Northern Rivers Flood Recovery—Richmond River High Campus Redevelopment

Archaeological Technical Report (ATR)

Report prepared for Department of Education, July 2025

GML HERITAGE

Acknowledgement of Country

We respect and acknowledge the Widjabul Wia-bal, their lands and waterways, their rich cultural heritage and their deep connection to Country, and we acknowledge their Elders past and present. We are committed to truth-telling and to engaging with Widjabul Wia-bal to support the protection of their culture and heritage. We strongly advocate social and cultural justice and support the Uluru Statement from the Heart.

Cultural warning

Aboriginal and Torres Strait Islander readers are advised that this report may contain images or names of First Nations people who have passed away.

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Report register

The following report register documents the development of this report, in accordance with the GML Heritage Pty Ltd (GML) Quality Management System.

Job No.	Issue No.	Notes/description	Issue date
24-0233	1	Draft Report	19 November 2024
24-0233	2	Draft Report (WWGAC Review)	27 November 2024
24-0233	3	Final Report	14 January 2025
24-0233C	4	Revised Draft Report (Change to Project Scope)	23 June 2025
24-0233C	5	Revised Draft Report	11 July 2025
24-0233C	6	Final Report	22 July 2025

Quality management

The report has been reviewed and approved for issue in accordance with the GML quality management policy and procedures.

It aligns with best-practice heritage conservation and management, *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013* and heritage and environmental legislation and guidelines relevant to the subject place.

Indigenous cultural and intellectual property

We acknowledge and respect the inherent rights and interests of the Widjabul Wia-bal in Indigenous cultural and intellectual property. We recognise that Aboriginal and Torres Strait Islander people have the right to be acknowledged and attributed for their contribution to knowledge but also respect their rights to confidentiality. We recognise our ongoing obligations to respect, protect and uphold the continuation of Widjabul Wia-bal rights in the materials contributed as part of this project.

Cover image

Photo of T403 during test archaeological excavations looking north across the study area. (Source: GML Heritage)

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Executive summary

Department of Education (DoE) engaged GML Heritage Pty Ltd (GML) to prepare an Aboriginal cultural heritage assessment report (ACHAR) for the Richmond River High Campus (RRHC) project. This report will form part of the environmental assessment for the study area prepared under Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW).

This Aboriginal archaeological technical report (ATR) is an appendix to the ACHAR. This archaeological report is a standalone technical report that provides evidence about the material traces of Aboriginal land use and integrates this evidence with other findings from the Aboriginal heritage assessment to support the conclusions and management recommendations in the ACHAR.

A search of Heritage NSW's Aboriginal Heritage Information Management System (AHIMS) identified no Aboriginal heritage sites/places within the study area. [redacted]

A field survey and archaeological test excavation program, as reported herein, [redacted]

The scientific values assessment of these sites has determined that they hold low scientific significance due to the general lack of material and secondary archaeological context, although they may hold some educational value.

The impact assessment and mitigation measures arising from this report are detailed in Section 6 of the ACHAR. All Aboriginal stone artefact sites identified within the study area will be impacted by the activity. Interpretation and community collection are recommended as management strategies.

Contents

1 Introduction

1 Introduction

1.1 Project background

This Aboriginal cultural heritage assessment report (ACHAR) has been prepared to support a Review of Environmental Factors (REF) for the rebuild of Richmond River High Campus (the activity). The REF has been prepared to support an approval for the RRHC development under Section 68 of the NSW Reconstruction Authority Act 2022 (RA Act).

The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The activity will be carried out at Dunoon Road, North Lismore, also known as 163 and 170 Alexandra Parade, North Lismore (the site).

This ATR forms an appendix to the ACHAR, which will be submitted to Heritage NSW to support an application for an Aboriginal Heritage Impact Permit (AHIP), under Section 90 of the NSW *National Parks and Wildlife Act* 1974 (NPW Act) for the RRHC project.

This report presents the results of an archaeological field survey and test excavation program that was completed to identify whether the study area contains Aboriginal sites and/or subsurface archaeological deposits. This report provides a significance assessment of the identified archaeological Aboriginal sites, places, landscapes and other values. An impact assessment and management recommendations are provided in the ACHAR to assist DoE with its future responsibilities for the management of Aboriginal cultural heritage within the study area.

1.2 The study area

The site is located at Dunoon Road, North Lismore, also known as 163 and 170 Alexandra Parade, North Lismore (Figure 1.1). The site comprises of 3 separate lots, located to the north of Alexandra Parade, with Dunoon Road running parallel to the eastern boundary of the site (Figure 1.2).

The site is legally described as:

- Lot 1 DP 539012;
- Lot 2 DP 539012; and
- Lot 1 DP 376007.

The site area is approximately 33.53 hectares. The proposed activity will be undertaken mainly within the south-eastern portion of the site.

This ACHAR also assesses portions of the Dunoon Road and Alexandra Parade road corridors.

The site is outlined in Figure 1.1 and Figure 1.2.

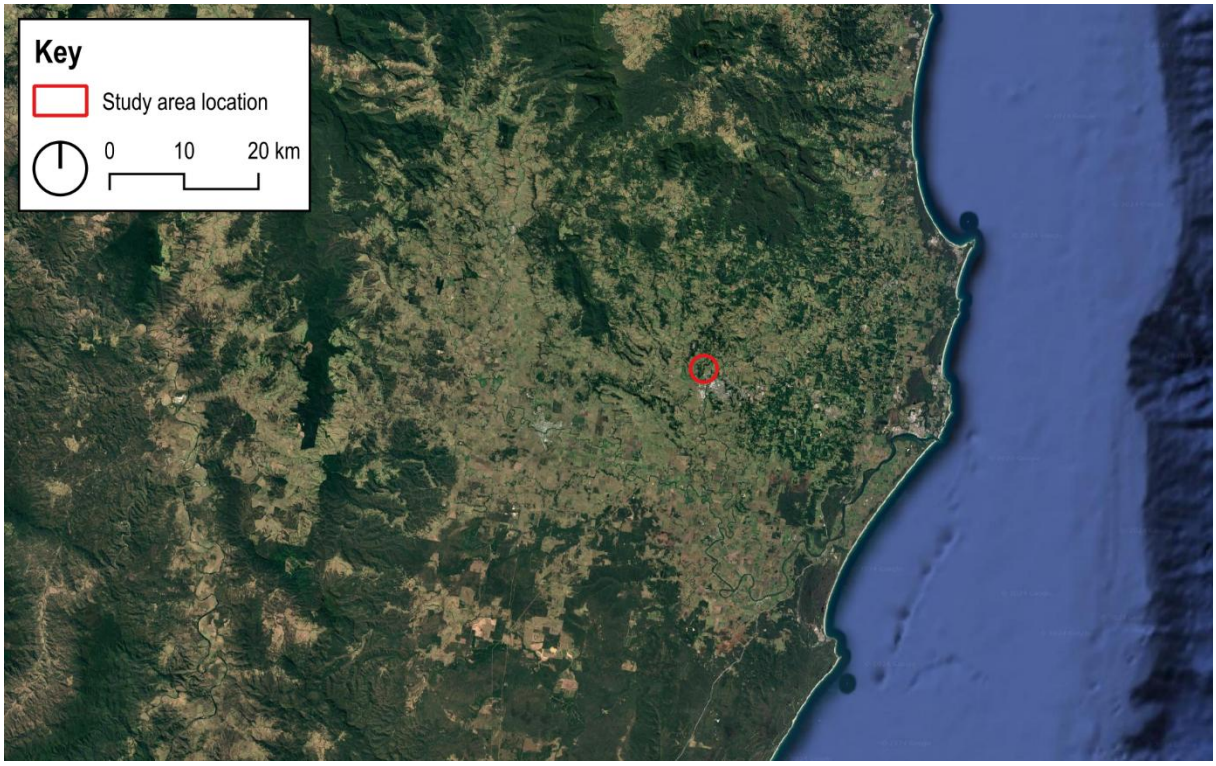

Figure 1.1 Location of the study area in NSW. (Source: Google Earth with GML overlay)

Figure 1.2 Location of the study area. (Source: Nearmap with GML overlay)

1.3 Native title holders

Widjabul Wia-bal of the Bundjalung Nation are the recognised native title holders of the wider region that includes the study area. Although the study area land is not subject to native title, the rights of the native title holders mean that modified processes for consultation and engagement are applicable under the National Parks and Wildlife Regulation 2019.

The study area is subject to the Widjabul Wia-bal Goori naa Indigenous Land Use Agreement (ILUA). Under the ILUA a modified Aboriginal consultation process for the purposes of Part 6 of the NPW Act applies, which provides for Widjabul Wia-bal to be consulted exclusively in respect of Aboriginal cultural heritage within the ILUA area, including where native title has been determined to be extinguished.

1.4 Objectives for this assessment

The objectives of this assessment were to:

- understand the number, extent, type, condition, integrity and archaeological potential of Aboriginal heritage sites and places within the study area;
- determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;

- understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;
- prepare a scientific cultural values assessment for all identified aspects of Aboriginal cultural heritage, as identified within this report;
- determine how the proposed project may impact the identified Aboriginal cultural heritage;
- aim to minimise impacts on Aboriginal cultural heritage through sensible and pragmatic site and land management;
- determine where impacts are unavoidable and develop a series of impact mitigation strategies that benefit Aboriginal cultural heritage and the proponent; and
- provide clear recommendations for the conservation of archaeological values and mitigation of impacts on these values.

1.5 Statutory context

The following statutory controls are relevant to the study area and therefore this report:

- the NPW Act; and
- the EPA Act.

Under Section 90 of the NPW Act, the proponent would require an AHIP should the development activities harm any Aboriginal object or Aboriginal place. Heritage NSW requires the appropriate management of other Aboriginal heritage social values, if connected with a study area.

1.6 Approach to Aboriginal heritage management

In order to administer the NPW Act and EPA Act, Heritage NSW (and its predecessors) has issued a series of best practice guidelines and policies. The approach to the preparation of this report was based on the following current best practice guidelines:

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*;[1]
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (the Due Diligence Code);[2]
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (the Code of Practice);[3]
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*;[4]
- *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*;[5] and
- *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance 2013* (the Burra Charter).[6]

1.7 Reporting approach

This Aboriginal ATR report is a standalone technical report that provides evidence about the material traces of Aboriginal land use, integrated with other findings from the Aboriginal heritage assessment to support the conclusions and management recommendations in the ACHAR.

This report has been prepared following the requirements for reporting as established in the Code of Practice.

1.8 Authorship

This project has been undertaken by the people listed in Table 1.1. Each person's role and affiliations are detailed.

Table 1.1 Investigators and contributors.

Name	Role	Name	Role
Sophie Jennings	GML Project Director and reviewer	Noel King Jnr	WWGAC fieldwork coordinator
Jacob Kiefel	GML Project Manager, excavation director and author	Aunty Queenie Speeding	WWGAC fieldwork coordinator
Dr Tim Owen	GML Principal, advice through the project, and reviewer	Chris Brown Jnr	WWGAC heritage monitor
Dr Chris Clarkson	Lithics specialist and author	Leon Kelly	WWGAC heritage monitor
Andie Coulson	GML archaeologist	Aunty Lena Logan	WWGAC heritage monitor
Jacob Gwiazdzinski	GML archaeologist	Thurston Moran	WWGAC heritage monitor
Minha Choi	GML archaeologist	Jamahl Roberts Snr	WWGAC heritage monitor
Madeline Gass	GML archaeologist		
Evangeline Kesteven	GML archaeologist		
Miles Robson	GML archaeologist		
Peter Woodley	GML archaeologist		

1.9 Endnotes

[1] Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

[2] Department of Environment, Climate Change and Water, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*, September 2010.

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

[4] Office of Environment and Heritage, *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, Sydney, April 2011.

[5] Department of Environment and Climate Change, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, 2009, <http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>.

[6] Australia ICOMOS Inc, *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance 2013,* Australia ICOMOS Inc, Burwood, VIC.

2 Archaeological context

2 Archaeological context

In line with Heritage NSW reporting requirements,[1] this section provides a review of previous archaeological work, the landscape context and regional character of the study area, and an Aboriginal heritage predictive model.

2.1 Previous archaeological work

The purpose of this section is to synthesise available information from previous archaeological and ethnohistorical studies to provide a context and baseline for what is known about Aboriginal cultural heritage in the study area.

2.1.1 Previous archaeological reports

The study area and its immediate surrounds have been subject to prior Aboriginal archaeological and cultural heritage assessment. These assessments were conducted by several heritage consultancies as part of rezoning proposals for the North Lismore Plateau (NLP). A preliminary Indigenous heritage assessment impact (PIHAI) report was also prepared for the study area.

Aboriginal archaeological and cultural heritage assessments and their associated field surveys have identified no Aboriginal sites within the study area, although the intangible values of the study area and surrounds have been noted. An independent peer review of Aboriginal cultural heritage assessments prepared for the proposed NLP development highlighted several areas requiring further assessment and investigation.[2] This section provides an outline of each assessment and their associated works.

Ainsworth Heritage 2010—Cultural Heritage Assessment (western slopes of NLP)

In 2010, Ainsworth Heritage conducted a cultural heritage assessment across the spurs and side slopes that characterise the western side of the NLP. Ainsworth delineated 12 potential archaeological deposits (PADs) across this area. It was considered likely these landforms would have been suitable as transitory ridgelines facilitating movement to and from the plateau. This cultural use may have led to the deposition of archaeological material at campsites. Furthermore, Ainsworth Heritage noted views to surrounding landforms and mythological sites in the Tweed Ranges.

These PADs are not registered in AHIMS. Subsequent assessments by Everick Heritage have generally disagreed with the identification of the PADs but the reports do not provide justification for this.[3]

Ainsworth identified a possible flaked stone artefact during its survey, although this is not registered in AHIMS. Reassessment of this find, provided in Everick Heritage's 2017 NLP ACHAR, suggests the flaking may be due to natural causes and/or mechanical damage although it is not identified in the report whether this reassessment is based on examination of photographs of the object or the object itself.

Converge Heritage 2012—North Lismore Plateau, NSW, Cultural Heritage Assessment

In 2012, Converge Heritage prepared an Aboriginal cultural heritage assessment[4] to inform a residential rezoning proposal for the NLP, abutting the western and northern boundary of the RRHC study area.

An initial desktop assessment of Aboriginal archaeological potential concluded that low relief spur and saddle landforms hold archaeological sensitivity, whereas low-lying slopes and valley floors hold no sensitivity. A subsequent field survey identified eight Aboriginal sites including four cultural sites and four areas of subsurface PAD. Of the four PADs, two are atop the plateau and two on elevated landforms adjacent to Booerie Creek (Figure 2.1). Converge ascribed high archaeological sensitivity to these locations for pre- and/or post-contact sites and recommended archaeological test excavations prior to development.

A women's site (birthing site) was recorded in association with a water spring towards the top of a spur on the central west of the plateau. Another water spring site was recorded at the northern edge of North Lismore Quarry. This site is an increase site (djurabihl) for the porcupine (echidna) and Converge noted several basalt blocks around its edge, one of which appeared to have been ground. Approximately 190m east of this site (immediately west of the RRHC study area) a carved/marked tree was observed.

A possible burial location was observed approximately 50m southeast of the increase site, north of Lismore Pioneer Cemetery (formerly North Lismore Cemetery). The site consisted of six small cairns made from small basalt stones positioned within a rough circle of large, basalt boulders. Converge noted the basalt boulders were covered in moss and lichen, yet the cairn stones were not, suggesting they had been placed before the stones. Additionally, the cairn stones appeared to show evidence of shatter from quarrying, implying an early to mid-twentieth century date of placement.

Figure 2.1 Location of PAD areas delineated by Converge Heritage (yellow areas). The red line shows the boundary of the NLP rezoning area, and the red arrow marks the RRHC study area. (Source: Converge Heritage 2012 with GML overlay)

Ian Fox & Associates 2013—Preliminary Report: Archaeological Test Pit Excavations, North Lismore Plateau

In 2013, Ian Fox & Associates completed the test excavations[5] recommended by Converge Heritage in its 2012 cultural heritage assessment. Prior to test excavations, Ian Fox & Associates conducted an initial field survey to confirm test pit locations. Excavations comprised eight 0.5m-by-0.5m and one 1m-by-1m test pits excavated across a random sampling pattern in each PAD.

One potential Aboriginal object was recovered from Test Pit 6, located approximately 430m west of the study area atop the NLP. Historical features and artefacts (non-Aboriginal) were also recovered from multiple test pits. A particularly high concentration was found in Test Pit 6. The excavation results indicated the PAD areas did not retain subsurface Aboriginal archaeological sites. However, Ian Fox & Associates stated that, while using a methodology consistent with the Code of Practice, less than 1% of the PAD areas had been sampled. Further, the firm noted that this sample size may not be sufficient to extrapolate these results to unexcavated areas.

Ainsworth Heritage 2018—Archaeological Test Pit Excavation Report, North Lismore Plateau

In 2015, Ainsworth Heritage undertook historical archaeological excavations near Test Pit 6.[6] These excavations were recommended after Ian Fox & Associates had identified extensive historical material during the 2013 Aboriginal archaeological excavations. Due to the potential for Aboriginal archaeology, Aboriginal archaeology specialists and Jali Local Aboriginal Land Council representatives assisted with the excavations. Three Aboriginal objects were recovered, two of which were flakes. Unfortunately, further details on these finds could not be located during the preparation of this report.

Spinifex Land Access Consultants 2015—Due Diligence Assessment Report, LCC North Lismore Plateau Phase 1 Project

In 2015, Spinifex Land Access Consultants (Spinifex) prepared an Aboriginal due diligence assessment for the creation of a trunk sewer and trenching for sewerage pipelines, in three locations in North Lismore and one location in South Lismore associated with the NLP residential development. A portion of the works for the trunk sewer was located within the current study area, near the intersection of Dunoon Road and Alexandra Parade (Figure 2.2).

