	Rare site type with low chance of preservation based on past land-use and clearing.
Fish Trap	Very Low	Usually located within higher order streams, or coastal environments, which are not present in / very near to Project Area.
Grinding Groove	Low	Potential for sandstone in the local geology, however the AHIMS search did not any reveal such sites in the local area and no suitable outcrops noted in one part of the Project Area during prior survey.
Habitation Structure	Low	Potential for sandstone in the local geology, however the AHIMS search did not any reveal such sites in the local area and no suitable outcrops noted in one part of the Project Area during prior survey.
Hearth	Low	Rare site type and more likely to occur at large base camps that were more frequented by Aboriginal people. No evidence for such in Project Area.
Modified Tree	Low	Rare site type, only one recorded in the AHIMS search of local area, and no evidence for mature (> 150 year old) trees in Project Area.
Non-Human Bone and Organic Material	Low	Rare site type with low preservation rates.
Ochre Quarry	Very Low	Rare site type, ochre not known to occur in the local geology.
Potential Archaeological Deposit (PAD)	Very High	One of the most common site types for region, including sites known to be present within the Project Area.
Shell	Low	More likely to occur near higher order streams / coast, and none previously recorded in the area.
Stone Arrangement	Very Low	Rare site type with low chance of preservation based on past land-use and clearing.
Stone Quarry	Medium	Quarry site known in proximity to Project Area. Survey did not find evidence of this extending into the Project Area but is possible that evidence may be present.
Waterhole	Very Low	Potential for sandstone in the local geology, however the AHIMS search indicates that they are a rare site type for the local area, with none in the search results.

6 Archaeological Survey

The proposed residential development portion of the Project Area was subject to pedestrian survey by Crystal Phillips of Heritage Now and Les Draper of Mindaribba Local Aboriginal Land Council on 8 December 2023.

The proposed access road was surveyed by Crystal Phillips and Tiffany Jones of Heritage Now and Les Draper of Mindaribba Local Aboriginal Land Council on 1 July 2024.

The aim of both surveys was to identify material evidence of Aboriginal occupation on the surface as well as provide an assessment of archaeological potential – the non-visible material traces or evidence of Aboriginal land use which have a likelihood of being present under the ground surface (DECCW 2010b, 12).

6.1 Survey Results

The Project Area was surveyed as three survey units: Undulating Hills (SU1 and SU2), and flood plain (SU5).

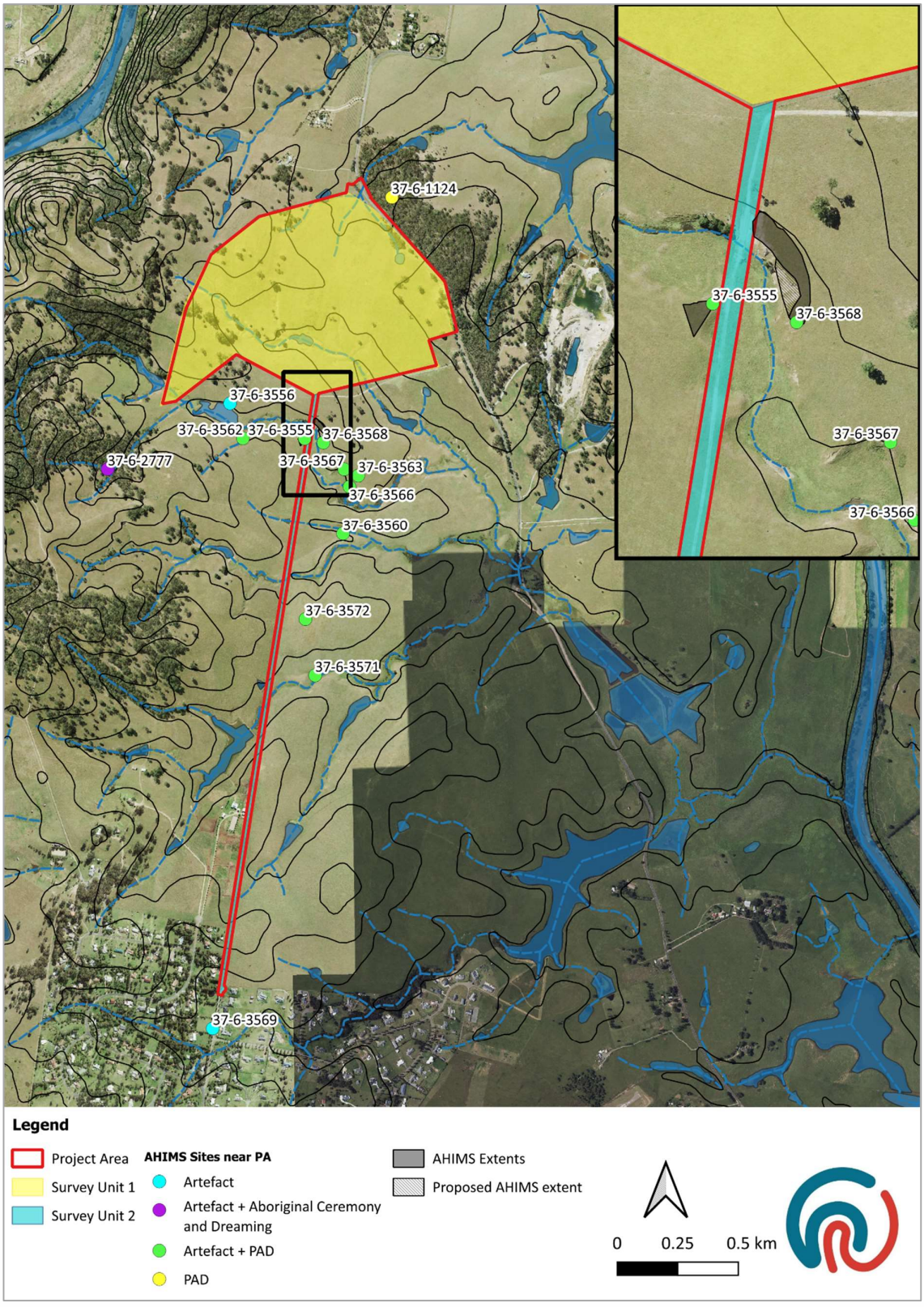

Figure 11. Illustration of Survey Units. (Source: SCP aerial with Heritage Now and AHIMS additions)

Table 7. Survey coverage.

