



**GLENMORE PARK EAST REZONING – GLENMORE PARK, NSW**

**Aboriginal Heritage Assessment**

Prepared for Nergl Developments Pty Ltd

Penrith Local Government Area

September 2023

Ref. 2309

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## 1 Introduction

### 1.1 Project background

Nerpl Developments Pty Ltd seek to rezone approximately 43 hectares of land within Glenmore Park to enable urban development for new housing, open space and recreation, major roads and stormwater management. The site (the current 'study area') is within the Penrith Local Government Area and is approximately 52 kilometres west of the Sydney CBD. The location of the study area is shown on Figures 1 and 2.

Kelleher Nightingale Consulting (KNC) has been engaged by Nerpl Developments Pty Ltd to undertake an Aboriginal heritage assessment of the study area. This assessment has been undertaken in accordance with the Heritage NSW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*.

### 1.2 Summary of findings

One previously registered artefact scatter site (TNR AFT 05) and three newly recorded PAD areas (Glenmore Park East PAD 1, Glenmore Park East PAD 2 and Glenmore Park East PAD 3) are located within the study area. Outside of the identified Aboriginal sites, the remainder of the study area displayed low archaeological potential due to ongoing land use practices or unfavourable landform contexts.

Based on the preliminary design, the site and PAD areas will be at least partially impacted by proposed rezoning and subsequent development. Future detailed design for the project should take the location of the identified site/PADs into consideration and avoid impact where possible. All potentially impacted archaeological sites will require the implementation of a process for the management / mitigating of Aboriginal cultural heritage.

Specifically, a program of archaeological test excavation is proposed for the identified site and PAD areas located within the study area. Aboriginal Heritage Impact Permit (AHIP) would also be required prior to impacting Aboriginal archaeological sites. This would include a process of Aboriginal community consultation in accordance with the Heritage NSW *Aboriginal cultural heritage consultation requirements for proponents 2010* and preparation of an Aboriginal Cultural Heritage Assessment Report (CHAR) in accordance with the *Heritage NSW Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

The identified site and PADs do not pose a constraint to future rezoning, subdivision or development but they will require a process of further assessment, consultation and mitigation to comply with relevant legislation and associated requirements prior to any impact.

### 1.3 Investigator / contributors

A full list of investigator / contributors to the current study is included in Table 1 below.

**Table 1. Investigator / contributor**

Investigator / Contributor	Affiliation	Role
Dr Matthew Kelleher	Kelleher Nightingale Consulting	Advisor, Reporting, Survey and Review
Mark Rawson	Kelleher Nightingale Consulting	Reporting, Survey
Ben Anderson	Kelleher Nightingale Consulting	GIS Mapping
Madeline Harding	Kelleher Nightingale Consulting	Reporting
Steve Randall	Deerubbin Local Aboriginal Land Council	Cultural heritage advisor, Survey

### 1.4 Aboriginal Stakeholder Consultation

The project has been conducted in consultation with Deerubbin Local Aboriginal Land Council (DLALC). DLALC was contacted at the commencement of the project to discuss the proposed works and invited to participate in the archaeological survey.

The archaeological survey of the study area was arranged for Friday 8 September 2023. Steve Randall from DLALC participated in the survey. Any comments received from DLALC will be appended to the report.



Figure 1. Study area location



Figure 2. Detail of study area

## 2 Archaeological background

### 2.1 Database search (AHIMS) and known information sources

#### 2.1.1. AHIMS web services

The Aboriginal Heritage Information Management System (AHIMS) is a database operated by Heritage NSW and regulated under section 90(Q) of the *National Parks and Wildlife Act 1974* (NPW Act). AHIMS contains information and records related to registered Aboriginal archaeological sites (Aboriginal objects, as defined under the NPW Act) and declared Aboriginal places (as defined under the NPW Act) in NSW.

A search of AHIMS was conducted on 1 September 2023 to identify registered (known) Aboriginal sites or declared Aboriginal places within or adjacent to the study area (Client service ID 815445). The search results are attached as Appendix A.

The AHIMS database search was conducted within the following area:

Eastings: 285698 – 287450  
 Northings: 6256540– 6258888  
 Buffer: 0 metres (the search coordinates included a buffer around the study area).