This assessment solely consisted of an AHIMS search and field inspection with Bundjalung representative Steve Roberts. No items or objects of Aboriginal cultural heritage were identified during the field inspections. It was concluded that the locations held nil-to-low Aboriginal archaeological potential. Steve Roberts recommended a Bundjalung representative monitor subsurface excavations at each location. It is understood that monitoring proceeded and that no Aboriginal objects or sites were observed, which is further evidenced by the absence of any registered AHIMS sites at these locations.

Figure 2.2 Trunk sewer installation location (outlined in red) in the south-east of the RRHC study area. Spinifex assessed this area as holding nil-to-low Aboriginal archaeological potential. Sewer alignment shown as yellow line. (Source: Spinifex 2015)

Remnant Archaeology 2016—North Lismore Plateau, An Aboriginal Archaeological Technical Report

This ATR by Remnant Archaeology[7] detailed the outcomes of additional Aboriginal archaeological assessment across the NLP. This assessment abutted the western and northern boundary of the RRHC study area.

Remnant Archaeology prepared a predictive model for previously unrecorded Aboriginal sites in the NLP. It concluded that bench, plateau and ridgeline landforms held high archaeological sensitivity, whereas creek lines, floodplains and slopes held low sensitivity. Remnant subsequently completed archaeological test excavations of highly sensitive landforms, recovering seven artefacts from 39 test pits. Most artefacts were flakes or debitage. Silcrete, chalcedony, petrified wood and chert were the predominant materials.

Remnant Archaeology concluded that no further archaeological management was required in connection with the NLP planning proposal.

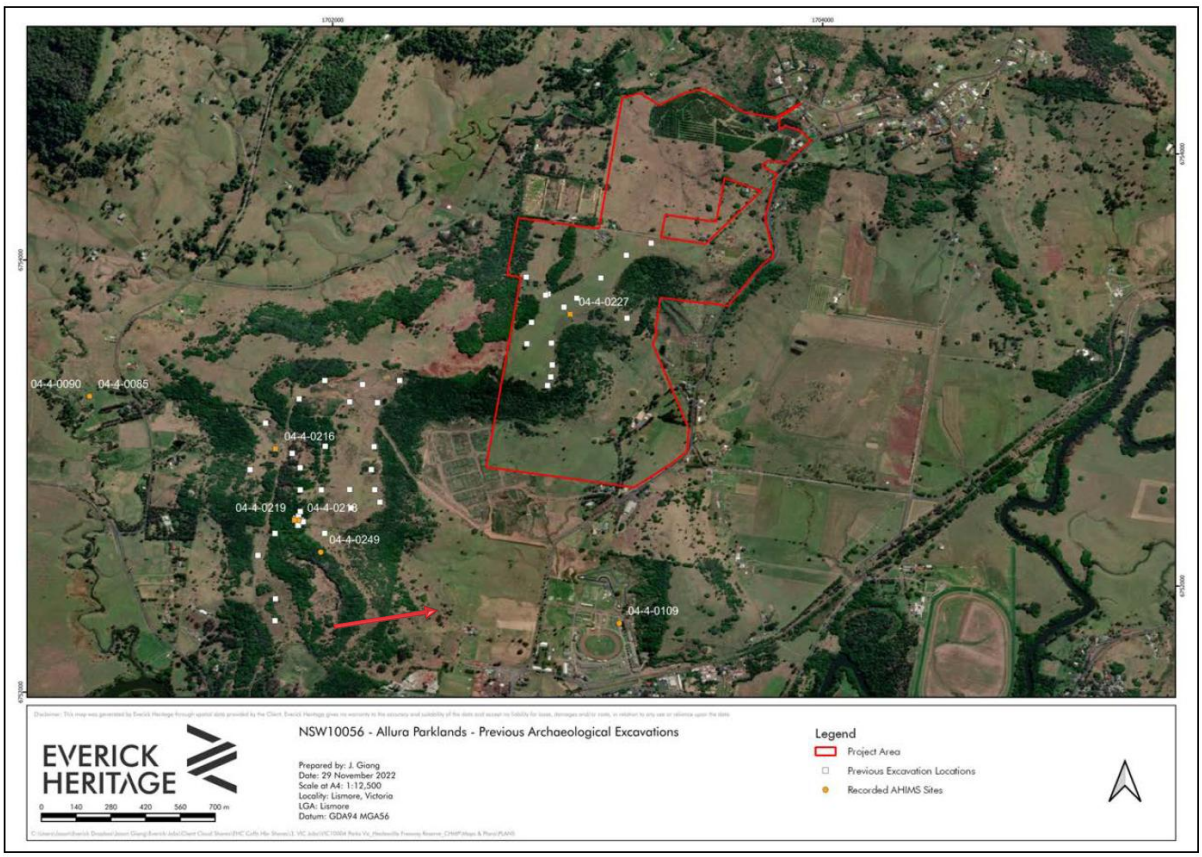

Figure 2.3 Locations of the Aboriginal archaeological test excavations by Converge Heritage, Ian Fox & Associates, and Remnant Archaeology. Each white square corresponds to a 0.5m x 0.5m or 1m x 1m test unit. The RRHC study area is marked by red arrow. (Source: Everick 2024, Figure 5-2, with GML overlay)

Everick Heritage 2017—North Lismore Plateau, Lismore, Cultural Heritage Assessment

In 2017, Everick Heritage prepared an Aboriginal cultural heritage assessment[8] to inform a revised rezoning proposal for the NLP, abutting the northern boundary of the RRHC study area. In 2018, Everick amended the ACHAR to respond to comments provided by the Office of Environment and Heritage (now Heritage NSW). The conclusions and recommendations of the report as they relate to Aboriginal archaeology remained consistent.

Desktop assessment of the study area indicated the area held low to moderate potential for pre-contact Aboriginal archaeology. Landforms with specific sensitivity included spurs, ridgelines, lower slopes and alluvial flats. A subsequent archaeological field survey relocated three previously registered AHIMS sites but identified no additional sites or PADs.

Everick determined that the proposed works would result in harm to Aboriginal heritage. It recommended an exclusion zone around two isolated stone artefact finds and an AHIP allowing for relocation of a small artefact scatter (all initially identified during Remnant Archaeology's 2016 Aboriginal archaeological excavations).

Everick Heritage 2023—Northern Rivers Flood Recovery Project—Site 9 Showground, North Coast and Mid North Coast, New South Wales, Preliminary Indigenous Heritage Assessment and Impact

In 2023, Everick Heritage prepared a PIHAI for the RRHC development, which included the study area currently being assessed.[9]

The assessment included a desktop study and visual inspection to identify Aboriginal cultural heritage values within the study area. Everick noted that portions of the study area had been subject to previous Aboriginal archaeological investigation, which had identified no Aboriginal sites. No AHIMS sites were registered within the study area. During the survey, agricultural, land clearing and construction activities were observed to have significantly impacted the integrity of topsoils, reducing archaeological potential. Everick ascribed moderate archaeological potential for low-density artefact scatters on slope landforms (Figure 2.4). Everick also ascribed high cultural sensitivity to these landforms.

Figure 2.4 Area of moderate archaeological and high cultural sensitivity (shaded in pink) as defined in Everick Heritage's 2023 PIHAI. (Source: Everick Heritage 2023)

Everick Heritage 2024—Allura Parklands Residential Development, Dunoon Road, North Lismore, Aboriginal Cultural Heritage Assessment Report

In 2024, Everick Heritage prepared an ACHAR for a proposed residential subdivision within the NLP,[10] approximately 700m north of the RRHC study area.

Desktop assessment of Aboriginal archaeological potential indicated that plateau, bench and ridgeline landforms held moderate to high potential for low-density lithic sites. Floodplain and lower slope landforms were considered to hold lower levels of archaeological sensitivity, primarily due to agricultural impacts. Everick noted the potential for grass clearings on such landforms, which would have been campsite locations.

Several Aboriginal sites and/or PADs were recorded during the subsequent archaeological field survey. A scarred tree (AHIMS ID 4-4-0320; 'P3-ST-1') was identified on a slope below a 'basalt terrace'. The Registered Aboriginal Parties (RAPs) in attendance noted the profile of an old man visible in the topography north of the Everick study area, which is part of a Songline. Furthermore, RAPs emphasised the aesthetic values of Lismore Showground Camp and Jumping Ant Hill as viewpoints. The importance of hoop pines present in the area was also noted.

Everick assigned several locations with potential for subsurface Aboriginal archaeological material during the survey. Forty 0.5m-by-0.5m and four 1m-by-1m test pits were excavated, resulting in the identification of eight subsurface Aboriginal sites, including four isolated finds and four artefact scatters. The test excavations aimed to provide a representative sample of all landforms within the area. Everick noted the lack of spatial coverage, covering only 11m^2 within a 126.11-hectare area (~0.001%); however, it considered the test excavations as having adequately characterised the area's archaeological potential.

Everick recommended avoidance of impacts to identified Aboriginal sites where practicable. Where not practicable, an AHIP for impacts would be required. Due to the potential for further unidentified subsurface Aboriginal archaeological material, Everick recommended the AHIP be development wide. Management strategies to be enacted under the AHIP included salvage excavation for one site (04-4-0227 'NLPI-08') and archaeological monitoring of subsurface excavation in sensitive areas.

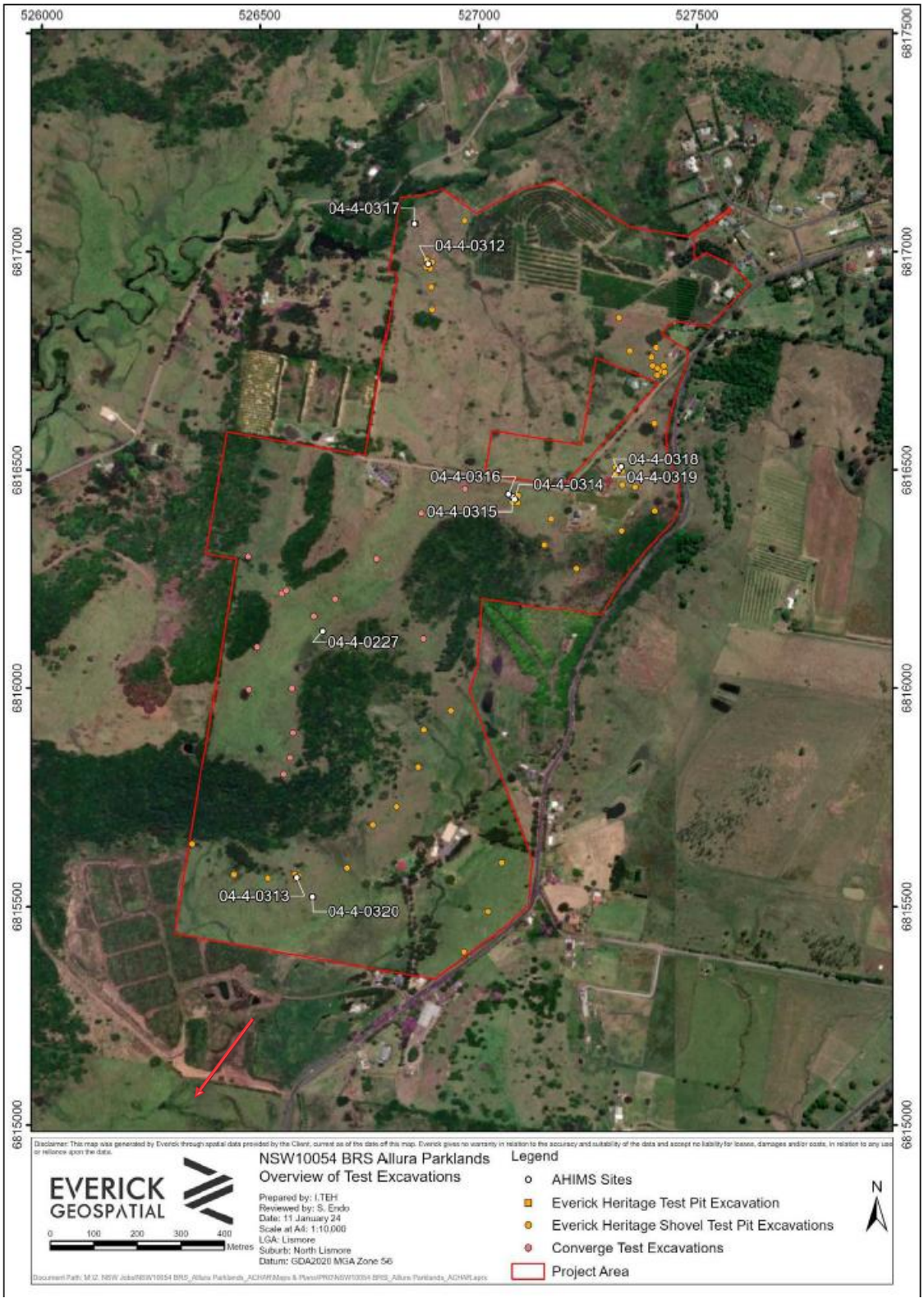

Figure 2.5 Locations of Aboriginal archaeological test excavations and identified Aboriginal sites during Everick's 2024 investigations. The study area is marked with a red arrow. (Source: Everick Heritage 2024, Figure 10-4, with GML overlay)

2.1.2 Aboriginal Heritage Information Management System search

A search of the Heritage NSW AHIMS database of an area 30km north to south by 30km east to west was undertaken on 18 July 2024 (reference number 911350). The results of the search are shown in Table 2.1, Figure 2.5 and 2.6. [redacted] On 10 January 2025, a basic search of the AHIMS database using the same search zone was completed (reference number 964705), which confirmed no new sites, other than those identified during the present study, had been registered in the intervening period.

Six restricted sites were present within the AHIMS search boundary; these were confirmed by Heritage NSW to be outside the study area on 18 September 2024 and have therefore been excluded from this analysis. Four sites are classified as 'Not a Site' and are excluded from this analysis.

No previously recorded Aboriginal sites were identified in the study area.

Table 2.1 Results of the AHIMS search.

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
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Aboriginal ceremony and Dreaming sites represent the range of connections associated with the region. [redacted]

Archaeological evidence of campsites near Bora grounds has been noted elsewhere in Widjabul Wia-bal territory and typically consists of stone artefacts.[11] Given the study area's proximity to [redacted] it is possible it was utilised in a similar fashion.

Almost half of the Aboriginal sites identified in the AHIMS search are stone artefact sites. Artefact sites consist of concentrations of stone artefacts in an open setting, isolated finds, or subsurface artefact assemblages found within intact topsoil (A) horizons or otherwise suitable sedimentary deposits. Flaked-stone tools and debitage are the primary artefact types. Silcrete, quartz and IMSTC (indurated mudstone, silicified tuff, chert) are the predominant materials. Ground-edge tools are also common and are generally manufactured from igneous stones such as basalt. Spatially, they are associated with a wide range of landforms including plateaus, slopes and floodplains. [redacted]

Grinding grooves have been recorded on suitable bedrock panels, which may be present within the study area where basalt naturally outcrops. Other site types are associated with landform types not found in the study area. Habitation structures are typically rock shelters in suitable rock overhangs, which are not found within the study area. Historical records and aerial photographs show the study area was entirely cleared of vegetation by the early twentieth century, precluding the possibility of culturally modified (scarred/marked) trees.

Two Aboriginal places were returned within the search area: [redacted]

[redacted]

Figure 2.6 [redacted]

Figure 2.7

2.2 Landscape context

The purpose of this section is to provide contextual information for use in developing a predictive model relating to the remains for evidence of Aboriginal occupation and use of the study area. Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The nature and availability of resources, including water, flora, fauna and suitable raw materials for the manufacture of stone tools and other items, had (and continues to have) a significant influence over how people utilise the landscape.

Alterations to the natural environment also impact on the preservation and integrity of any cultural materials that may have been deposited whereas current vegetation and erosional regimes affect the visibility and detectability of Aboriginal sites and objects. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

2.2.1 Geology and soil landscapes

The study area is underlain by Lismore Basalt, a Miocene-aged unit of the Lamington Volcanic Complex. Lismore Basalt is typically iron-and silica-rich tholeiitic basalt, although alkali-rich formations are also recorded.[14] In some locations, including the NLP, basaltic layers are interbedded with unconsolidated conglomerates, which can consist of quartzite, phyllite, slate, rhyolite, porphyry and/or obsidian.[15]

To the east, bedrock is overlain by several metres of Holocene-aged alluvial clays, gradually deposited as valley-fill or floodplain deposits along first- and second-order tributaries of Wilsons River. Nearby geotechnical and paleoenvironmental investigations have identified up to 10m of alluvial clays which, importantly, were deposited concurrently with Aboriginal occupation of the region.[16] These studies indicate there is no geological reason that Aboriginal archaeological material would not be present at any depth within this profile, excepting the uppermost layers that likely post-date European colonisation.[17]

Basalt is commonly used as a raw material for tool manufacture or for ceremonial purposes, and it outcrops frequently throughout the NLP. Although no evidence of Aboriginal stone quarrying has previously been found on or near the landform, it is likely that suitable basalt pieces were collected from the surface for use.[18] Deliberately placed, locally sourced basalt stone arrangements have been recorded in association with an increase site and possible burial on the NLP.[19] The interbedded conglomerates would have been inaccessible prior to exposure during quarrying operations at North Lismore Quarry.