Survey Unit	Landform	Survey Unit Area (m^2)	Visibility %	Exposure %	Effective Coverage Area (m2)	Sample Fraction (%)	Sites Identified
1	Undulating Hills	673601	20	10	13472.02	2	3
2	Undulating Hills	50784	15	5	380.88	0.75	1

Survey Unit 1 (SU1) Undulating Hills

Survey Unit 1 includes the residential development area, comprising a series of valleys with sloped land either side of the valley (Plate 1), and ridge lines near the western boundary of the Project Area and the centre of the Project Area (Plate 2, Plate 3). There was thick grass cover across the majority of the Project Area, with areas of exposure limited to erosion on slopes adjacent to the drainage and creek lines (Plate 4). As waterways are generally considered to have archaeological sensitivity, the survey targeted these areas of exposure.

The main creek line runs approximately north-west to south-east across the Project Area. Another drainage line runs north-south, meeting the creek line near the centre of the Project Area. During the survey, surface artefacts were identified in three locations (near the fence line on the southern boundary, where the creek meets another drainage line near the centre of the Project Area, and at the western boundary) in areas of exposure adjacent to the creek (Figure 12). Further details are provided below.

There was good visibility along the edge of a dam in the north-east of the Project Area (Plate 5). However, no artefacts were observed in this area. Outside of the dam, visibility in this area was low.

Some sandstone outcrops were noted along the north-south drainage line (Plate 6), and on the ridge line near the centre of the Project Area (Plate *7*). However, there was no evidence of art, grinding grooves or stone arrangements.

Three surface artefact sites were identified during the survey, adjacent to the creek line running through the middle of this part of the Project Area (Plate 8 - Plate 16). The entire creek line, and the second order creek in the south-west corner of this part of the Project Area were assessed as being archaeologically sensitive, with potential for containing subsurface archaeological material

Survey Unit 2 (SU2) Undulating Hills

This survey unit encompasses almost the entirety of the proposed access road section of the Project Area and comprises undulating hills (Plate 17), interspersed with drainage channels (Plate 19). No sandstone outcrops were identified near the drainage channels. Ground surface visibility was generally poor due to thick grass cover; however, the ground surface was visible in areas where the grass cover was thinner. The greatest area of visibility was along an unsealed vehicle track that extends approximately through the first quarter of the northern section of the proposed access road (Plate 20). This track contained mixed stone inclusions. It is likely this material was introduced to provide traction to vehicles using the track (Plate 21). Exposures were also seen along fence lines (Plate 22), erosional gullies (Plate 23), and where ground was trampled by livestock (Plate 24).

Within these exposures, B horizon clay was visible in the northern half of the survey unit and A horizon soils within the southern half.

The land within this survey unit, is currently being used as paddocks for livestock animals, and there is visible ground disturbance from animal trampling and fence lines (Plate 26). There was also ground disturbance from the installation of a water culvert for a third order creek, which passes underneath the vehicle track (Plate 27).

The location of the previous recorded PAD (AHIMS 37-6-3568) which is recorded as extending into the Project Area, was reidentified (Plate 28). Visibility was generally poor due to thick vegetation coverage and was limited to sheet wash erosion (Plate 29). Within these exposures, A Horizon Rothbury soils were visible, as were stone inclusions local to the area (Plate 30). No surface artefacts associated with this site were identified within the proposed New Access Route.

The site card for 37-6-3658 details that test excavations have been conducted (which yielded 171 artefacts); however, there was no visible evidence of the test pits during survey.

The PAD extent associated with AHIMS 37-6-3555 does not fall within the Project Area, however the elevated terrace it is recorded on could be viewed from the New Access Route. No Aboriginal objects associated with this site were identified during survey.

6.1.1 Aboriginal Sites Identified and/or previously recorded

The archaeological surveys of the Project Area identified three new artefact scatters and an associated PAD in addition to previously recorded sites, previously recorded sites were also ground-truthed (inspected).

6.1.1.1 Survey Unit 1 (The Proposed Residential Area)

Anambah Road AFT-01

Artefacts were identified within exposures on both the north-east and south-west side of the creek line, near the south-east boundary of the Project Area (Figure 12, Plate 8-Plate 11). In addition, several outcrops of silcrete were observed; however, exposure in this area was too limited to determine whether there was any evidence of these being quarried. There is a quarry site recorded on AHIMS c.470m south-east of this area (AHIMS 37-6-3564), where large cobbles of silcrete, a large number of flakes removed for further reduction, and flaked primary reduction flakes were identified in an exposure on the margin of the creek, with smaller tools noticeably absent. It is possible that the silcrete outcrops here are part of the same geological formation as at AHIMS 37-6-3564.

It is considered unlikely that the artefacts are in situ; rather, their location is likely the result of movement from run-off down the slopes towards the creek. Immediately north-west of the artefacts, the slope flattens and broadens. This area was identified as archaeologically sensitive by Les Draper, who suggested that the flat area next to the creek would have been a good place to camp.

Anambah Road AFT-02

This site was also located along the creek line (Figure 12, Plate 12). The flat, elevated area adjacent to water was also considered archaeologically sensitive, potentially of greater sensitivity than Anambah Road AFT-01 due to a gentler slope which is more suitable for occupation. Three artefacts were identified: two IMT flakes and one silcrete flake (Plate 13).

Anambah Road AFT-03

This site was identified adjacent to the creek line, immediately west of the Project Area (Figure 12, Plate 14). A single artefact was identified: a large IMT flake with evidence of retouch along the right dorsal margin (Plate 15). This artefact is also considered unlikely to be in situ, as it was found on an eroding slope next to the creek. The flatter area above the slope was identified as archaeologically sensitive.

Anambah Road PAD

Based on the results of the survey, and previous surveys in Anambah which have identified multiple artefact sites adjacent to creeks, the entire creek line within the middle of the Project Area, and the second order creek in the south-west corner of the Project Area, are likely to be sensitive (Figure 12).