The AHIMS search results showed:

<b>12</b>	<b>Aboriginal sites are recorded in or near the above location</b>
<b>0</b>	<b>Aboriginal places have been declared in or near the above location</b>

The type and distribution of registered Aboriginal sites within these coordinates are shown in Figure 3. The frequencies of site features (site ‘types’) within the AHIMS database search area are shown in Table 2.

**Table 2. Frequency of site types and context from AHIMS database search**

Site Context	Site Features	Frequency	(%)
Open	Artefact	12	100
<b>Total</b>		<b>12</b>	<b>100</b>

Two previously registered AHIMS sites (AHIMS 45-5-0309 and AHIMS 45-5-4804) were identified within the study area. The AHIMS results, the nature of previously recorded sites and previous archaeological investigations in the area are discussed further in section 3.2.

#### 2.1.2. Other heritage registers and databases

Other sources of information including heritage registers and lists were also searched for known Aboriginal heritage in the vicinity of the study area. These included:

- Penrith Local Environmental Plan 2010
- State Heritage Register and State Heritage Inventory
- Section 170 Heritage and Conservation Registers
- Commonwealth Heritage List
- National Heritage List
- Australian Heritage Database
- Australian Heritage Places Inventory
- Register of the National Estate (non-statutory archive).

No items of Aboriginal heritage were listed or registered on these databases within the study area.





Figure 3. AHIMS search results

## 2.2 Previous archaeological investigations

Previous archaeological investigations have been undertaken within the immediate vicinity of the study area. These investigations have included archaeological assessments related to the ongoing planning and development of precincts of the South West Priority Growth Area and road infrastructure projects. The pertinent studies are discussed below.

### Glenmore Park/Mulgoa Rise

Dallas undertook an archaeological survey of the South Penrith Development Site (the future suburb of Glenmore Park) in 1981 (Dallas 1982). The survey encompassed an area of approximately 800 hectares on the southern side of the Western Motorway between Mulgoa Creek and The Northern Road. The survey identified 20 surface artefact scatters and seven isolated artefacts. The sites were located on elevated locations or hills adjacent to School House Creek or an unnamed tributary of Surveyors Creek. Modern land-use practices such as ploughing were found to have disturbed many of the identified sites along Surveyors Creek while sites near School House Creek were found to be more intact. Low density artefact scatters with five or less artefacts constituted half the identified sites and most sites had less than 10 artefacts. Artefacts were predominantly flakes and flaked pieces made from chert and silcrete with some examples of mudstone and quartz. One basalt edge-ground hatchet was also identified.

Three disturbed, low density artefact scatters identified as part of the assessment were identified within the vicinity of the current study area: SP 12 (AHIMS 45-5-0310), SP 13 (AHIMS 45-5-0311) and SP 14 South Penrith (AHIMS 45-5-0412). One Aboriginal site was identified within the current study area, SP11 (AHIMS 45-5-0309). The site comprised an artefact scatter of nine artefacts located over an area measuring 120 x 50 metres. The artefacts consisted of one core, three flakes, three broken flakes and two flaked pieces (one with evidence of usewear). The sites were subject to a Consent to Destroy (Permit #450019) and are no longer extant.

Dallas and Steele conducted an Aboriginal archaeological survey and assessment of a portion of Lot 6800 DP 1013970, Glenmore Park (Dallas and Steele 2001a). The assessment area bordered the current study area to the west. No Aboriginal stone artefacts or culturally modified trees were identified during the survey. The slopes adjacent to Surveyors Creek were considered to have been disturbed by landuse practices and were assessed as having low archaeological potential; however, one area of potential archaeological sensitivity was identified within the Surveyors Creek corridor.

A subsurface testing program of the area of potential archaeological sensitivity was undertaken by Dallas and Steele in 2001 (Dallas and Steele 2001b). The program comprised 18 test trenches (1 x 1 metre) that were excavated in successive 10 centimetre spits using a backhoe fitted with a flat (batter) bucket and five 1 x 1 metre test squares which were manually excavated in 5 centimetre spits using hand tools. Soil profiles were found to be relatively uniform across the area with a depth between 20 centimetres and 40 centimetres. A total of 73 stone artefacts were recovered during the program. The artefacts were predominantly made from silcrete with smaller quantities of tuff and quartz also recovered. Artefacts recovered during the excavation were predominantly flakes and flake fragments whilst backed artefacts, cores, broken hatchet head fragments, retouched fragments and a scraper were also found. Artefacts were distributed in low densities across the tested area; however, one area contained a relatively higher artefact density and was interpreted as a knapping location.