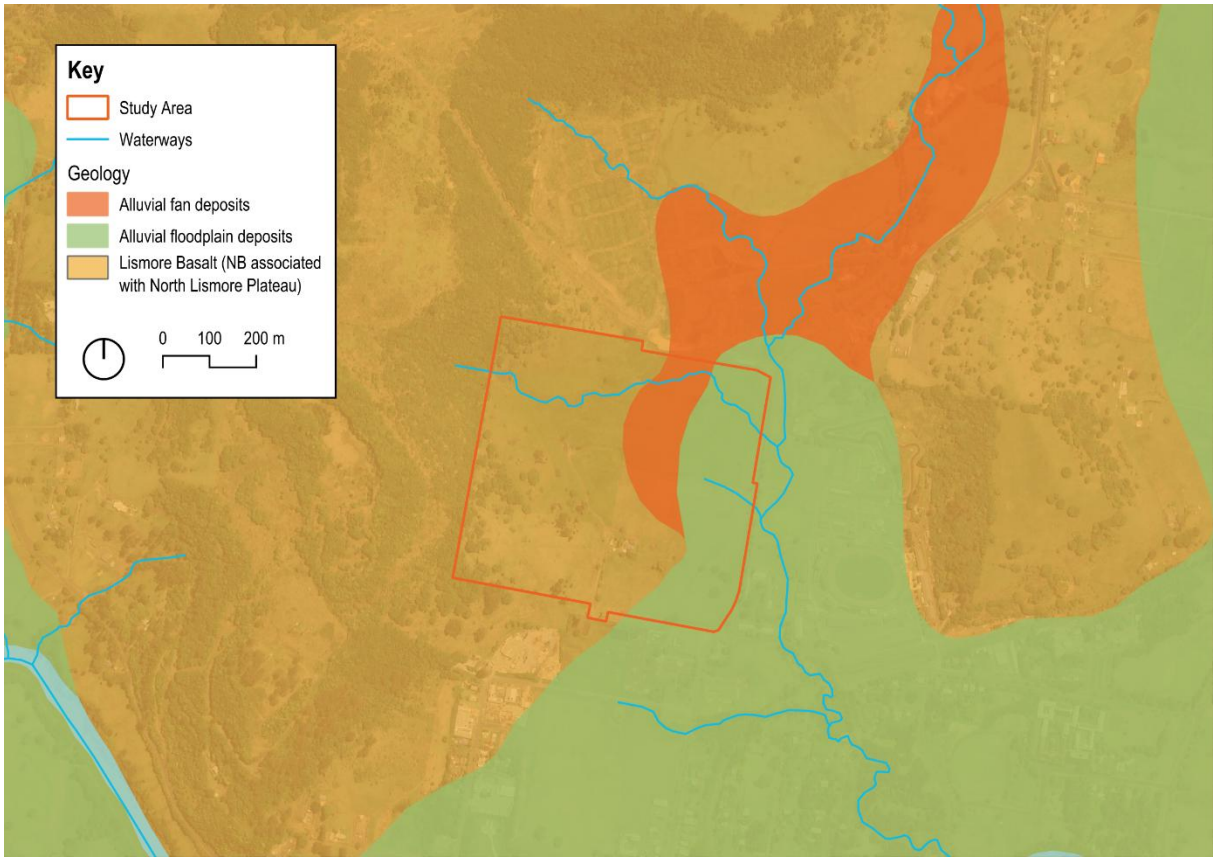

Figure 2.8 Surface geological units within the study area and surrounds. (Source: Geoscience Australia with GML overlay)

2.2.2 Landforms and landscape features

The study area is situated on the eastern slopes of the NLP, a narrow, roughly north–south orientated ridgeline extending ~2km from Mcleay Road to Nimbin Road. This landform is known as the buninj and is highly significant to Widjabul Wia-bal, additionally for its use as a traditional travel route, and for the expansive views of Country its elevated position provides.[20]

Within the study area, the NLP slopes are characterised by two east–west orientated spurs bisected by a fluvially eroded gully (Figure 2.8). The scarp slopes are steep (~22%) but lessen towards the footslopes, particularly east of Alexandra Parade. Ephemeral flowlines criss-cross the slopes after rains. Relatively flat alluvial valley-fill and floodplain landforms characterise the eastern half of the study area. The valley-fill deposits are associated with an ephemeral first-order creek that flows from atop the NLP east to form a confluence with a second-order creek on the opposite side of Dunoon Road.

Historical aerial imagery shows these landforms have been modified by historical activities.

Construction of houses, roads and other structures would have required localised levelling and partial landform excavation. Land clearing would have significantly increased the risk of mass movement events on the NLP slopes and damming of natural creeks would have altered the patterns of erosion and deposition throughout the study area. Despite these impacts, landforms appear relatively intact across most of the study area.

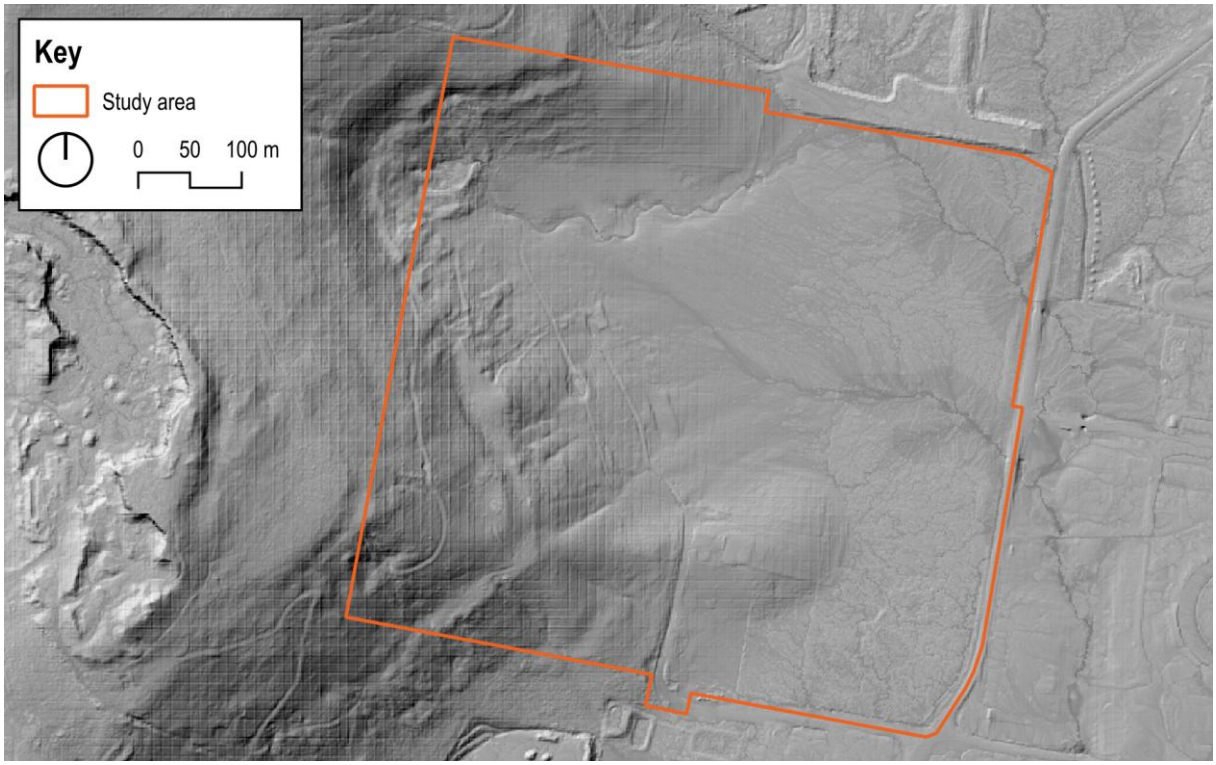

Figure 2.9 Hillshade of study area generated from a 5m digital elevation model (DEM). A topographic wetness index (TWI) layer has been overlaid to enhance contrast.

2.2.3 Soils

Three soil landscapes are mapped within the study area, which can be broadly grouped according to their formation process: colluvial or alluvial. In these soil landscapes, soil formation occurs in the upper layers of sediments deposited via colluvial (eg sheetwash, mass movement, soil creep) or alluvial (ie flooding) processes respectively. As basalt is the parent material of these sediments, soils tend to be highly clayey.

The colluvial Coolamon soil landscape is mapped across the steep NLP slopes. Soils typically consist of <100cm of dark brown friable clay loams directly overlying weathered bedrock.

Mass movement events, such as slumping or landslides, are common, leading to the deposition of colluvial basaltic pebbles/cobbles. This material often limits the effective depth of soils to ~20–30cm. The colluvial nature of Coolamon soils means a gradual loss of material over time. As a result, archaeological material tends to be eroded and displaced from its original depositional context.

The alluvial Disputed Plain and Leycester soil landscapes are mapped across the eastern half of the study area. These soils vary slightly due to their association with different landform types. The Disputed Plain soil landscape is mapped in association with valley infill/fan deposits. Generally, <70cm of black blocky clays (A and B horizons) overlie >100cm of brownish to reddish black cracking clays. In areas with more silica-rich parent materials <30cm of massive, hardsetting silty/sandy clay loams overlie >50cm of mottled blocky clays. These soils are very similar to the Leycester soil landscape, which is mapped across the alluvial plains in the southeast of the study area. Leycester soils typically consist of <50cm of self-mulching black light clays (A horizon) overlying >1m of cracking medium to heavy clays (B horizon). Because these soils form as deposited layers over time, there is potential for stratified archaeological deposits.

Aboriginal archaeological excavations in the region have found that archaeology tends to be restricted to the upper A topsoil horizons. No Aboriginal objects have conclusively been proven to be in situ within a B horizon, although very few archaeological excavations have investigated them. There are two possible reasons for this. Subsoils may represent older surfaces that pre-date Aboriginal occupation of the region. Alternatively, subsoils often form through subsurface soil formation processes, such as clay illuviation, which preclude the movement of artefacts into them.

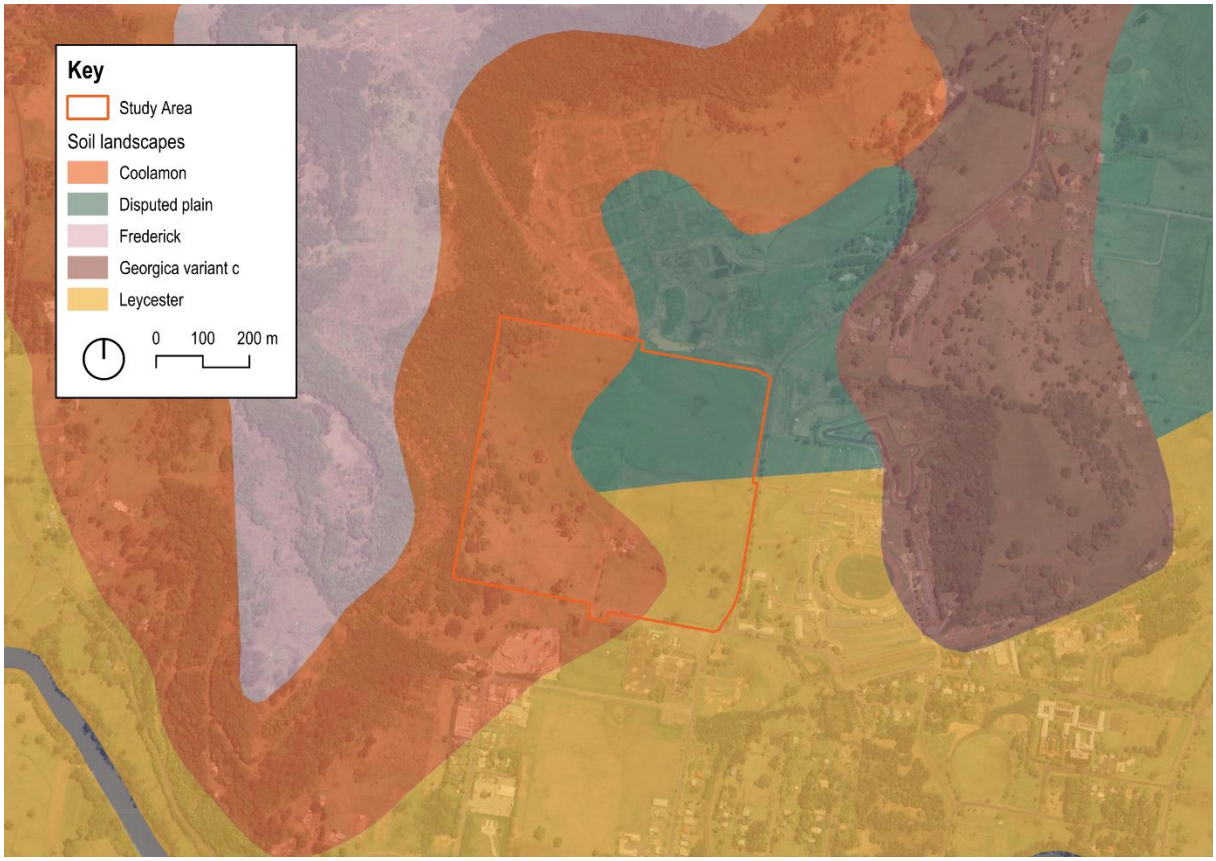

Figure 2.10 Soil landscapes of the study area and surrounds. (Source: Morand 2009 with SIX Maps basemap and GML overlay)

2.2.4 Hydrology

The availability of water had significant implications for the range of resources available and the suitability of an area for human occupation. An area's proximity to water affected access to food and water resources and defined the types of landforms present. This in turn has significant implications for the type and nature of associated archaeological assemblages.

The study area is situated within the Wilsons River catchment. Two ephemeral first-order creeks flow west–east across the study area to form a confluence with a second-order creek opposite Dunoon Road. Previous archaeological assessments and excavations in the region have found that Aboriginal sites are present on landforms associated with waterways, such as floodplains or terraces. During Wandarahn ceremonies, groups would often camp near waterways, to ensure consistent access to food and water resources for the duration of their stay.[21] It is possible the creeks in the study area were utilised in this fashion during ceremonies at the Lismore Showground Wandarahn.

Lismore experiences some of the highest rainfall and is one of the most flood-prone areas in NSW.[22] High-intensity floods can displace or remove archaeological material deposited on a floodplain, and archaeological investigations in the Northern Rivers region have identified displaced Aboriginal stone tools among river bedload gravels.[23] Conversely, lower-intensity floods may have buried archaeological deposits beneath layers of alluvial clays.

2.2.5 Fauna and flora

Prior to colonisation, the ecology of the study area was characterised by subtropical rainforest communities known as the 'Big Scrub'. These ecologies provided Widjabul Wia-bal and other Aboriginal people with abundant food, water and timber resources. Bundjalung material culture is dominated by tools and other implements manufactured from bark and wooden fibres.[24] Different animals and plants were utilised for specific purposes. For example, jumping ants from Jumping Ant Hill (immediately east of Lismore Showground) were used for both medicine and food.[25]

Some plant and animal species related to spiritual or ceremonial aspects of culture. A Gurrumbil (hoop pine) at Parrots Nest (west of Lismore) was connected with retaliation customs.[26] This area was also associated with an increase (djurabihl) site wherein ceremonies were performed to ensure the continuing availability of the Gurrumbil (hoop pine).[27] Other nearby increase sites include an echidna djurabihl located on the NLP (NB WWGAC representatives confirmed this site extends into the study area via the southern ridgeline, its 'snout') and a possum djurabihl at Wilsons Park.[28]

The Big Scrub contained many small, isolated patches of grassland and grassy open-forest ecologies. These areas tended to be associated with major campsites and/or ceremonial grounds. Aboriginal people would deliberately maintain these areas to prevent the encroachment of rainforests. Their former locations are reflected in place names throughout the Richmond Valley, for example, Goonellabah meaning 'a grassy hill surrounded by forest'. There is no historical documentation of a grassland or grassy open-forest connected with the study area; however, the geological and geomorphological position of the study area suggests it is possible, as reflected in the NSW Pre-1750 State Vegetation Type Map, which depicts much of the central portions of the study area as Far North Lowland Basalt Grassy Forest (Figure 2.11).

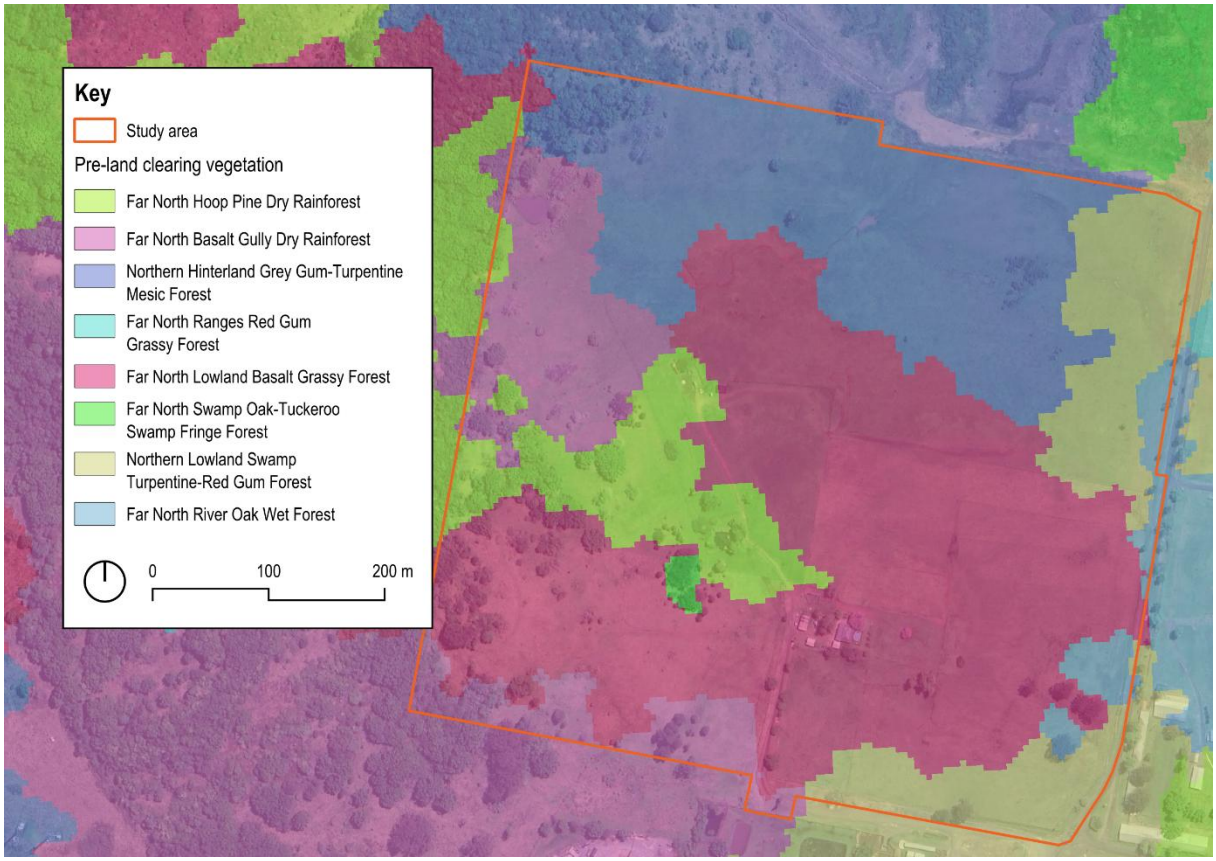

Figure 2.11 Pre-colonisation vegetation communities in the study area and surrounds. (Source: NSW Pre-1750 State Vegetation Type Map with GML overlay)

2.2.6 Land use history

The first land grants in the area that became Lismore were issued in 1843, marking the beginning of successive phases of intensive non-Aboriginal land use and modification. Early settlers cleared the native forests for pastoral use, which has remained the main land use in the study area until the present day. A 1958 aerial image (Figure 2.12) shows the entire study area cleared of vegetation, and historical records indicate the entire NLP had been cleared by the late nineteenth century; forest ecosystems were not re-established until the late twentieth century.[29] Initial land clearance and stock grazing would have resulted in minor disturbances to topsoils, particularly if chain ripping was employed, while also leaving the soils vulnerable to erosion.