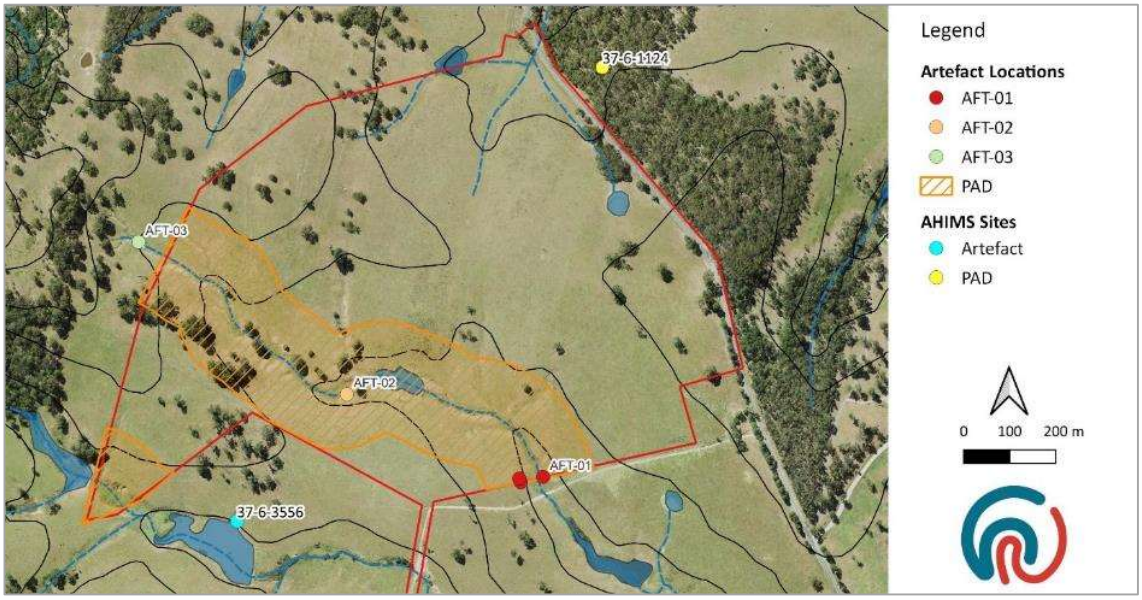

Figure 12. Location of artefact sites and potential archaeological deposits within SU1. (Source: SCP topography and SCP aerial with Heritage Now and AHIMS additions)

AHIMS 37-6-1124 (PAD1 Rutherford)

This PAD site is registered on the opposite side of Anambah Road to the Project Area. Given the proximity of the registered site (c.80m from the Project Area) and the lack of information available from AHIMS, the survey sought to determine if the area of PAD extends into the Project Area. Les Draper and Heritage Now agreed that the site was unlikely to extend into the Project Area due to changes in landform between the two sides of Anambah Road, and previous land use including construction of the road and dams (Plate 16). No surface artefacts were found in the vicinity of this previously recorded site.

6.1.1.2 Survey Unit 2 (New Access Route)

AHIMS 37-6-3568 (Anambah SAC 11 and PAD 27)

The location of the PAD was confirmed during survey and it was identified it partially extends into the Project Area, encompassing the terrace landform in that area.

AHIMS 37-6-3555 (Anambah IF 8 and PAD 23)

The location of this previously recorded PAD was confirmed. No additional artefacts were identified in the erosional exposure on the western boundary of the Project Area, and the site does not extend into the proposed New Access Route.

Table 8. Artefact details

Site	Raw Material	Colour	Type	Length (mm)	Width (mm)	Thickness (mm)	Location*		Notes
							Easting	Northing	
Anambah AFT-01	Silcrete	Red	Flake	28	24	7	358285	6384230	Located south-west of creek
	Silcrete	Pink/grey	Flake	10	9	1	358244,	6384219	Located north-east of creek
	Silcrete	Grey	Flake	20	15	6	358244	6384219	Located north-east of creek
	IMT	Yellow	Core	30	30	30	358241	6384226	Located north-east of creek
Anambah AFT-02	IMT	Red	Flake	28	34	8	351918	6384377	
	IMT	Red	Distal Flake	23	10	4	351918	6384377	
	Silcrete	Pink	Flake	33	18	6	351918	6384377	
Anambah AFT-03	IMT	Yellow	Flake	60	45	15	357526	6384654	Retouched, possible tool, negative flake scars on dorsal
*Coordinates given in GDA 94 Zone 56									

6.1.2 Aboriginal Consultation

Les Draper from Mindaribba LALC agreed that the elevated area along creek line in SU1 was an area of PAD (Anambah Road PAD), in particular around AFT-02. He also agreed that outside of the previously recorded AHIMS sites, the route of the proposed New Access Road (SU2), was of low archaeological potential, noting the disturbance and steepness of the terrain.

6.1.3 Summary

Areas of archaeological sensitivity were identified in SU1 (location of the proposed residential development), and SU2 (associated with the location of the proposed new access route). In SU1, three new surface artefact sites were identified during the survey, adjacent to the creek line running through the middle of the proposed residential development. The entire creek line, and the second order creek in the south-west corner of the Project Area (residential development), are assessed as being archaeologically sensitive, with potential for subsurface archaeological material. AHIMS 37-6-1124 (a PAD) is considered unlikely to extend into the Project Area, based on changes in landform and past land-use.

The two previously recorded PADs 37-6-3555 and 37-6-3568 are considered to still be archaeologically sensitive, however only 37-6-3568 extends into the Project Area.

7 Significance Assessment and Aboriginal Cultural Values

Cultural heritage refers to the tangible and intangible values that we choose to pass on to future generations. In order to identify the values worth passing on, a significance assessment needs to be undertaken. The significance assessment needs to: identify the range of values present across the Project Area and assess their importance.

7.1 Methodology

Identifying the Aboriginal cultural values is part of the significance assessment process and is guided by the Burra Charter and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW.*

There are four recognised classes of values under the Burra Charter (Australia ICOMOS 2013):

- Social,
- Historical,
- Aesthetic, and
- Scientific.

Within this significance assessment, Aboriginal cultural values are captured within social, historical and aesthetic values. The archaeological values are contained within scientific values.

Social value refers to the spiritual, traditional, historical or contemporary associations that Aboriginal people have for place. Historical value refers to the associations of a place with a historically important person, event, phase or activity in the Aboriginal community. Aesthetic value refers to the sensory, scenic, architectural and creative aspects of the place.

Archaeological values refer to the importance of the landscape, area, place or object because of its rarity, representativeness and the extent to which it may inform our understanding of Aboriginal culture.

7.1.1 Aboriginal Cultural Values Methodology

Aboriginal cultural values are identified through the Aboriginal consultation process. Formal opportunities for the Aboriginal community to contribute to identifying cultural values are provided in the ACHA methodology review period, during fieldwork and during the draft report review period. In addition, RAPs are invited to provide feedback at any time through the consultation process, by phone or in writing (email or letter).

7.1.2 Archaeological (Scientific) Values Methodology

Archaeological (scientific) values relate to whether the Project Area can contribute to our understanding of Aboriginal culture. Under the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, archaeological values are to be considered within the below sub-categories:

- Representativeness,
- Rarity,
- Research potential, and
- Educational potential.

Significance is expressed as grades: low, moderate or high.

7.2 Aboriginal Cultural Values Assessment

Les Draper of Mindaribba LALC communicated during the archaeological surveys of the Project Area that all of the artefact sites were culturally significant, showing evidence of Aboriginal people living along the creek terraces.

The areas of moderate and high cultural value identified in the assessment are highlighted in Figure 13.

7.3 Historical and Aesthetic Values Assessment

The Project Area is not known to be associated with a historically important person, event, phase or activity in the Aboriginal community, and is therefore of low historical value.

The Project Area is of low aesthetic value in terms of sensory, scenic, architectural or creative aspects.

7.4 Archaeological Values Assessment

This section assesses the archaeological values of the Project Area according to the criteria in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*.

The artefact sites and PADs identified within the Project Area are typical of the archaeological record in the Hunter and are therefore not rare. However, these site types have research and educational potential to expand our knowledge of Aboriginal occupation in the area.

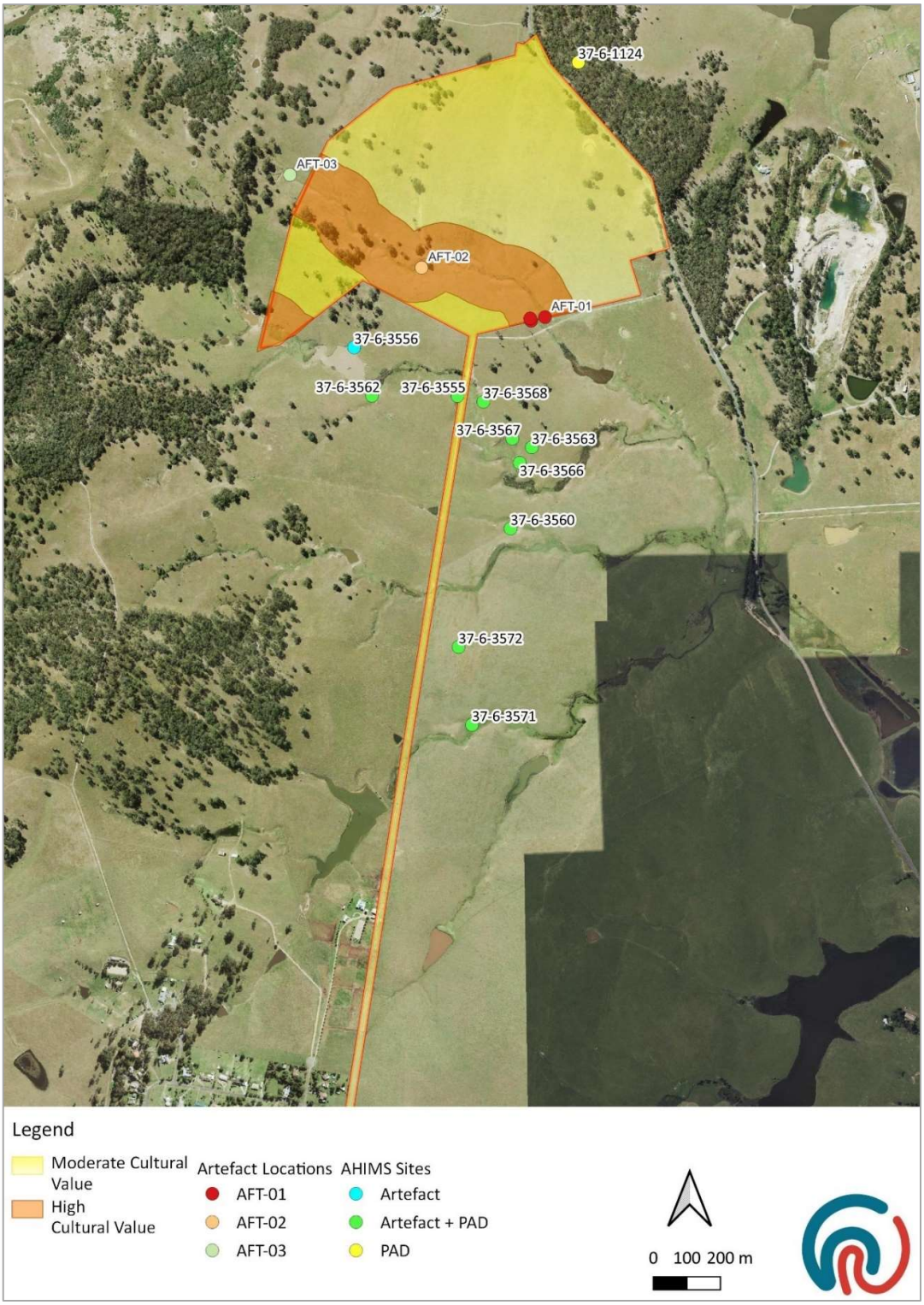

Figure 13. Illustration of Aboriginal cultural values identified within the Project Area. (Source SCP aerial with Heritage Now additions).