Figure 2.12 1958 aerial image. (Source: NSW Historical Imagery with GML overlay)

By 1958, two small houses, a road, a dam and fences had been built within the study area. Additional structures, probably associated with cattle grazing, are visible in a 1979 aerial but otherwise the study area has remained largely unchanged to the present day (Figure 2.13, Figure 2.14, Figure 2.15). Construction activities would have resulted in localised truncation, if not removal, of topsoil deposits. The natural hydrology of the study area has also been modified by historical activities such as damming. Minor adjustments to the channel of the northern creek are visible when comparing aerial photographs, and the southern creek formerly flowed from the NLP. This would have altered the flow of water and sediment through the landscape, and thus patterns of erosion and deposition.

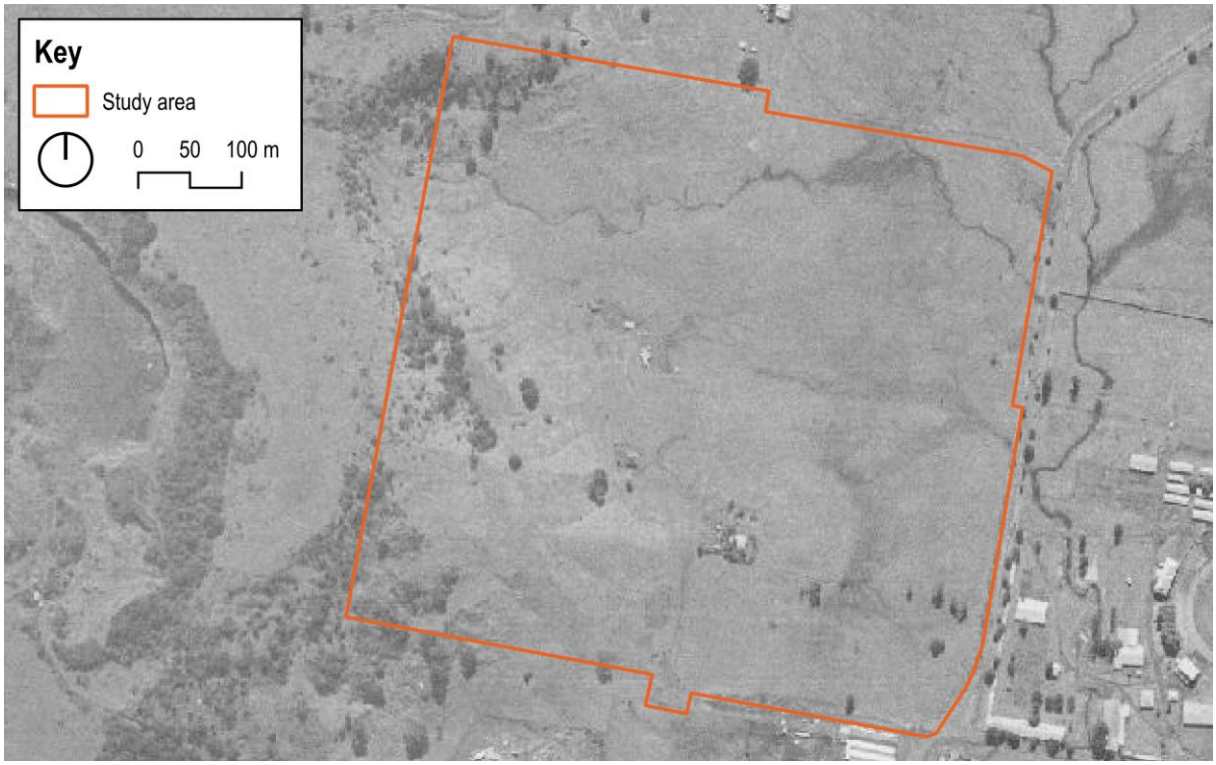

Figure 2.13 1971 aerial image. (Source: NSW Historical Imagery with GML overlay)

Figure 2.14 1979 aerial image. (Source: NSW Historical Imagery with GML overlay)

Figure 2.15 1997 aerial image. (Source: NSW Historical Imagery with GML overlay)

2.3 Aboriginal heritage predictive model

Aboriginal heritage predictive modelling provides an understanding of how Aboriginal sites, places and objects are distributed within a wider landscape.[30] Through a process of landscape characterisation, Aboriginal people and archaeologists are able to infer which locations were most frequently visited and used in the past. Such assessment may be used to interpret long-term subsistence and habitation patterns. Based on the landscape context, land use history, regional and local archaeological patterns it is possible to provide a predictive statement for the likely occurrence of Aboriginal archaeological sites/places connected with the study area (Table 2.2).

The study area is situated on the southeastern slope of the NLP, characterised by two east–west orientated ridgelines bisected by a steep, fluvially eroded gully. Prior to European arrival, the landscape would have been dominated by Big Scrub rainforest ecologies, potentially including patches of open-grassy forests, and freshwater creeks. These ecosystems would have provided Aboriginal people with abundant food, water and timber resources. The study area is situated in a highly important cultural landscape in proximity to several ceremonial and mythological sites. Therefore, the study area is in a landform, ecological and cultural context that is associated with consistent occupation and land use within the region by Widjabul Wia-bal.

The AHIMS search results suggest that archaeological evidence of these activities would most likely be stone artefact (lithic) sites, if present.

Relating archaeological sensitivity to landform or soil types is difficult due to the relative lack of archaeological surveys or excavations in the Lismore region.[31] Previous archaeological investigations of the NLP and surrounds have ascribed sensitivity for stone artefact sites to differing landforms including floodplains,[32] slopes,[33] spurs/ridgelines,[34] the NLP itself[35] and a combination of landform types.[36] Subsequent surveys and excavations have generally identified limited numbers of stone artefacts, a finding that is generally accredited to historical disturbance or the predominance of poorly preserved organics in Bundjalung material culture, although these assessments have utilised low-density sampling patterns that limit their statistical viability.[37] Furthermore, these assessments have often ignored areas or landforms considered to have nil or low sensitivity. In any case, on similar nearby landforms, excavations have recovered low densities of Aboriginal objects. These results would imply the study area holds similar levels of archaeological potential.

The NLP's slopes are highly susceptible to mass movement erosional events, such as slumping or debris flows, which is a landform context unlikely to retain in situ archaeological material. In colluvial landscapes, archaeological material tends to be eroded from its original depositional context. Erosional rates across the NLP slopes may have been exacerbated by land clearing activities in the nineteenth century. Other historical activities, such as localised construction and agricultural activities, also significantly reduce the potential for in situ archaeological material along the slopes. However, other landforms within the study area appear relatively intact. Ongoing alluvial deposition within the study area may have buried archaeological deposits, also working to protect them from anthropogenic disturbances.

An overview of the types of Aboriginal sites/places and their predicted location within the study area's landscape is provided in Table 2.2.

Table 2.2 Types of Aboriginal archaeological sites that may be located within the study area.

Archaeological site type	Description and potential location
Stone artefacts	Stone artefact concentrations are collections of stone, frequently brought from other areas, that demonstrate evidence for Aboriginal working, use or discard of the stone at a single location. Stone artefact concentrations may be associated with any of the below site types. Where such sites are buried by sediment, they may not be noticeable unless exposed by erosion or disturbed by modern activities. These sites may be present within intact topsoil deposits, or otherwise suitable sedimentary deposits, on landforms with proven archaeological sensitivity. Such landforms include floodplains, ridgelines and slopes.

Archaeological site type	Description and potential location
Isolated finds	Sites consisting of a single stone artefact, isolated from any other artefacts or archaeological evidence. They are generally indicative of sporadic past Aboriginal use of a location. A distinction should be drawn between isolated finds that are a component of the background distribution of objects, and specialised objects such as axes, hammer stones, grinding dishes etc that would have been used repeatedly and may have been carried from place to place. These sites may be found in similar landform contexts as described above. They may also be found within historical fills or heavily disturbed topsoils; however, their presence cannot be predicted and they would almost certainly not be in situ.
Resource areas	Resource gathering areas represent landforms that contain a high number of fauna and flora species that were known Aboriginal resources. Resource areas are commonly associated with permanent water resources, often swamps or marshes, and frequently have recorded sites such as middens nearby. Landforms associated with these sites are often flats with a favourable outlook. The study area is situated on a floodplain landform within the vicinity of several major and minor watercourses, and likely provided access to multiple flora and fauna resources. It likely formed part of a larger resource area associated with the Lismore floodplains.
Other site types	A review of the local Aboriginal cultural heritage background suggests that other physical site types are unlikely to be present. An absence of old growth trees precludes site types connected with trees.

Juxtaposing the outcomes from the modelling against the history of recent land use provides an indication of locations and landforms that could be connected with physical (tangible) aspects of Aboriginal heritage. Predictive modelling indicates that the study area holds low to moderate potential for in situ archaeological material. Landforms with proven archaeological sensitivity are present within relatively undisturbed areas. The NLP slopes are ascribed low to moderate sensitivity for isolated finds associated with their colluvial origin. Higher levels of sensitivity are ascribed to hilltop landforms, which would be less affected by colluvial processes, and toe slopes, where colluvially transported material would eventually accumulate. The cultural sensitivity of the Echidna djurabihl suggests that it may have been a focus for Aboriginal activities, and as such, it has been ascribed moderate sensitivity for isolated finds and/or small lithic concentrations. Alluvial landforms appear relatively intact and are ascribed moderate potential for smaller concentrations of lithics buried beneath an undetermined level of alluvial clay.

This assessment requires verification through archaeological test excavation. An overview of the archaeologically sensitive areas is shown in Figure 2.16.

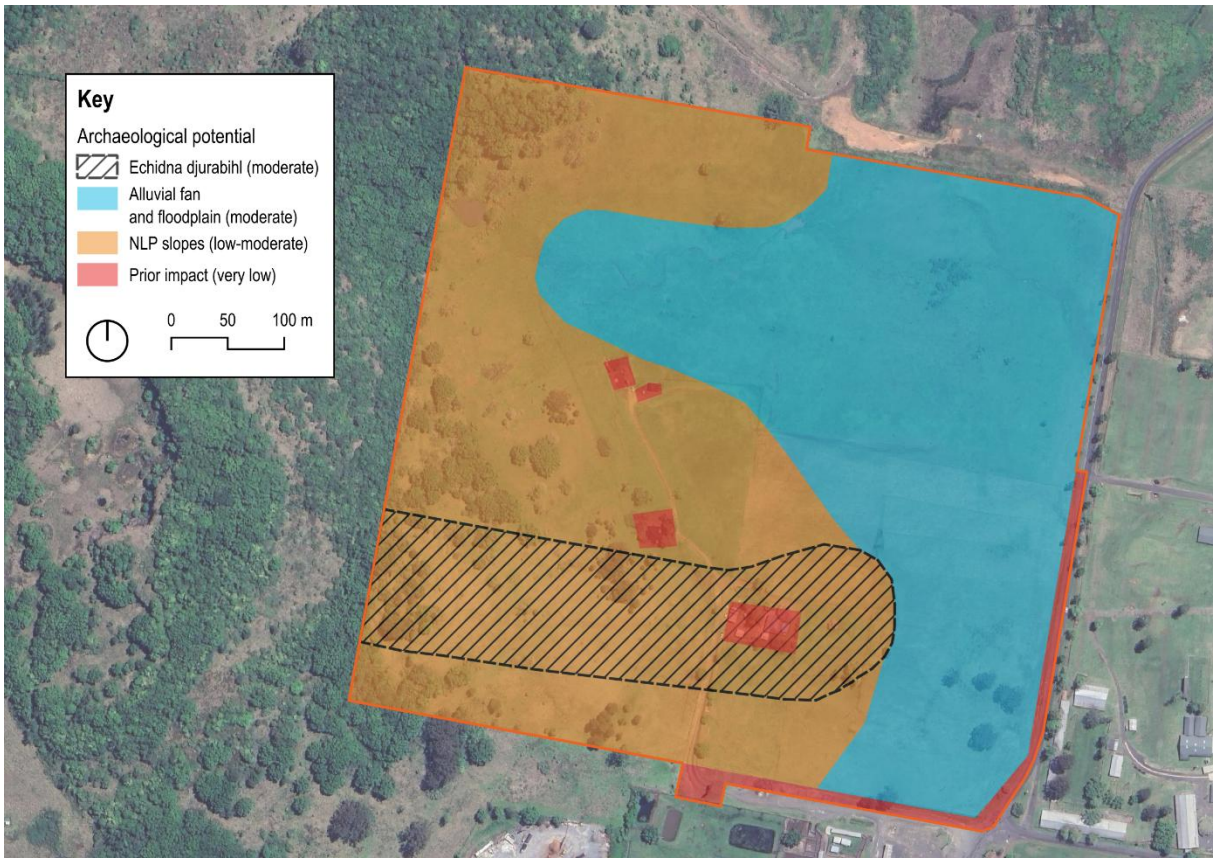

Figure 2.16 Summary of Aboriginal heritage predictive modelling for the study area. (Source: SIX Maps with GML overlay)

2.4 Endnotes

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3 Archaeological field survey

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This section details the methods and outcomes from the field survey that, combined with the results of the test excavation (Section 4), provides the data that allows for an assessment of scientific and cultural significance (Section 5). Archaeological field methods applied to the current study have included a pedestrian survey, followed by Aboriginal archaeological test excavation. The pedestrian survey examined the surfaces of the land, aiming to determine whether Aboriginal objects were or could be present.

3.1 Survey sampling strategy

The study area was surveyed by GML archaeologists and WWGAC representatives on 9 September 2024. A linear pedestrian survey was conducted across the proposed impact area, inspecting all soil exposures and zones with low vegetation that contained tracks and paths. Although the sampling included all landforms that will potentially be impacted by the proposed project, areas with observable exposures were focused upon and used to extrapolate to the remainder of the study area due to the dense grass cover that limited exposures to 0% across large portions of the area. Notes were made of soil conditions, evidence of disturbance and the possible extent of sites.

In June 2025, DoE identified that service trenching works would be required outside the initially proposed study area for RRHC. These works are required to connect services (eg. water, sewer, stormwater, Telstra) supplying the school to existing services within the Dunoon Road and Alexandra Parade road corridors (Figure 3.1). No additional site inspection, survey or test excavation was undertaken across these new areas. This is because they are underlain by the same landforms and soils previously archaeologically surveyed and excavated in 2024, albeit more heavily impacted by previous road construction and service installation works. It is therefore reasonable to conclude they hold the same levels of potential for Aboriginal stone artefacts and should be subject to the same management and mitigation strategies as the remainder of the study area.