7.4.1 Proposed Residential Development Area - Anambah AFT-01, AFT-02, AFT-03, Anambah Road PAD and AHIMS 37-6-1124

Overall, the newly recorded and previously recorded sites are of moderate significance in terms of scientific (archaeological) values. This is because:

- The sites have moderate representative value within a regional context, as they are typical of the region and have assisted with refining site modelling around the Hunter. There is room for comparative study between the lower order streams within the residential development area versus the third order stream of the proposed access road.
- The raw material and artefact types at the sites are found elsewhere in the Hunter and are not rare.
- The areas of PAD associated with these artefacts have moderate research value.
- The sites have educational value, as providing examples of Aboriginal objects and there is opportunity for interpretation in the green spaces in the masterplan.

7.4.2 Proposed New Access Route - AHIMS 37-6-3572, 37-6-3568, 37-6-3555

The site card of AHIMS 37-6-3568 indicates that test excavation results uncovered a sub-surface scatter of moderate density, typical for the Hunter region. It is unclear how much of the sub-surface archaeology remains intact, however the site card states that it retains high archaeological potential.

The site cards for AHIMS 37-6-3555 and AHIMS 37-6-3572 indicate that the sites are assessed as being of low to moderate archaeological significance. Information available on the investigations that have taken place thus far indicate that the sites contain low artefact densities. However, they retain some archaeological potential having not been fully salvaged.

7.5 Summary: Statement of Significance

Overall, the newly recorded Aboriginal sites within the proposed residential development area of the Project Area are assessed as having moderate archaeological significance, as is the previously known PAD (37-6-1124). Around the route of the proposed new access route, the previously recorded PAD site AHIMS 37-6-3568 retains high archaeological potential and is of moderate archaeological significance. PAD sites AHIMS 37-6-3555 and 37-6-3572 are of low to moderate archaeological significance. All of the identified sites and PADs are of high cultural significance, and the Project Area is of low historical and aesthetic significance.

8 Impact Assessment and Mitigation

This section assesses the potential impact of the proposed works in relation to Aboriginal heritage values in the Project Area and provides options for mitigating loss of Aboriginal cultural values.

8.1 Proposed Works

The proposal is for a staged subdivision of approximately 900 residential allotments and open space areas (Figure 14). Included in this development is a new access road to connect the new development to River Road, and ultimately the New England Highway. This access road is likely to be a single lane with additional room for a shoulder on either side. The proposal will also require additional improvements to the Anambah Road / A43 interchange for the additional road traffic associated with the subdivision.

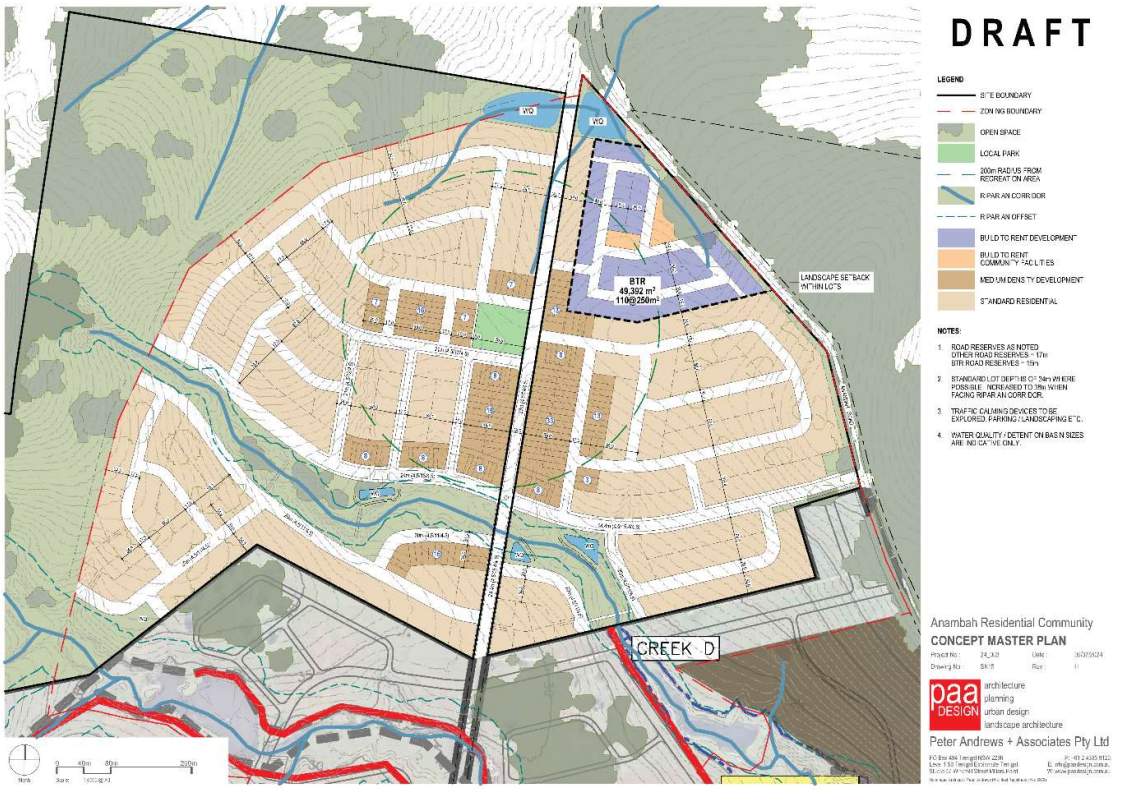

Figure 14. Indicative plan of the residential development. (Source: PAA Design)

8.2 Impact Assessment

This section addresses the potential impacts to Aboriginal cultural values as result of the proposed works.

Of the Aboriginal sites observed as part of the survey, a number extend into / are within the Project Area and so have the potential to be subject to direct impacts, specifically:

- New Site Anambah Road AFT-01 (37-6-4425);

- New Site Anambah Road AFT-02 (37-6-4428);
- New Site Anambah Road AFT 03 (37-6-4427);
- New Site Anambah PAD;
- AHIMS 37-6-3568 (PAD).

Whilst others sit within the vicinity of the Project Area but do not extend into and so will not be subject to direct impact, specifically:

- AHIMS 37-6-1124 (PAD); and
- AHIMS 37-6-3555 (PAD).

8.2.1 Anambah AFT-01, AFT-02, AFT-03 and PAD

The surface artefacts identified are within the riparian zone of the masterplan. Works in the riparian zone include revegetation and stabilisation works that are at risk of impacting the sites. In addition, the residential development may directly impact some areas of the wider PAD associated with these artefacts and the PAD would need to be archaeologically tested, if it is to be impacted.

8.2.2 AHIMS 37-6-1124 (PAD1 Rutherford)

AHIMS 37-6-1124 is a PAD site, that is approximately 80m north of the residential development section of the proposed Project Area. It is not thought that it extends into the Project Area and so it will not be directed impacted by the proposed residential development.

8.2.3 AHIMS 37-6-3568 (Anambah SAC 11 and PAD 27)

AHIMS 37-6-3568 is an artefact and PAD site, that extends into the proposed impact zone. Part of the PAD extent will be directly impacted by the proposed River Road access route, which will require vegetation clearance, widening and sealing.

8.2.4 AHIMS 37-6-3555 (Anambah IF 8 and PAD 23)

AHIMS 37-6-3555 is an artefact and PAD site, that is approximately 6m west of the proposed impact zone. It will not be directed impacted by the proposed River Road access route.

8.3 Mitigation

The below strategies have been developed to mitigate harm and/or loss of Aboriginal cultural values as a result of the proposed works.

8.3.1 Mitigation of Impacts to sites in the Residential Development Anambah AFT-01, AFT-02, AFT-03 and PAD

Before the commencement of ground disturbing works associated with later development, archaeological testing will be required within the area of PAD to be impacted. This would be to understand the research and educational potential of these sites and to expand our knowledge of Aboriginal occupation in the area; in particular, the use of lower order streams, and potentially localised sources of silcrete and stages of tool manufacture, if the silcrete outcrops were used for quarrying.

Archaeological testing under the *Code of Practice* is to be undertaken within the footprint of the element of the PAD which will be disturbed by the works, prior to ground disturbing works taking place identify if salvage excavation is warranted.

The surface artefacts are within the riparian zone and will not be directly impacted by development. However, there is risk of inadvertent impacts due to their proximity to the development. It is recommended that prior to commencement of works, hazard fencing be placed around each site with a 5m buffer zone.

8.3.2 Mitigation of Impacts to sites in the River Road Access Route AHIMS 37-6-3568, AHIMS 37-6-3555,

Before ground disturbing works begin for the proposed River Road access, the PAD extents of these sites should be fenced off to avoid any impacts with a 5m buffer.

AHIMS 37-6-5555 does not extend into the mapped road corridor and will require fencing to avoid the site, if the site cannot be avoided, archaeological testing is required to identify the nature and extent of the identified PAD.

If the PAD extent of site 37-6-3568 is to be impacted, archaeological salvage of the site would be required. This would be conducted under the provision of an Aboriginal Heritage Impact Permit (AHIP).

8.3.3 General mitigation strategies

All Aboriginal sites within the residential development and access road are to be clearly marked on all relevant construction drawings, along with buffers and fencing, as relevant.

All on-site personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. This may be done through an onsite induction or other suitable format.

8.4 Consideration of Sustainable Development

Under the NSW *Protection of the Environmental Administration Act 1991* Ecologically sustainable development principles (ESD) are to be considered in the assessment of environmental impacts; and this includes impacts to heritage. The consideration of ESD principles is required under the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales 2010.* In particular, the precautionary principle and the principle of inter-generational equity are to be considered where there are proposed impacts to the environment (which includes heritage).

8.4.1 Precautionary Principle

The precautionary principle states that if there are threats of serious or irreversible damage to the environment, then a lack of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

The proposed works do not pose a threat of serious or irreversible damage to the environment, both the surface artefact sites and PADs are represented elsewhere in the local area and the mitigation measures proposed provide acceptable conservation outcomes for the Aboriginal sites.

8.4.2 Inter-generational Equity & Cumulative Harm

The principle of inter-generational equity states that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. Cumulative harm is understanding how the cumulative effects of the Proposal.

The mitigation measures proposed will ensure that the Aboriginal sites are either conserved in situ and avoided, or are salvaged and conserved ex situ and thus satisfies the principle of inter-generational equity.

8.4.3 Other matters

There is no restricted information associated with this report and no confidential information (other than RAPs who do not want their details released). Heritage Now Pty retains the copyright of this report.

9 Conclusions and Recommendations

The proposed residential development portion of the Project Area was surveyed in December 2023 by Heritage Now and Mindaribba LALC. This survey identified three artefact sites along the creek terrace of a first order drainage line which runs through the Project Area. As a result, the entire creek terrace was identified as a sensitive landform and an area of Potential Archaeological Deposit (PAD).

A subsequent survey was undertaken in July 2024 by Heritage Now and Mindaribba Local Aboriginal Land Council for the proposed River Road Access Route and the Anambah Road Interchange. There are several previously recorded sites south of the Project Area. AHIMS 37-6-3568 has surface artefacts and potential archaeological deposit (PAD), the PAD partially overlaps the road corridor. AHIMS 37-6-3555 PAD and AHIMS 37-6-3572 are outside the road corridor. No new sites were identified in the Road River Access Route.