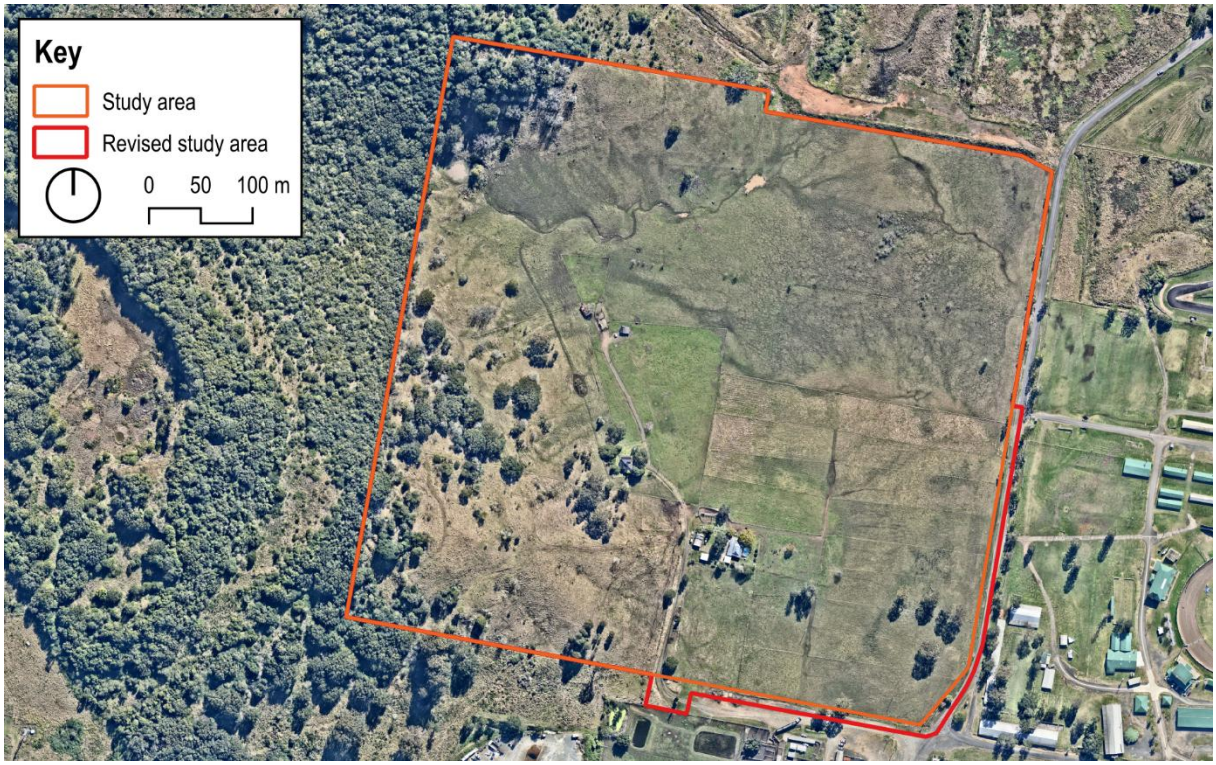

Figure 3.1 Comparison between original study area (orange) and revised study area (red). Revised study area extends into portions of Alexandra Parade and Dunoon Road. (Source: Nearmap with GML overlay)

3.1.1 Field methods

In accordance with Heritage NSW guidelines,[1] the description of survey coverage includes landform units, the total area surveyed within that landform unit and a quantification of the level of exposure and visibility. Heritage NSW has defined exposure and visibility thus:

> Visibility is the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stony ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals'.
>
> Exposure is different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals'.[2]

The calculation of effective coverage provides a means with which to describe the proportion of the study area in which it is possible to assess the presence or absence of archaeological material.

This measure is expressed as a percentage and can be calculated using several different techniques. For this study, effective coverage was calculated by multiplying the area surveyed by the percentage of exposure and visibility within the survey unit. The area of effective coverage was then expressed as a percentage of the whole survey unit.

3.1.2 Archaeological potential

Archaeological site formation is a complex combination of scientific factors, such as bioturbation, and environmental factors, such as erosion or burial through soil movement. Once discarded on the ground surface, artefacts are often readily incorporated into the topsoil horizons through the process of bioturbation. Most commonly, dense artefact deposits exist hidden beneath the upper surface, imperceptible by the casual observer [3]. Archaeological assessments that do not employ appropriate methods of subsurface detection or prediction cannot reliably define an area's archaeological content. Most frequently, the eroded component of a larger subsurface deposit is detected and recorded as a site. Where soils are sandy, artefacts can occur at greater depths and erosion may frequently expose artefacts. Therefore, it is crucial that the soils, sands and geomorphology of an area are defined in an archaeological assessment and the archaeological implications defined. An understanding of these factors, linked further to the notions of site integrity and condition, yields an understanding of an area or site's archaeological potential.

It is important to note that the level of archaeological potential relates to the likelihood of discovering an Aboriginal object within a location. Further description should then be made as to the potential condition and integrity of the soil matrix and potential site itself. Only once all these factors have been considered can scientific value start to be assessed for an area with potential. Therefore, though scientific value and potential are linked, it must be noted that these values and potentials are not the same and can differ substantially for any single site or area with potential.

Areas with archaeological potential were identified according to the definitions in Table 3.1.

Table 3.1 Definitions of archaeological potential.

Rank	Definition	Example
No potential	Artefacts cannot occur in situ.	Eroded landforms, reconstructed landscapes, hazardous landscapes, developed areas.

Rank	Definition	Example
Low potential	Artefacts are not normally found in comparable contexts but could occur in low densities, making detection unlikely.	Landforms with no specific focus for use, ie with water sources or undifferentiated slopes.
Moderate potential	Artefacts are known to occur in comparable landforms in detectable densities (~1artefact/m^2) and there is an unknown possibility for detection.	Landforms with an environmental focus that may have seen seasonal visitation.
High potential	Artefacts are consistently found in comparable landforms or similar environmental contexts and thus will certainly be found in any ground-disturbing works.	Landforms with a known environmental focus encouraging repeat visitation to specific locales, ie margins of a swamp or near high-order creeks.

3.2 Survey results—survey units and landforms

The study area was surveyed according to survey units, landforms and landscapes following Heritage NSW requirements (Section 3.1.1). All survey units are described in Table 3.2 and shown in Figure 3.1. Details with respect to landform coverage are provided in Table 3.3.

Table 3.2 Survey coverage.

Survey unit (SU)	Landform	Survey unit area (SUA) (m^2)	Visibility (V) %	Exposure (E) %	Effective coverage area (ECA) (m^2) (=SUA* V%*E%)	Effective coverage % (=ECA/SUA *100)
1	Lower slope	564	80	80	361	64
2	Lower slope	724	80	80	463	64
3	Lower slope	731	50	50	3.7	25
4	Lower slope	1961	5	10	888	0.5
5	Lower slope	1657	50	50	4.5	25
6	Alluvial fan	906	5	10	361	0.5
7	Alluvial fan	2142	5	10	463	0.5
8	Alluvial fan	680	5	10	183	0.5
9	Alluvial fan	544	5	10	9.81	0.5
10	Alluvial fan	167	5	10	414	0.5
11	Creek	976	90	100	4.53	90

Survey unit (SU)	Landform	Survey unit area (SUA) (m^2)	Visibility (V) %	Exposure (E) %	Effective coverage area (ECA) (m^2) (=SUA* V%*E%)	Effective coverage % (=ECA/SUA *100)
12	Valley infill	522	5	10	10.7	0.5
13	Valley infill	313	5	10	3.4	0.5
14	Valley infill	442	5	10	2.72	0.5
15	Creek	227	90	100	0.84	90
16	Valley infill	678	5	10	878	0.5
17	Creek	165	90	100	2.61	90
18	Valley infill	538	5	10	1.57	0.5
19	Creek	598	90	100	2.21	90
20	Alluvial fan	4006	5	10	204	0.5
21	Floodplain	428	5	10	3.39	0.5
22	Creek	253	5	10	149	0.5
23	Floodplain	1113	5	10	2.69	0.5
24	Creek	339	5	10	538	0.5
25	Floodplain	3138	5	10	20	0.5
26	Floodplain	2825	5	10	2.14	0.5
27	Alluvial fan	2435	5	10	1.27	0.5
28	Lower slope	103	5	10	5.57	0.5
29	Lower slope	607	5	10	1.7	0.5
30	Lower slope	1457	5	10	15.7	0.5
31	Lower slope	576	80	80	14.1	64
32	Lower slope	969	80	80	12.2	64
33	Spur	383	5	10	0.52	0.5
34	Spur	909	5	10	3.04	0.5
35	Spur	1396	5	10	7.29	0.5
36	Spur	719	5	10	369	0.5
37	Floodplain	615	5	10	620	0.5
38	Floodplain	786	5	10	1.92	0.5

Survey unit (SU)	Landform	Survey unit area (SUA) (m^2)	Visibility (V) %	Exposure (E) %	Effective coverage area (ECA) (m^2) (=SUA* V%*E%)	Effective coverage % (=ECA/SUA *100)
39	Floodplain	1356	5	10	4.55	0.5
40	Floodplain	1499	5	10	6.98	0.5
41	Spur	965	5	10	3.6	0.5
42	Spur	2543	5	10	3.08	0.5
43	Spur	187	5	10	3.93	0.5

Table 3.3 Landform summary—sampled areas.

Landform	Landform area (LA) (m^2)	ECA	% Landform effectively surveyed (=ECA/LA *100)	Number of Aboriginal sites located in survey	Number of artefacts or features located in survey
Floodplain	11760	58.8	0.5%	0	0
Alluvial fan	10880	54.4	0.5%	0	0
Lower slope	9349	2430.76	26%	0	0
Spur	7102	35.51	0.5%	1 (Echidna djurabihl)	0
Creek	2558	1772.36	69.3%	0	0
Valley infill	2493	12.465	0.5%	0	0
Total	**44142**	**4364.295**	**16.21%**	**1**	**0**

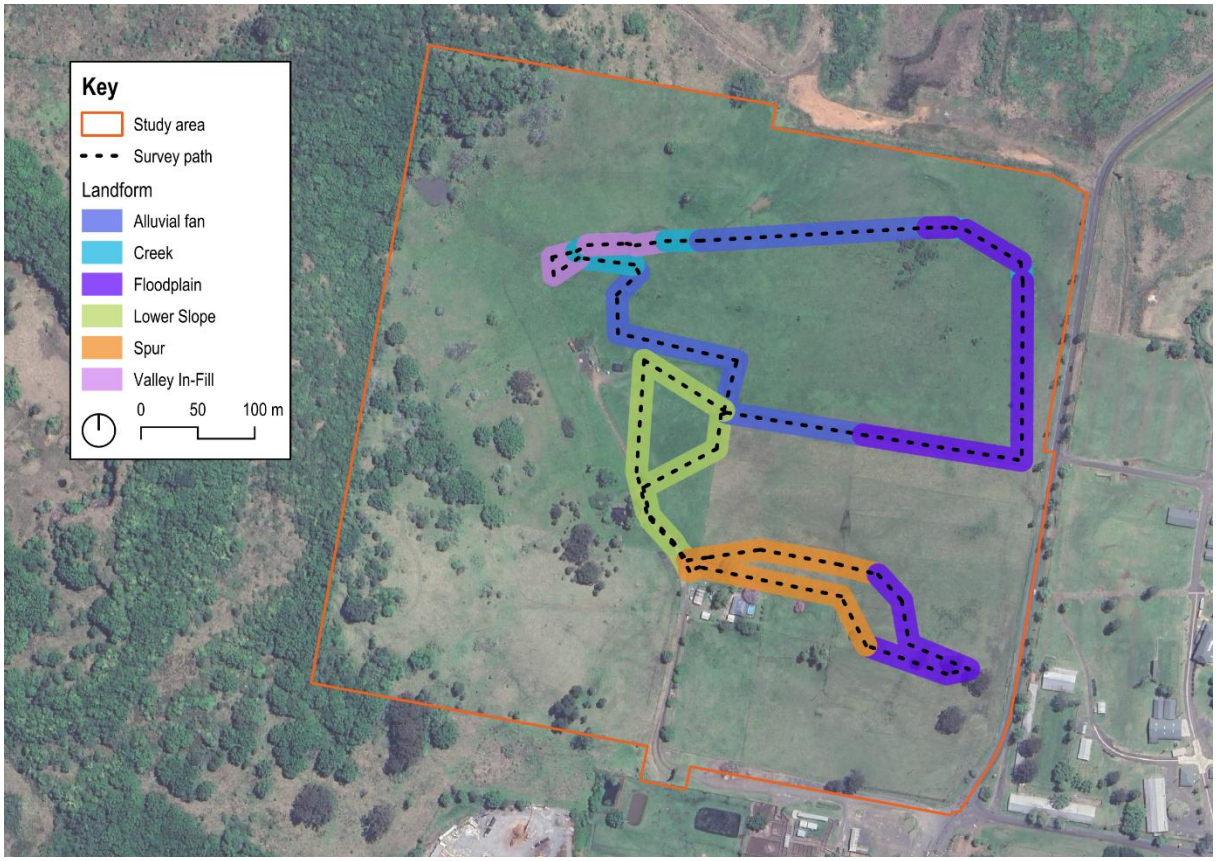

Figure 3.2 Landforms and survey transects across the study area. (Source: SIX Maps with GML overlay)

3.3 Survey results—Aboriginal sites/places and landscapes

[redacted]

Table 3.4 [redacted]

[redacted]

Figure 3.3 [redacted]

3.4 Endnotes

1 Department of Environment, Climate Change and Water (now Heritage NSW), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, September 2010, p 13.

2 Department of Environment, Climate Change and Water (now Heritage NSW), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, September 2010, Appendix A.

3 Wandsnider, LA and Camilli, EL 1992, 'The Character of Surface Archaeological Deposits and its Influence on Survey Accuracy', *Journal of Field Archaeology*, 19(2), pp 169–188; Fanning, P and Holdaway, S 2001, 'Stone Artefact Scatters in Western NSW, Australia: Geomorphic Controls on Artefact Size and Distribution', *Geoarchaeology: An International Journal*, 16(6), pp 667–686.

4 Aboriginal archaeological test excavation

4 Aboriginal archaeological test excavation

This section presents the results of the Aboriginal archaeological test excavation completed within the study area. The test excavation examined a large portion of the study area for subsurface Aboriginal archaeological deposits, as the entire study area was designated as holding PAD during the pedestrian survey.

Combining the results of survey and test excavations allows for the development of an archaeological zoning plan that defines where Aboriginal evidence is, and could be, located within the study area. Consideration has also been given to possible locations that do not contain physical evidence of Aboriginal occupation, but could have been significant as part of Aboriginal use of this landscape, such as walking tracks, ceremonial areas, Dreaming trails etc.

4.1 Test excavation methodology

An archaeological research design (ARD) was developed for archaeological test excavation of the study area and issued to the Widjabul Wa-bal for a 28-day review period on 16 September 2024 in accordance with the consultation requirements of the ILUA. In 2025, the proposed locations of school buildings within the existing site boundary were altered, necessitating additional test excavation. An ARD for additional test excavation was issued to the Widjabul Wia-bal on 21 February 2025 for the 28-day review period. The methodology contained in both ARD is presented below.

Archaeological test excavation would be undertaken in accordance with the Code of Practice. The test excavation program is proposed to help clarify, determine and characterise the Aboriginal archaeological potential of the soils and sediments within areas of the activity where impacts are proposed. The results of test excavations would inform future management methodologies for the construction phase, as required.

Test units (TUs) will be placed within the areas of potential that will be subject to disturbance as part of the proposed works. The proposed TU layout is presented in Figure 4.1. In total up to 100 TUs may be excavated.

The 2024 excavations proposed to excavate test units on a 30m grid across the then-proposed footprint of the new school buildings and sports grounds. This grid pattern corresponds to the placement of boreholes and test pits proposed for the geotechnical and contamination investigations. The 2025 excavations proposed a smaller 20m grid across the development footprint due to the cultural sensitivity of the Echidna djurabihl.

During the field survey an area of cultural sensitivity was identified in the southeastern corner of the study area. Based on discussions with the WWGAC representatives, it is proposed to excavate four test units spaced 20m apart across this area (Figure 4.1).

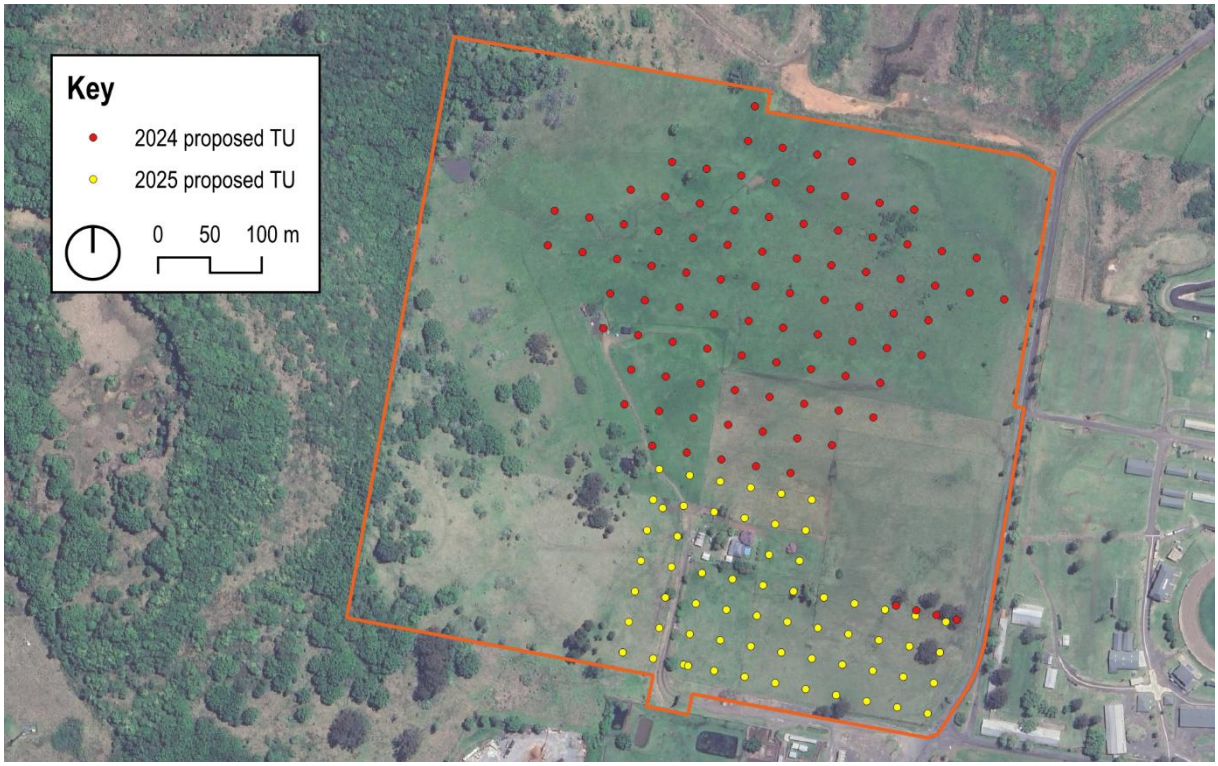

Figure 4.1 Proposed locations of archaeological TUs within the study area. The four 2024 TU (shaded red) in the south-east were requested by WWGAC representatives during the field survey due to the area's cultural sensitivity. (Source: SIX Maps basemap with GML overlay)

Excavations will consist of 500mm by 500mm TUs excavated in 100mm 'spits' or natural stratigraphy, whichever is smaller, to an archaeologically sterile horizon (eg B horizon subsoils). Any archaeological feature would be excavated according to its stratigraphy. TUs would be spaced according to the locations discussed above. The first TU on a given landform would be excavated in 50mm spits.