Heritage Now provides the following recommendations:

AHIMS Site	Recommendations
AHIMS 37-6-4425 Anambah AFT-01 **AHIMS 37-6-4428** Anambah AFT-02 **AHIMS 37-6-4427** Anambah AFT-03	The surface artefacts are within the riparian zone and are at risk of impact from re-vegetation and stabilisation works to the riparian corridor. An exclusion zone is to be established around the artefact sites prior to the commencement of ground disturbing works to reduce inadvertent impacts to sites. If sites cannot be avoided than an AHIP for the collection of the surface artefacts is required and no ground disturbing works are to undertaken in these areas without further archaeological investigation, as per the below recommendation.
Anambah Road Potential Archaeological Deposit	The area of Potential Archaeological Deposit will be impacted by the residential development. Archaeological testing is required to be undertaken in the development / ground disturbance footprints to identify if salvage excavation under an Aboriginal Heritage Impact Permit is warranted.
AHIMS 37-6-3568 Anambah SAC 11 and Potential Archaeological Deposit 27	The area of Potential Archaeological Deposit partially extends into the River Road Access Route. It can likely be avoided by the roadworks, but if it cannot be avoided, then an Aboriginal Heritage Impact Permit for community collection and salvage within the Project Area is required.
AHIMS 37-6-3555 Anambah IF 8 and Potential Archaeological Deposit 23	The surface artefacts and Potential Archaeological Deposit are outside the River Road access route will not be directly impacted by development. The current fence line needs to remain in place to avoid the risk of inadvertent impacts. If the fence needs to be removed during works than an exclusion zone will need to be established.
All Sites General mitigation methods	All Aboriginal sites within the residential development and access road are to be clearly marked on all relevant construction drawings, along with buffers and fencing, as relevant. All on-site personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new

	Aboriginal, or suspected Aboriginal, heritage sites. This may be done through an onsite induction or other suitable format.

10 References

Attenbrow, Val. 2006. *What's Changing: Population Size or Land-Use Patterns? The Archaeology of Upper Mangrove Creek, Sydney Basin*. Canberra: Australian National University Press.

Australia ICOMOS. 2013. *The Burra Charter*. Australia International Council on Monuments and Sites.

Brayshaw, Helen. 1987. *Aborigines of the Hunter Valley*. Scone, NSW: Scone and Upper Hunter Historical Society.

Caton, J M, and R J Hardwick. 2018. *Field Guide to Useful Native Plants from Temperate Australia*. Harbour Publishing House.

Clarkson, Chris, Zenobia Jacobs, Ben Marwick, Richard Fullagar, Lynley A. Wallis, Mike Smith, Richard Roberts, et al. 2017. "Human Occupation of Northern Australia by 65,000 Years Ago." *Nature* 547:306–10.

Dallas, M. 2003. "Aboriginal Archaeological Assessment Lots 70 & 71 in DP 714785 Anambah Road NSW."

Dallas, Mary. 2003. "Aboriginal Archaeological Assessment Lot 71 DP 573182, Rutherford, NSW." Aboriginal Archaeological Assessment 98729. Balmain, NSW: Report to Pulver Cooper & Blackley on behalf of Winten Property Group.

Dallas, Mary, and Roslyn Kerr. 1997. "Archaeological Survey of Proposed Subdivision of Rural Land Lot 71, DP 573183, Rutherford Hunter Vallet, NSW." Archaeological Survey Report 4119. Balmain, NSW: Report to Pulver Cooper & Blackley.

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

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

———. 2010c. "Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales." Sydney, NSW: Department of Environment, Climate Change and Water.

Dunn, Mark. 2020. *The Convict Valley: The Bloody Struggle on Australia's Early Frontier*. Crows Nest, NSW: Allen & Unwin.

ERM Mitchell McCotter Pty Ltd. 1999. "Sand and Gravel Extraction at Gosforth: Environmental Impact Statement." Environmental Impact Statement 4639. Thornton, NSW: Report to Robert Smith.

Godden Mackay Logan. 2012. "Anambah Investigation Area: Archaeological and Cultural Assessment Methodology (Draft Report)." Archaeological and Cultural Assessment Methodology. Redfern, NSW: Report to Stockland Developments.

Hamm, Giles. 2008. "Aboriginal Cultural Heritage & Archaeological Assessment for Re-Zoning Application for Land Identified as: Lot 71, DP: 714785 Anambah Road, Anambah." Aboriginal Cultural Heritage & Archaeological Assessment 101566. Katoomba, NSW: Report to L & A Wells Property.

Hawley, S.P., R.A. Glen, and C.J. Baker. 1995. "Newcastle Coal Field Regional Geology 1:100,000." Sydney, NSW: Geological Survey of New South Wales.

Heritage Now. 2024. “HN1046-Aboriginal Heritage Due Diligence Assessment Report - 559 Anambah Road, Gosforth.” Heritage Now.

Hughes, P, N Spooner, and D Questiaux. 2014. “The Central Lowlands of the Hunter Valley, NSW: Why so Few Early Sites Have Been Found in This Archaeologically-Rich Landscape.” *Australian Archaeology* 79:34–44.

Insite Heritage. 2010. “Aboriginal Archaeological Assessment: Proposed Aged Care Facility Lochinvar, NSW.” Aboriginal Archaeological Assessment 101912. Wangi Wangi, NSW: Report to De Witt Consulting.

Irish, P. 2017. *Hidden in Plain View: The Aboriginal People of Coastal Sydney*. Sydney: NewSouth Publishing.

Keith, David. 2004. “Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT.” Hurstville: Department of Environment and Conservation.

Koettig, Margrit. 1987. “Monitoring Excavations at Three Locations along the Singleton to Glennies Creek Pipeline Route, Hunter Valley, NSW. (Third Report on Archaeological Investigations along This Route).” 1179. Public Works Department, NSW.

Kovak, M, and JW Lawrie. 1991. *Soil Landscapes of the Singleton 1:250,000 Sheet*. Sydney.

Kuskie, P. 1994. “An Archaeological Assessment of a Land Rezoning Proposal at Lot 1 DP 559519, Thornton, NSW.” Archaeological Assessment 2916. Deakin, ACT: Report to Gutteridge Haskins & Davey Pty Ltd.

Kuskie, Peter. 2015. “Waterford County Eastern Sector (Part Lot 812 DP 1171131, Part Lot 7270 DP 1187087, Lot 1 DP1020710 and Lot 43 DP 1009594, Chisholm, Lower Hunter Valley, New South Wales: Aboriginal Cultural Heritage Assessment.” Aboriginal Cultural Heritage Assessment 103380. Report to Waterford County Pty Ltd.