The decision to excavate a TU at each location specified would be determined in the field in response to on-site conditions. Some proposed TU locations may be moved or skipped (ie not excavated) based on the initial results of excavation, provided both archaeologists and WWGAC representatives agree on this course of action. For example, should it be identified that significant earthworks have occurred within a portion of the study area, removing intact soils with potential for Aboriginal objects, the TUs in that area may be abandoned once disturbance is identified.

TUs may be expanded to capture the extent of an archaeological feature; however, the expansion of individual TUs would not exceed 3m^2 as per Code of Practice requirements.

Should five or more Aboriginal objects be present in a TU, the TU could be expanded to 1m^2 to understand the nature and extent of the archaeological deposit.

The decision to expand a TU would be based on the progress of the archaeological works, the need to clarify a deposit, and the outcomes of adjacent TUs.

Additional TUs may be placed at 10m or 5m intervals surrounding a TU should initial excavations confirm the presence of archaeological material. The trigger for additional TUs would be 20 artefacts/m^2. The decision to expand any TU would be discussed with the WWGAC representatives on site.

The final locations of all excavated TUs will be surveyed following test excavation.

All archaeologically excavated deposits will be wet sieved through a 3mm mesh on site. Sieving may be conducted into skip bins or in a suitable location that ensures water runoff does not impact the tested area (ie not upslope) or nearby waterways. Sediment controls, such as sediment fencing, would be employed as necessary.

Any Aboriginal objects from test excavations would be initially assessed on site, followed by detailed analysis and recording off site. All lithics would be analysed in accordance with the standards of *A Record in Stone: The Study of Australia's Flaked Stone Artefacts*.[1]

All fieldwork recording would be undertaken by a qualified archaeologist. For each TU, the following data would be collected:

- the location of each TU, section or feature sampled;
- description of all stratigraphic units, including a detailed photographic record—recording will be undertaken in accordance with the *Australian Soil and Land Survey Field Handbook* (The National Committee for Soil and Terrain, 2009); and
- environmental, archaeological and dating (if applicable) sampling of individual stratigraphic units.

4.1.1 Research questions

The first objective of the archaeological test excavation within the current study area was to undertake excavation that allows for soil horizons across the study area to be clarified, characterised, described, and assessed for their archaeological potential.

The second objective was to determine whether these soil profiles contain archaeological materials and to undertake an assessment of them within a regional context.

To achieve these two objectives, research questions were established to guide the archaeological process and provide the basis for questioning the data collected. Relevant research questions included the following:

1. What are the characteristics of the soil horizons? How has land use history impacted the study area and survival of soils, and thus archaeological material? Is there a difference in soil integrity across the tested area?
2. What are the physical attributes of the archaeological deposit present? Is there archaeological evidence that can be dated? Does the deposit reflect continued long-term landform occupation? Or is it specific to one period in the past?
3. How can the deposit be interpreted in terms of cultural use across the landscape? Are there spatial and/or stratigraphic variations in the deposits? Can archaeology be interpreted in a regional context? Is the deposit linked with the traditional use of the adjacent showgrounds area?
4. How are the archaeological deposits culturally significant? How does the Aboriginal community view and value the deposit identified? How should other nearby archaeological deposits be approached in terms of heritage management?

4.2 Test excavation results

The Aboriginal archaeological test excavation program was completed in three phases by a team of archaeologists and WWGAC representatives. The first phase was undertaken between 23 September to 15 October 2024, the second phase between 9 to 16 April 2025, and the third phase between 5 to 8 May 2025.

A total of 124 TUs covering 31.5m^2 was excavated to B horizon clays, or otherwise archaeologically sterile deposits, in 100mm spits. Of this area, 18.75m^2 was excavated on colluvial landforms, including 9m^2 on the [redacted] 8.25m^2 on slopes and 1.5m^2 on the northern spur. A total of 12.75m was excavated on alluvial landforms, comprising 5.75m^2 on the floodplain, 4.75m^2 on the alluvial fan/s and 2.25m^2 in valley in-fill landforms.

During Phase One, not all initially proposed TU could be excavated due to logistical constraints. Therefore, areas with higher levels of archaeological potential or intact soil deposits, as verified during initial excavations, were targeted following consultation with on-site WWGAC representatives. It was agreed that the revised sampling grid had sufficient spacing between TUs to adequately characterise the Aboriginal archaeological potential of each sampled landform.

Following Phase Two, based on discussions with on-site WWGAC representatives following the completion of phase two and given the [redacted] landform and frequency of artefacts recovered from it, it was agreed to relocate TUs to this landform for phase three. The density of TUs across the floodplain was reduced to three and additional TUs spaced at 20m intervals across the djurabihl, aiming to facilitate a better understanding of the archaeological sensitivity of the landform.

Refinement of the proposed extent of works meant TUs west of Alexandra Parade were no longer warranted, excepting three TUs placed in anticipation of future geotechnical works. In addition, four TUs were placed around the extant house to investigate the degree to which historical land uses had impacted the archaeological sensitivity of this area. The revised sampling grid was developed in collaboration with on-site WWGAC representatives and was provided via email to the WWGAC on 22 April 2025 (Figure 4.2).

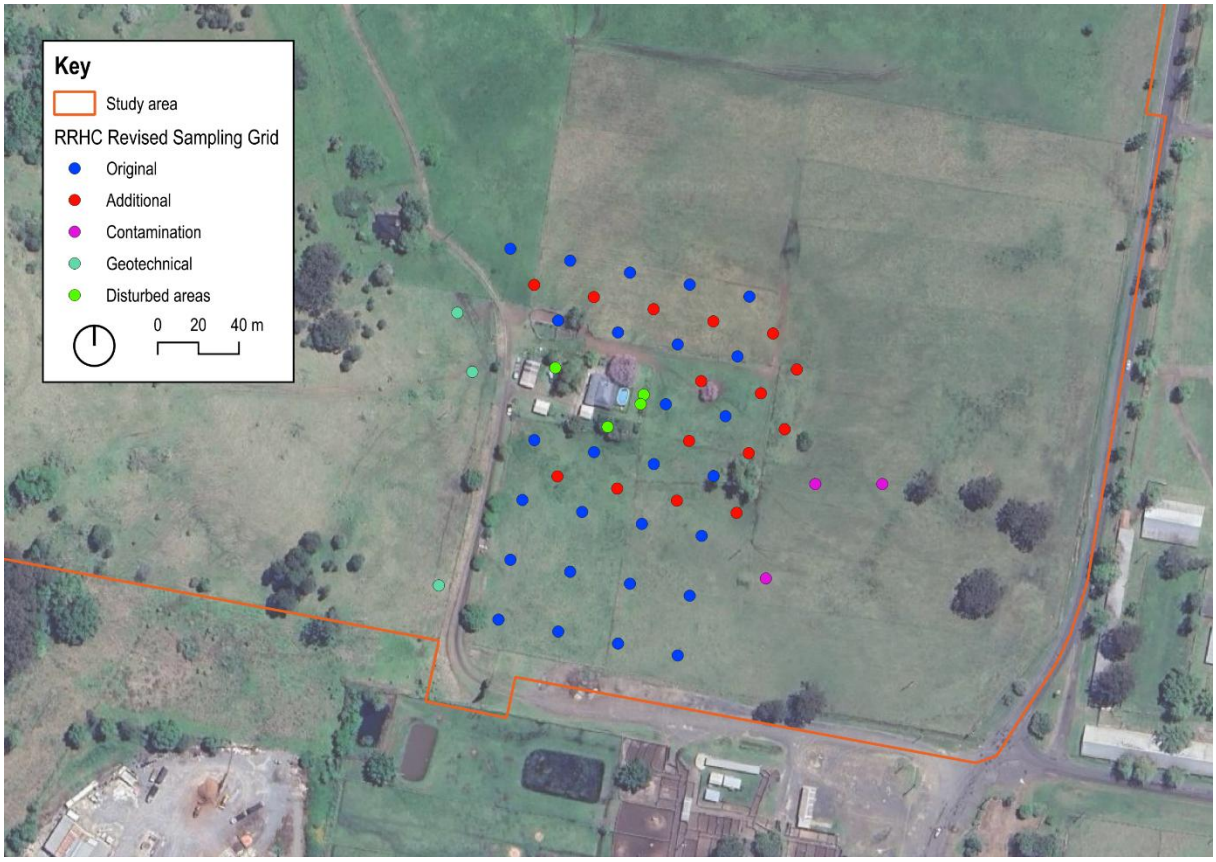

Figure 4.2 Revised sampling grid for Phase Three. (Source: SIXMaps with GML overlay)

[redacted]

The trigger point for expansion was five artefacts in a single TU. That point was not reached in any TUs. However, after consultation with RAPs, T403 was expanded to 1m by 1m due to the archaeological potential of that location. No Aboriginal cultural features were identified during test excavations.

[redacted]

The consensus was that test excavations had successfully confirmed the archaeological nature and extent of Aboriginal objects within the study area, culminating in the opinion that there are no intact Aboriginal archaeological deposits within the sampled soil and sedimentary deposits. Due to the limited archaeological signature of 44 artefacts, the remainder of the study area has been assessed as having a very low potential to contain Aboriginal objects as a background scatter, resultant from random and unpredictable redeposition of archaeological materials by erosive processes, construction and agricultural activities. No further Aboriginal archaeological excavations are required after this phase of archaeological test excavation.

Table 4.1 provides a summary of all excavated TUs including landform, soil landscape and number of lithics recovered. The locations of the TUs is shown in 4.3 to 4.6.

Table 4.1 [redacted]

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Figure 4.3 [redacted]

Figure 4.4 [redacted]

Figure 4.5 [redacted]

Figure 4.6 [redacted]

4.3 Analysis and discussion

4.3.1 Soil conditions (integrity and condition)

The study area is located across three soil landscapes as defined by Morand:[2] Coolamon, Disputed Plain and Leycester (Figure 2.9). Each of these landscapes was subject to archaeological testing. As expected, the depth of soil across the study area varied according to the soil landscape, the level of erosion and the extent of historical impact any location had been subject to. The stratigraphic sequence of soil horizons broadly conformed to that described by Morand. There was evidence of impacts and mixing of soils, for example the presence of subsurface historical material or exotic gravels in some TUs. Classification of stratigraphic horizons associated with the soil landscapes occurred in the field following the formal definition in Morand.

Coolamon

The Coolamon soil landscape comprises the slopes and spurs of the NLP. Soil characteristics varied slightly between landform types but can broadly be described as follows:

- **Topsoils (A horizons)**—between 100mm and 400mm of dark brown/greyish brown silty clay to clay loam, moderately compacted with abundant rootlets, ironstone concretions and small (<10mm) sub-angular to sub-rounded colluvial basalt gravels. Some TUs contained a ~10–30mm humic 'top dressing' layer, which was interpreted as loosely consolidated, recently deposited colluvial material. Generally thicker on spur landforms. No differentiation between A_1 and A_2 horizons was observed.
- **Subsoils (B and C horizons)**—medium to heavy brown clay, compact, plastic, with few rootlets and moderate sub-angular to sub-rounded colluvial basalt gravels. Gravel size increased with depth and some TUs (notably T101) showed clast-supported gravels in a silty matrix.

[redacted] In general, the colluvial origin of these soils indicates that these artefacts were not recovered from their original depositional context. All but two were associated with spur landforms, which contained deeper, less eroded soils when compared with the NLP slopes. Slopes contained shallower soils with higher percentages and sizes of colluvial basalt gravels. Furthermore, most slope TUs were in a paddock with nearby dirt roads/tracks, agricultural structures and stormwater drains. The presence of material on the spurs is likely also reflective of higher intensity or frequency of Aboriginal land use on these landforms, for example as transit corridors or camping locations.

[redacted] were recovered from heavily disturbed contexts associated with the extant homestead (from TUs 16-05, 16-05A, 19-01, 19-03, and 19-04).

These areas comprised anthropogenic soils, evidenced most clearly by the presence of blue plastic at the base of TUs 16-05 and 16-05A. It is unclear whether these soils have been wholesale imported to the site, if they comprise redeposited soils or a combination of the two. The redeposited material showed similar physical characteristics to nearby Coolamon soils and so may simply be redeposited material from the immediate vicinity. Consultation with WWGAC representatives confirmed these artefacts could reasonably be associated with [redacted], albeit not necessarily in the specific location in which they were found.

Disputed Plain

The Disputed Plain soil landscape is located along alluvial valley infill and fan landforms. On-site observations indicated that these soils extend farther west, which is supported by regional geological mapping (Section 2.2.1). No variation between valley infill or fan deposits was observed. Based on the test excavation, the soil profile can be characterised as follows:

- **Topsoils (A horizon)**—between 100mm and 300mm of brown clay loam to light clay with abundant rootlets, ironstone concretions, small (<10mm) sub-angular to sub-rounded basalt gravels and sub-rounded quartz gravels.
- **Subsoils (B horizon)**—brown medium to heavy compact, plastic clay with very few rootlets.

[redacted] Very high numbers of small (<10mm) sub-rounded quartz gravels were recovered from this soil landscape, particularly from TUs adjacent to a creek line. These quartz gravels were sub-rounded which, combined with their position within alluvial deposits adjacent to an active creek, suggests a fluvial origin. This inference is further supported by the general soil characteristics, which are consistent with silica-rich parent materials as described in Morand.

[redacted]

[redacted]

Leycester

The Leycester soil landscape is mapped across the floodplains of the study area. Based on the test excavation, the soil profile can be characterised as follows:

- **Topsoils (A horizon)**—between 100mm and 300mm of self-mulching dark brown to black light clay with abundant plant roots and occasional ironstone concretions and small basalt gravels.
- **Subsoils (B horizon)**—greyish black to black medium to heavy clay, compact, plastic with occasional rootlets.

[redacted]

Leycester soils form as deposited layers of clay-rich sediments over time, continuing to the present day. The surface layer shrinks and swells with drying and wetting, allowing humic aggregates to mix into it, thereby creating a topsoil layer. Test excavations were largely limited to these topsoils as shallow groundwater levels combined with high clay compaction necessarily limited deeper excavation. It is likely that test excavations were limited to post-1840 alluvial sediments. Some TUs were excavated into the B horizon clays with no Aboriginal artefacts recovered but it is unclear at what depth pre-1840 alluvium may be expected.

4.3.2 Lithics analysis

2024 Excavations

Nine artefacts were recovered from seven of the 70 0.5 x 0.5m test pits. During sieving an additional chert flake was found in T403 and two potential mudstone flakes in T105 were observed but these were not recovered due to the very small size of these artefacts. Although the majority of test pits recorded no artefacts, the average artefact density across the site for all 70 pits is 0.5 artefacts per m^2, with a maximum density of 4 artefacts per m^2 in test pits T1002 and T104.

The assemblage mostly comprises flakes (44%), flaked pieces (22%) and a single core (11%), pot lid (11%) and retouched flake (11%) (Figure 4.4). The core is a small chert multiplatform core with a small amount of cortex (Figure 4.5), whereas the retouched flake is a crystal quartz bifacial side scraper (Figure 4.6).

Almost all artefacts in the assemblage are broken. The core is the only complete artefact. One artefact is a pot lid (heat spall) and indicates that a local fireplace once existed.

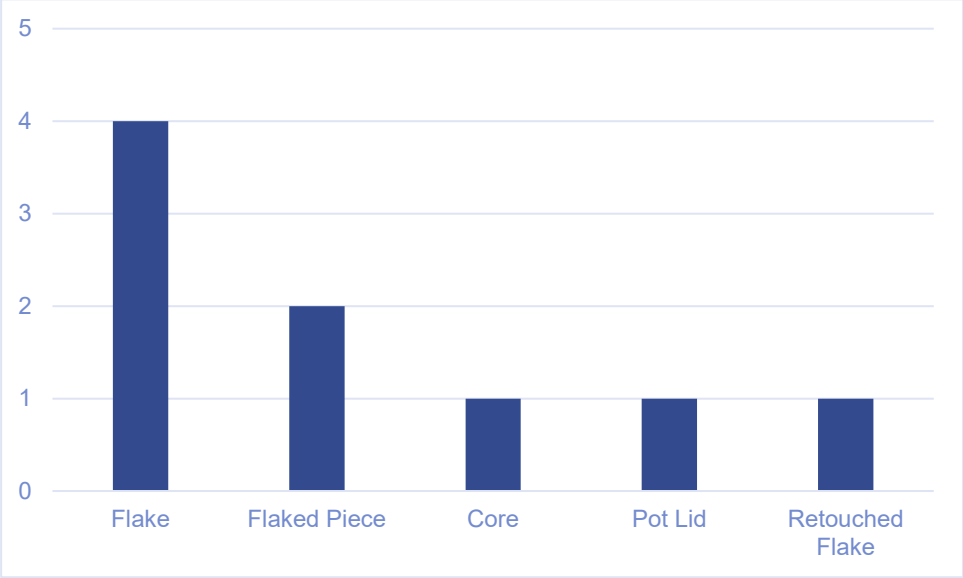

Figure 4.7 Frequency of different artefact types.

Figure 4.8 [redacted]

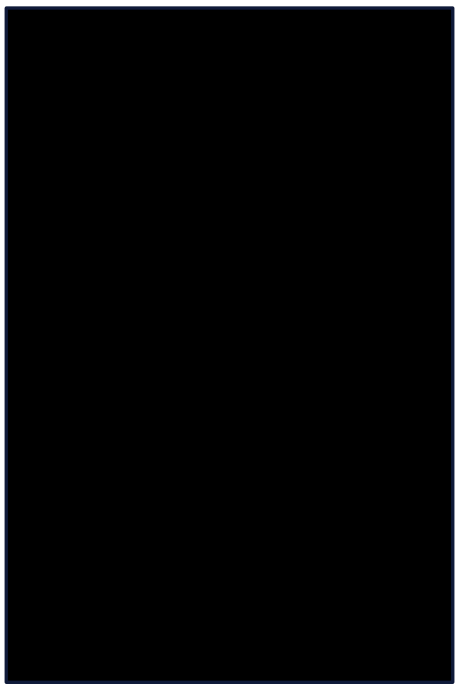

Figure 4.9 [redacted]

Raw materials

The assemblage is dominated by chert artefacts (44%), followed by chalcedony (22%), basalt (11%), crystal quartz (11%) and silcrete (11%) (Figure 4.7). Cortex is mostly absent from all but the basalt flake (100% rounded), core (10% irregular) and retouched flake (20% angular). The types of cortex suggest materials were collected from quite different geological environments. The basalt and chalcedony likely derive from the underlying Lamington Volcanics. Silcrete may also derive from sources adjoining volcanics. Cherts likely derive from stream beds.

Several (N=4) crystal quartz flakes were also found as surface finds during the excavation, within the roughly central north–south corridor of artefacts through the study area.

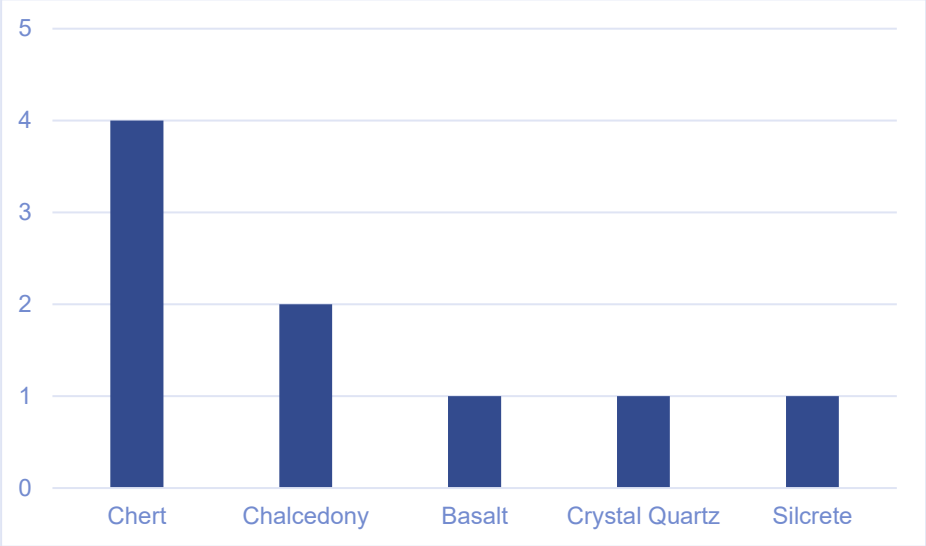

Figure 4.10 Frequency of different raw materials.

Dimensions

All artefacts excepting the basalt flake are small, with a mean mass of 3.29g and a mean maximum dimension of 10.7mm (Figure 4.3). Artefacts are slightly longer than they are wide (L:W = 1.25) with width double thickness on average (W:T = 2.13). Platforms are wide and thick with platform angles in the ideal range.

Table 4.2 Mean and standard deviation of stone artefacts for key attributes.

Attribute	Average	Standard deviation
Mass g	7.66	14.53
Maximum dimension	15.47	17.95
% cortex	14.44	32.83
Length	15.48	14.28
Width	12.55	14.03
Thickness	5.89	7.7
Platform width	18.81	19.98
Platform thickness	5.99	7.36
Platform angle	61.50	3.54

Spatial distribution

Stone artefacts are distributed in a roughly north–south corridor from T1002 and T901 in the north to T105 in the south (Figure 4.8). The largest numbers of artefacts were found in T104, T105, T403 and T1002 (N=2) across the test pitting area. The five crystal quartz surface finds also fit within this corridor.

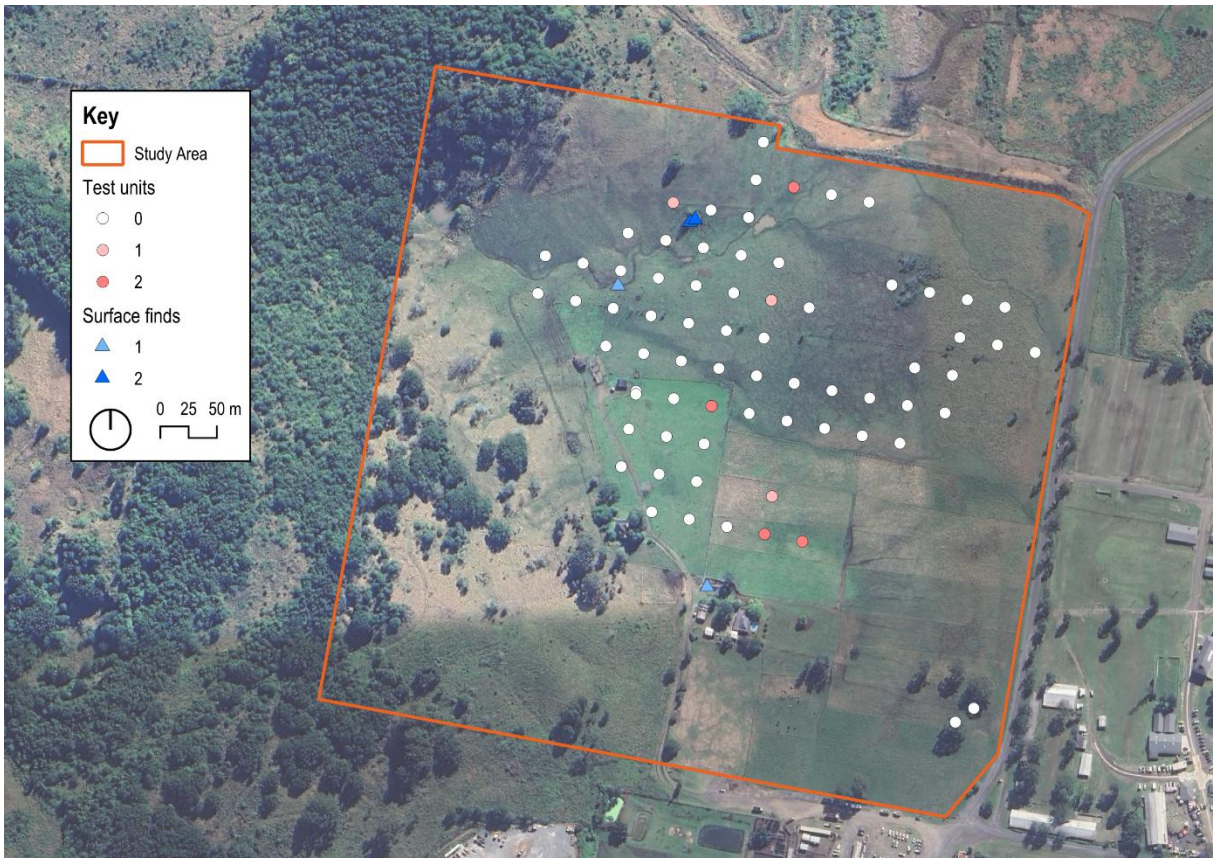

Figure 4.11 [redacted]

Vertical distribution

Artefacts were recovered at varying depths down to a maximum depth of 30cm in Spit 3 in T104 and T401 (Figure 4.9). There appears to be no real difference in raw materials or artefact types with depth; however, the sample size is too small to be sure of possible changes through time.

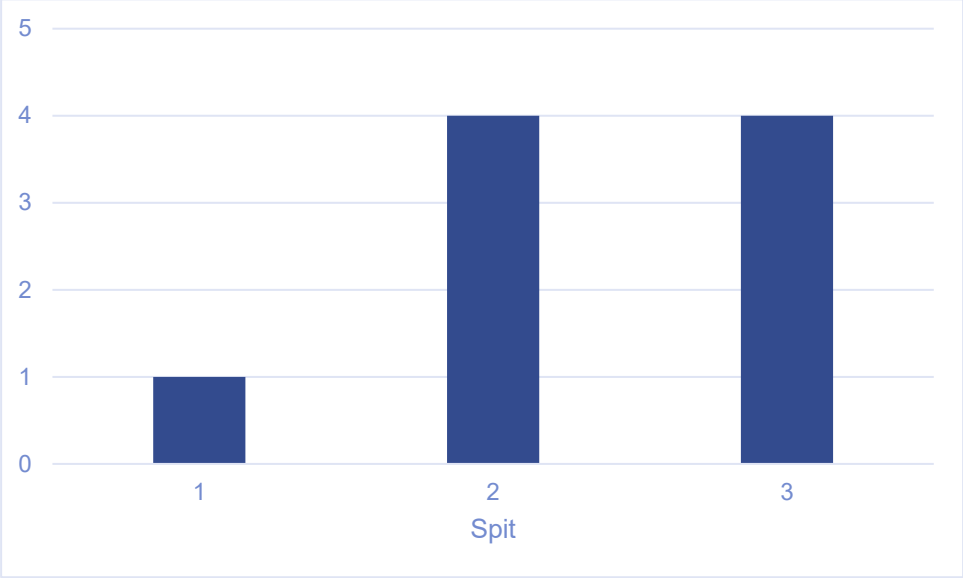

Figure 4.12 Vertical distribution of artefacts.

Conclusion

The 2024 RRHC lithic assemblage consists of a small, low-density scatter of artefacts. These are small in size and mostly made from chert and chalcedony, which may derive from river gravels but may also be from more distant sources. Only one artefact is made from locally derived basalt. A heavily worked chert core attests to some local implement manufacture. Overall, the sample size is too small to answer high-level behavioural or temporal questions. However, the small size of the artefacts, high levels of breakage and overall sparseness of lithics points to infrequent discard of stone artefacts by people likely moving through quickly and not staying or camping long. No strong or clear association was noted between artefact locations and drainage lines in the test pitting area.

2025 Excavations

Twenty-nine artefacts were recovered during sieving from seven of the 53 0.5m-by-0.5m pits representing seven different artefact types (Table 1). An additional lithic was observed atop a geotechnical trench spoil pile. Post-excavation lithics analysis has confirmed that twenty-seven of these artefacts are Aboriginal objects. Two potential objects recovered from TU13-04 were confirmed to be non-artefactual. The assemblage is mostly composed of flakes (N = 19, 70%), bipolar flakes (N = 2, 7%) and flaked pieces (N = 2, 7%) (Table 4.2, Figure 4.13). All other artefact types consist of a single specimen each, and include a quartz crystal manuport, some yellow ochre, a redirecting flake and a retouched flake which may be backed along one edge (Figure 1).

Most artefacts are incomplete (67%) while distal (30%), medial (15%) and proximal fragments (11%) are most common.

Almost all artefacts in the assemblage are broken with the core the only complete artefact. One artefact is a pot lid (heat spall) and indicates a local fireplace once existed.

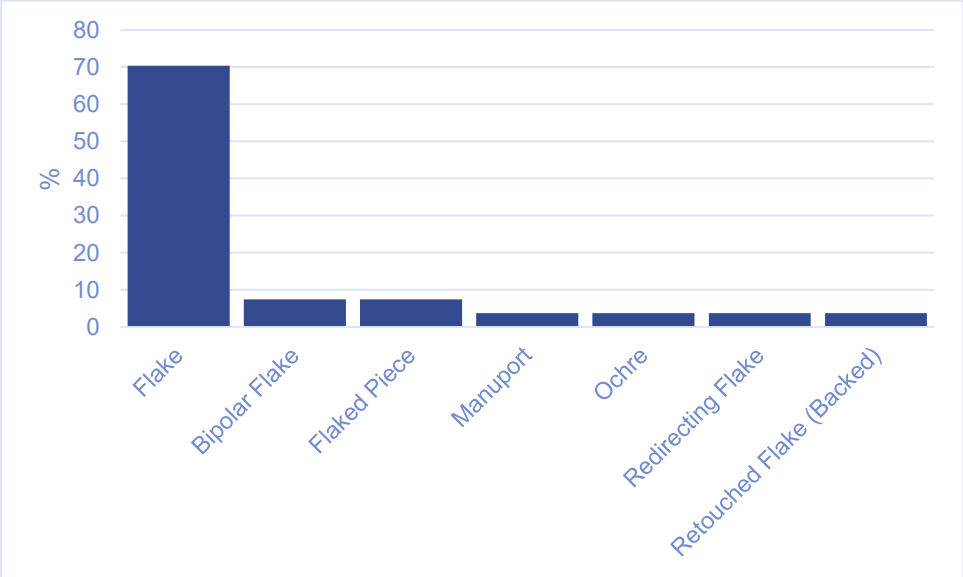

Figure 4.13 Frequency of different artefact types.

Raw materials

The assemblage is dominated by chert artefacts (n = 11, 41%), followed by silcrete (N = 8, 30%), basalt (N = 4, 15%) and crystal quartz (N = 2, 7%). The remaining raw materials have only a single specimen and represent 4% of the assemblage each: ochre and milky quartz (Table 4.2, Figure 4.13). The silcrete flakes are mostly grey in colour but on is bright red and this likely indicates heating (Figure 3). A chert artefact also has pot lidding indicating uncontrolled heating.

Cortex is present on only two flaked artefacts and only makes up 10% of the surface. A crystal quartz manuport is largely cortical with some damage that may suggest initial testing. The basalt and chalcedony likely derive from the underlying Lamington Volcanics. Silcrete may also derive from sources adjoining volcanics. Cherts likely derive from stream beds.

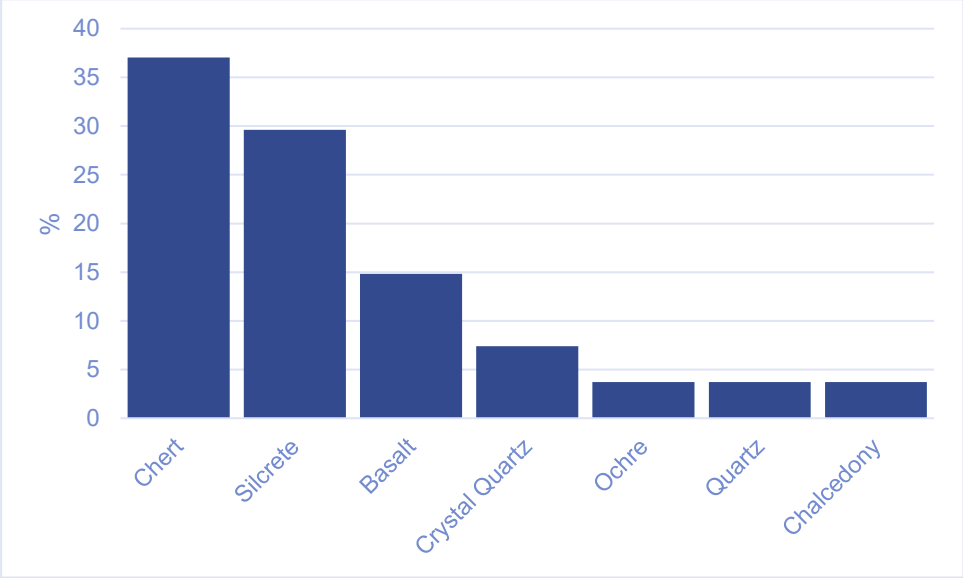

Figure 4.14 Frequency of different raw materials.

Dimensions

Stone artefacts are all small excepting two made from basalt (mean weight = 31 ± 3 g, Mean length = 53 ± 1.4 mm) and one chert retouched flake weighing 5.4g with a maximum dimension of 26.5 mm. All other artefacts have a mean weight of only 0.79 ± 1.17 g and a maximum dimension of 13.8 ± 7.3 mm. Summary statistics for all artefacts are provided by ram material in Table 4.2. Representative examples of the different artefacts are shown in Figure 4.15.

Artefacts are slightly longer than they are wide (Length:Width = 1.3) with width triple thickness on average (Width:Thickness = 3.35). Platforms are around a third the size of the dorsal area. Hertzian (19%) followed by crushed initiations (11%) are the most common while feather terminations are most common (41%) with only a few hinge terminations (7%). Platform types are mostly multiscarred (15%), single scarred (7.4%) or crushed (7.4%). Overhang removal is the dominant form of platform preparation (15%), while dorsal scar orientations are mostly from proximal to distal (22%).