Kuskie, Peter, and Jo Kamminga. 2000. “Salvage of Aboriginal Archaeological Sites in Relation to the F3 Freeway near Lenaghans Drive, Black Hill, New South Wales. Volume A: Report.” Roads and Traffic Authority NSW.

Mary Dallas Consulting Archaeologists. 2010. “Aboriginal Heritage Assessment and Management Plan - Portions of the Lochinvar Urban Release Area, Lochinvar, Hunter Valley, NSW.” Aboriginal Heritage Assessment and Management Plan 102067. Report to Paradigm Planning & Development Consultants on behalf of Stockland Developments.

Nash, Daphne. 2004. *Aboriginal Plant Use in South-Eastern Australia*. Australian National Botanical Gardens. https://parksaustralia.gov.au/botanic-gardens/pub/aboriginal-plantuse.pdf.

NSW Minerals Council. 2010. “NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects.” NSW Minerals Council Ltd.

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

———. 2012. “Guide to Completing the AHIMS Site Recording Form.” Sydney: Office of Environment and Heritage.

Ruig, Jill. 1996. “Archaeological Survey for Aboriginal Sites at Lochinvar, Hunter Valley, New South Wales.” Archaeological Survey Report 3730. Singleton, NSW: Report to Mr. L McLeod of “Penn Park.”

———. 1997. “Test Excavations on Penn Park, Lochinvar, NSW.” Report to Mr L McLeod.

Solling, Mark. 2014. *Town and Country: A History of the Manning Valley*. Halstead Press. https://www.gould.com.au/town-and-country-a-history-of-the-manning-valley/hls019/.

Threlkeld, L.E. 1974. *Australian Reminiscences and Papers of L.E. Threlkeld : Missionary to the Aborigines*. Edited by Neil Gunson. G. Canberra: Australian Institute of Aboriginal Studies.

Tindale, N. 1940. “Map Showing the Distribution of the Aboriginal Tribes of Australia1940.” M3 804eca/1788/1: State Library of NSW.

———. 1974. *Aboriginal Tribes of Australia. Their Terrain, Environmental Controls, Distribution, Limits and Proper Names.* Canberra: ANU Press.

Williams, Alan N., Adrian Burrow, Phil S. Toms, Oliver Brown, Michelle Richards, and Tessa Bryant. 2017. “The Cranebrook Terrace Revisited: Recent Excavations of an Early Holocene Alluvial Deposit on the Banks of the Nepean River, NSW, and Their Implications for Future Work in the Region.” *Australian Archaeology* 83 (3): 100–109.

Williams, Alan, and Sean Ulm. 2014. “AustArch: A Database of 14C and Luminescence Ages from Archaeological Sites in Australia.” *Archaeology Data Service*. https://doi.org/10.5284/1027216.

11 Plates

Plate 1. Southern boundary, looking north-west across the Project Area, showing a series of ridges and valleys. (Source: Heritage Now 2023)

Plate 2. View from the south-west section of the Project Area towards the creek line to the north, and the ridge in the centre of the Project Area in the distance. (Source: Heritage Now 2023)

Plate 3. View to the north-west across the ridge line. (Source: Heritage Now 2023)

Plate 4. Area of exposure along the creek; view to the south-west. (Source: Heritage Now 2023)

Plate 5. Dam near Anambah Road. (Source: Heritage Now 2023)

Plate 6. Sandstone outcrops along a drainage line; view to the west. (Source: Heritage Now 2023)

Plate 7. Sandstone outcrops along a ridge line; view to the south. (Source: Heritage Now 2023)

Plate 8. Location of Anambah Road AFT-01; view to the east towards the creek line and Anambah Road. (Source: Heritage Now 2023)

Plate 9. Location of Anambah Road AFT-01; view to the west towards the creek line and area of PAD. (Source: Heritage Now 2023)

Plate 10. Anambah Road AFT-01 artefact found on eastern creek bank. (Source: Heritage Now 2023)

Plate 11. Anambah Road AFT-01, IMT core found on western creek bank. (Source: Heritage Now 2023)

Plate 12. Location of Anambah Road AFT-02; view to the south. (Source: Heritage Now 2023)

Plate 13. Artefacts identified at Anambah Road AFT-02. (Source: Heritage Now 2023)

Plate 14. Location of Anambah Road AFT-03; view to the west. (Source: Heritage Now 2023)

Plate 15. Anambah Road AFT-03, dorsal view of artefact. (Source: Heritage Now 2023)

Plate 16. Anambah Road; view to the north, showing the recorded location of AHIMS 37-6-1124 on the lower slope to the right. (Source: Heritage Now 2023)

Plate 17. General view of the undulating hills in Survey unit 2, view to north. (Source: Heritage Now 2024)

Plate 18. Undulating Hills Survey Unit 2, view to south. (Source: Heritage Now 2024)

Plate 19. Example of a drainage line in Survey unit 2. (Source: Heritage Now 2024)

Plate 20. The unsealed vehicle track. (Source: Heritage Now 2024)

Plate 21. Introduced mixed stone inclusions visible in the unsealed vehicle track. (Source: Heritage Now 2024)

Plate 22. Ground exposure along a fence line, showing A horizon soils. (Source: Heritage Now 2024)

Plate 23. Erosional gully showing B horizon soils. (Source: Heritage Now 2024)

Plate 24. Ground exposure from animal trampling. (Source: Heritage Now 2024)

Plate 25. Location of 37-6-3572 view to north. (Source: Heritage Now 2024)

Plate 26. Ground disturbance from livestock trampling. (Source: Heritage Now 2024)

Plate 27. Water culvert for a third order creek, facing east. (Source: Heritage Now 2024)

Plate 28. General view from the top of survey unit 2, facing north-west. (Source: Heritage Now 2024)

Plate 29. Erosion on the western side of Survey unit 2. (Source: Heritage Now 2024)

Plate 30. A horizon soils with local stone inclusions in Survey unit 2. (Source: Heritage Now 2024)

Plate 31. Erosion exposure along fence line SU2 showing A horizon soil and local stone inclusions. (Source: Heritage Now 2024)

Appendix 1 Aboriginal Consultation

Appendix 2 AHIMS Search Results