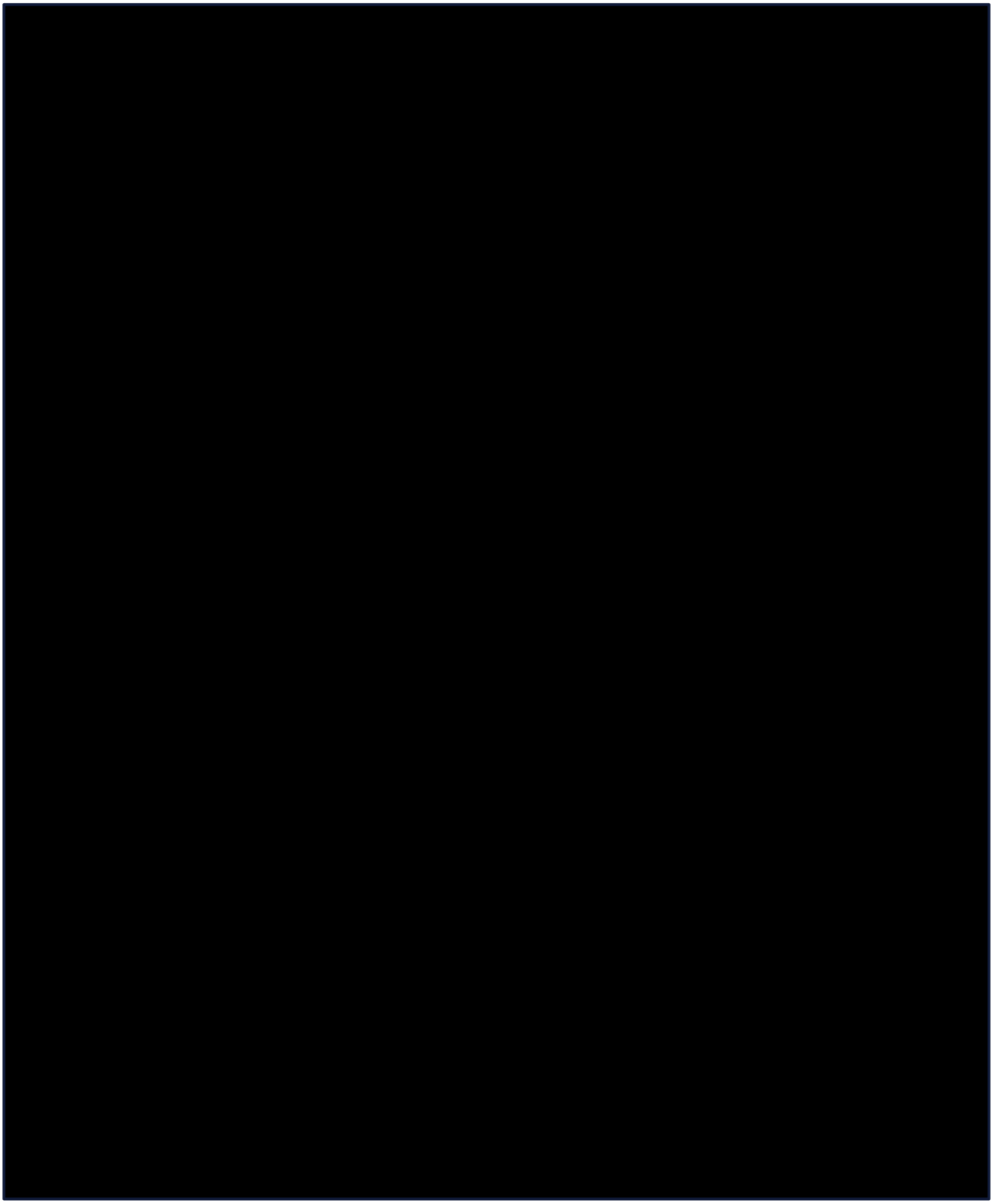

Figure 4.15 [redacted]

Spatial distribution

While the majority of test pits recorded no artefacts (60%), the average artefact density across the site for all 53 pits is 0.54 artefacts per m2, with a maximum density of 3 artefacts per m2 in test pits TU14-05 (Table 4.2). The majority of artefacts are found surrounding the vicinity of the modern-day homestead. This is because the homestead and the artefacts are located on a low-gradient ridgeline that extends eastward towards the flats that adjoin a creek line that flows into the Wilson River. This was likely a prime place for habitation on sightly elevated ground beside the flats. Artefacts recovered in the 2024 test pits were also distributed along the base of the low ridge line that adjoins the creek to the north of the 2025 pits.

Vertical distribution

Artefacts are found to a maximum depth of Spit 4, with most artefacts found in Spit 1 (55%), and declining thereafter (26% and 22%), with only one artefact found in Spit 4 (Figure 4.16). The possible backed artefact occurs in Spit 3, and this accords with a mid- to late Holocene peak in backed artefact abundance followed by a near-absence in the last 1000 years.[3] A single silcrete flake was also found at 40cm depth in a geotechnical trench, corresponding in depth to Spit 4.

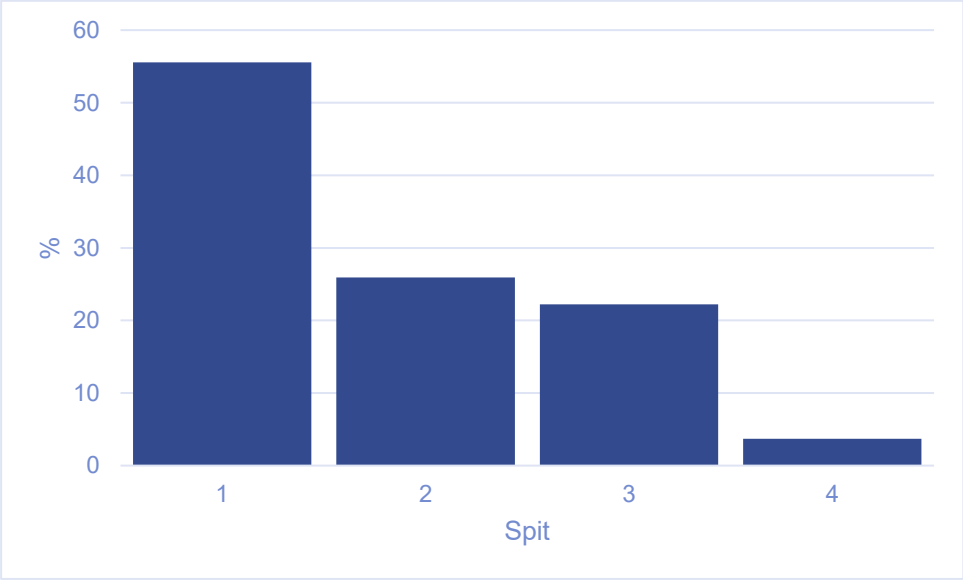

Figure 4.16 Number of artefacts recovered in each spit.

Conclusions

The Richmond River High Campus 2025 lithic assemblage consists of a small, low-density scatter of artefacts. These are all mostly small in size and mostly made from chert, chalcedony, silcrete and locally derived basalt with little to no cortex. The larger size of the basalt artefacts is consistent with a nearby source for this material.

A heavily worked chert core found in 2025 attests to some local implement manufacture but also high reduction intensity and low discard—both likely pointing to high mobility in the area with little discard of transported stone.[4] The presence of a possible backed artefact in Spit 3 also points to a mid-to-late Holocene age for the 2025 artefacts. The nature of the assemblage points to a series of small high mobility campsites (with some evidence for hearths in the form of burnt lithics) on the slightly elevated areas beside flats adjoining the river. These campsites are but a small subset of the sites that would exist along the river corridor, including at the neighbouring showgrounds. They may not be representative of sites closer to the river, however, which we might expect to show signs of more intensive habitation for longer periods, leading to higher artefact densities and more varied economic and technological activities.

Overall, sample size remains too small to answer many high level behavioural or temporal questions. However, the small size of the artefacts, high levels of breakage and overall sparseness of lithics points to infrequent discard of stone artefacts by people likely moving through quickly and not staying or camping long. Denser concentrations of artefacts might be expected nearer the Wilsons River and its banks but this remains outside of the test pitting area.

Comparison of 2024 and 2025 assemblages

The 2024 and 2025 assemblages are very similar, with most artefacts being small chert flakes that are likely byproducts of retouching or core manufacture, some retouched implements (a crystal quartz scraper in 2024 and a chert possible backed artefact in 2025) and a single chert multiplatform core in 2024. Artefacts from both phases of excavation are mostly made from chert, chalcedony and silcrete, with some larger basalt artefacts. Location of artefacts is also similar, fringing the low elevation slope beside flats and a creek line. The vertical distribution of the 2024 artefacts differed from that of 2025, however, with artefacts more prevalent in Spits 2 and 3 in 2024, and in spits 1 in 2025. This may simply reflect rates of sedimentation and burial in different geomorphic contexts.

4.3.3 Addressing the research questions

This section includes responses to the research questions presented in the ARD and incorporates the findings from both the field survey and test excavation.

What are the characteristics of the soil horizons? How has land use history impacted the study area and survival of soils, and thus archaeological material? Is there a difference in soil integrity across the tested area?

Topsoils across the study area were dark, clay-rich loams with differentiation between A and B horizons generally indicated by increased clay content, compaction and/or plasticity. No differentiation between A_1 or A_2 horizons was observed, which is consistent with regional soil landscape mapping.

Almost all Aboriginal objects were recovered from colluvial soils, which suggests they have been 'moved' from their original depositional context to their present location. It is likely that land clearing across the NLP has increased the frequency and intensity of colluvial and alluvial-caused soil erosion. In turn, this may have contributed to the spatial distribution of Aboriginal objects identified during the present study.

What are the physical attributes of the archaeological deposit present? Is there archaeological evidence that can be dated? Does the deposit reflect continued long-term landform occupation? Or is it specific to one period in the past?

Twelve Aboriginal objects were recovered from topsoil deposits in seven locations. Multiple materials and artefact types were noted.

The erosional nature of the colluvial Coolamon soil landscape means there is no potential for stratified or dateable archaeological evidence using scientific methods such as carbon dating or optically stimulated luminescence. Stratification in alluvial soils is possible; however, the lack of material in these locations means no relationships between soil layers and artefact position can be derived.

How can the deposit be interpreted in terms of cultural use across the landscape? Are there spatial or stratigraphic variations in the deposits? Can archaeology be interpreted in a regional context? Is the deposit linked with the traditional use of the adjacent showgrounds area?

[redacted] Given the erosional nature of the landforms that most objects were identified on, they are not necessarily representative of location-specific cultural activities, although they certainly demonstrate Aboriginal cultural use in association with the NLP.

The flaked stone objects indicate that the wider landscape was visited, and that people carried out stone discard activities on at least one occasion. Several flaked objects were large enough prior to breakage to have been carried to this location as flakes. The presence of small flaking debris (less than 15mm in size) indicated that stone flaking may have been carried out at the location where the objects were found. These objects were found on the spur landforms, which may have been favourable for camping due to their raised position in the landscape or as transitory corridors. A chalcedony pot lid was recovered from T1002 which indicates a local fireplace once existed.

The overall lack of material makes comparison with the regional archaeological record difficult. All objects have been made from materials that can be locally sourced.

The basalt was likely sourced from the NLP, as was the quartz. The chert and chalcedony were both likely sourced from the Wilsons River bedload. All objects are consistent with lithic technologies used within the Lismore region throughout the Holocene.

[redacted]

How are the archaeological deposits culturally significant? How does the Aboriginal community view and value the deposit identified? How should other nearby archaeological deposits be approached in terms of heritage management?

On-site WWGAC representatives indicated that the objects have inherent social value as tangible reflections of Aboriginal cultural activities in and surrounding the study area. This value is somewhat lessened by the low densities of material, which makes linking the finds to location-specific cultural use difficult.

The low density of Aboriginal objects across the study area (~0.5 artefacts/m^2) is consistent with nearby Aboriginal stone artefact sites. Previous studies have noted the high cultural sensitivity of the NLP for intensive, repeated occupation activities that leave an archaeological signature. During test excavations, most artefacts were found in association with alluvial or colluvial deposits near or on the slopes of the NLP, suggesting they are representative of cultural activities on the NLP, particularly the spur landforms. Therefore, these results further support the conclusions of previous research.

4.4 Endnotes

1 Holdaway, S and Stern, N 2004, *A Record in Stone: The Study of Australia's Flaked Stone Artefacts*, Museum Victoria and Aboriginal Studies Press, Melbourne.

2 Morand, DT 2009, *Soil Landscapes of the Lismore-Ballina 1:100,000 Sheets*, Edition 2 map, NSW Department of Environment, Climate Change and Water, Sydney.

3 Hiscock, P 2002, Pattern and Context in the Holocene Proliferation of Backed Artifacts in Australia. *Archaeological Papers of the American Anthropological Association,* 12**,** 163-177.

4 Clarkson, C 2007, *Lithics in the land of the lightning brothers: the archaeology of Wardaman Country, Northern Territory*, Canberra, ANU Press.

5 Scientific values and significance assessment

5 Scientific values and significance assessment

5.1 Preamble

Aboriginal heritage sites, objects and places hold value for communities in many different ways. The nature of those heritage values is an important consideration when deciding how to manage a heritage site, object or place and how to balance competing land use options.

The approach to Aboriginal heritage assessment is based on identifying the key Aboriginal heritage values—values that are likely to be both tangible and intangible. This approach needs to consider the values assessment from the perspectives of both the Aboriginal and scientific communities, in accordance with Australian best practice documents.

This assessment concerns itself with scientific values only. Aspects of social, historic and aesthetic value are assessed in the ACHAR, to which this report is an appendix.[1]

The primary guide to management of heritage places is the Burra Charter. The Burra Charter defines cultural significance as:

> Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations.
>
> Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.
>
> Places may have a range of values for different individuals or groups.[2]

5.1.1 Assessment criteria

This assessment has sought to identify Aboriginal heritage objects and sites within the study area and obtain sufficient information to determine the values of those objects and sites. Following Heritage NSW guidelines for assessing scientific value,[3] five key criteria have been considered during the examination of the scientific value/significance of the identified sites and places within the study area. These criteria are as follows:

- Research potential—does the evidence suggest any potential to contribute to an understanding of the area, region or state's natural and cultural history?

- Integrity and condition—integrity refers to the level of modification a site has been subject to (the cultural and natural formation process) and whether the site could yield intact archaeological deposits, which could be spatially meaningful. Condition considers the state of the material, which is especially relevant for organic materials.
- Complexity—the demonstrated or potential ability of a site to yield a complex assemblage (stone, bone and/or shell) and/or features (hearths, fire pits, activity areas).
- Archaeological potential—the potential to yield information (from subsurface materials that retain integrity, stratigraphical or not) that will contribute to an understanding of contemporary archaeological interest, or that could be saved for future research potential.
- Connectedness—whether the site can be connected to other sites at the local or regional level through aspects such as type, chronology, content (ie materials present, manufacturing processes), spatial patterning or ethnohistorical information.

- Representativeness—how much variability (outside and/or inside the study area) exists, what is already conserved, and how much connectivity is there?
- Rarity—is the study area important in demonstrating a distinctive way of life, custom, process, land use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential—does the study area contain teaching sites or sites that might have teaching potential?
- Archaeological landscapes—the study of the cultural sites relating to Aboriginal peoples within the context of their interactions in the wider social and natural environment they inhabited. Landscapes can be large or small depending on specific contexts (ie local or regional conditions); they may also be influenced by Aboriginal social and demographic factors (which may no longer be apparent).

A statement of Aboriginal scientific significance has been prepared that summarises the salient values as drawn from the above criteria.

5.2 Scientific assessment

5.2.1 Scientific assessment against criteria

The study area has been assessed against each of the criteria defined above.

Research potential

The study area holds low research potential.

[redacted]

All objects can be linked with Aboriginal activities undertaken within the wider NLP cultural landscape. Those on the spur can be linked to traditional activities on those landforms. However, the lack of material makes drawing associations with specific types of traditional activities difficult.

Artefacts are typical of others in the region in both material and typology.

Integrity and condition

The integrity and condition of soils throughout the study area are moderate.

Regional geology and soil mapping, pedestrian survey, examination of historical aerial photographs and the results of previous archaeological assessments showed that portions of the study area had been modified through historical disturbance, whereas others appear relatively intact.

Complexity

The complexity of the archaeological deposits identified is low.

The Aboriginal objects identified during the test excavation comprise 12 isolated finds or stone artefact concentrations. These objects were unstratified and were not spatially intact.

Landforms with potential for complex, stratified deposits include floodplains. The study area contains such landforms; however, test excavations failed to identify any cultural material. This is likely because test excavations were limited to post-1840 alluvial material.

Archaeological potential

The study area holds nil to very low archaeological potential.

Low levels of archaeological potential were ascribed to the scarp slope and alluvial valley infill and fan landforms before test excavations. Moderate levels of archaeological potential were ascribed to the spur and floodplain landforms.

Following the results of test excavations, the archaeological potential of the study area has been reassigned.

Connectedness

The archaeological evidence identified within the study area can be connected to those at a regional level through commonality in material content and relatively low density of artefacts. However, most artefacts were found on spur landforms, which is inconsistent with the regional patterning of Aboriginal sites. This may reflect a preference for occupation of these landforms, and the absence of finds on other sites may simply be because there have been very few archaeological investigations of these landforms in the wider region (ie sampling bias).

Due to the overall limited number of artefacts found during the test excavation and field survey, the finds hold little potential to further archaeological knowledge in the region of Lismore beyond what is already understood through previous investigations and the cultural knowledge of the Widjabul Wia-bal.

Representativeness

The artefacts are typical of others in the region in both material and typology.

Rarity

The artefacts are not rare in terms of raw material or method of manufacture.

Education potential

Although the objects are not rare or unusual in their raw material or method of manufacture, they do hold some educational value. They have the potential to be used in educational displays about Widjabul Wia-bal cultural heritage for the staff and future students of RRHC.

Archaeological landscapes

Archaeological deposits associated with the spurs, in conjunction with oral histories associated with this site, provide enough detail about the wider social and physical context to allow the study area to be described as an archaeological landscape. The archaeological accumulation of materials resulting from occupation activities, with clear zones of archaeological evidence, shows the importance of analysing the study area as a whole, rather than the sites in isolation.

The spatial patterning of archaeological deposits recovered from the study area indicates that the spur landforms were preferred locations for Aboriginal people’s activities.

5.2.2 Statement of scientific heritage significance

Overall, the study area holds low scientific significance. The Aboriginal artefacts have low research potential as they are typical of raw materials and artefact manufacture within the context of the region. They are neither rare nor representative examples of Aboriginal artefacts.

However, these artefacts could hold some educational value if suitably interpreted as part of a small display or educational collection. This could provide value to the staff and students of RRHC who may not be familiar with the area's Aboriginal cultural heritage.

The WWGAC's cultural landscape holds scientific value, notably as an element that provides cultural context to the lithics identified. For this assessment, we have included this value as a component under social value.

5.3 Endnotes

[1] This division is in line with Office of Environment and Heritage (now Heritage NSW) requirements for reporting and assessment, as defined under Office of Environment and Heritage, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, April 2011, Section 2.4.2; and Department of Environment, Climate Change and Water, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, September 2010, Requirement 11.

[2] Australia ICOMOS Inc, *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance 2013*, Australia ICOMOS Inc, Burwood, VIC, p 2.

[3] Office of Environment and Heritage, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, April 2011, p 10.

6 Appendices

6 Appendices

Appendix A

AHIMS Search Results

Appendix B

Fieldwork Records