The recovered stone material included a large volume of fragments which likely represented the remains of flaked material but could not be attributed to a formal artefact type. These fragments represented a stone type that did not naturally occur within the soil profile. The low density spatial distribution of artefacts and large quantities of stone fragments outside the knapping location were interpreted as reflecting the effect of natural process such as inundation from floodwaters and possible redeposition of material from upstream (Dallas and Steele 2001b: 47-48).

The Glenmore Park Southern Release Area, an area encompassing approximately 225 hectares west of the Northern Road, south of Ridgetop Drive and Mulgoa Nature Reserve, was assessed by Navin Officer in 2003. The assessment area was located to the west and south of the current study area and included a review of background information and a field survey. The survey identified eight archaeological sites and two areas of potential archaeological deposit. The sites were generally low density artefact scatters or isolated artefacts located on low hills or elevated positions adjacent to creeks. The artefacts were predominantly made from silcrete with minor quantities of chert, tuff and volcanic material also identified. Artefact types were primarily flakes and flaked pieces. A single backed artefact, scraper, core, grindstone and ground edge hatchet were also found. Much of the original landscape of Glenmore Park was considered to have been drastically altered from past landuse. The central portion of Glenmore Park was disturbed through the quarrying operations and subsequent regeneration of the Mulgoa Quarry. Historical landuse for agricultural and pastoral purposes had resulted in widespread vegetation clearance of much of the land, with some remnant vegetation in the south and isolated possible old growth trees across the landscape.

### **Glenmore Park South**

An Aboriginal heritage due diligence assessment was undertaken to accommodate a planning proposal for the extension of Glenmore Park at Mulgoa (Niche Environment and Heritage 2020). The assessment included lands located to the south of the current study area. The assessment included a desktop assessment which identified five previously registered Aboriginal archaeological sites within the assessment area. The sites comprised artefact scatters and isolated finds.

The desktop assessment included a review of historical aerial imagery which demonstrated that the assessment area had been subject to extensive disturbance related to farming practices over the last 60 years (Niche Environment and Heritage 2020: 17). The assessment determined that the landscape within the assessment area had likely been disturbed by land use practices, however it concluded that pockets of undisturbed archaeological deposits may remain across the assessment area. Based on a landscape assessment, it was concluded that despite evidence of land use disturbance, the study area displayed high surface and subsurface archaeological potential due to the presence of first and second order tributaries across the assessment area and previously recorded Aboriginal archaeological sites. The assessment recommended that further investigations and impact assessment would be required, including the preparation of a CHAR, Aboriginal communication consultation and the process of applying for an Aboriginal Heritage Impact Permit.

### **M4 Western Motorway**

An archaeological survey for Aboriginal sites within the M4 Western Motorway corridor between Parramatta and Emu Plains was conducted in 1996 (Brayshaw and Haglund 1996). The assessment area included the M4 Western Motorway corridor located to the north of the study area. The archaeological survey identified 20 Aboriginal archaeological sites that were predominantly low density artefact scatters (less than five artefacts) and isolated artefacts. Much of the road corridor was found to be heavily disturbed, resulting in an archaeological record that was not considered to be reflective or representative of past Aboriginal occupation and use of this area; however, two artefact scatters located near South Creek were found to have relatively high artefact density and low disturbance. These sites were located in close proximity to major waterways on defined topography such as terraces or level hills/ridges with limited disturbance from modern landuse practices and protection from fluvial activity and erosion.

Silcrete artefacts dominated the recorded assemblages, with lower numbers of indurated mudstone, quartz, quartzite and igneous materials also identified. The assemblage comprised 70% flakes or flake fragments and 30% cores or core fragments. The high proportion of broken or damaged artefacts was considered to be the result of disturbance and post-discard breakage.

An Aboriginal archaeological survey and subsequent cultural heritage assessment of the M4 Motorway corridor was undertaken by KNC as part of the M4 Managed Motorway (M4MM) project (KNC 2013; KNC 2015). The investigation, a follow-up from the 1996 Brayshaw and Haglund assessment, included a review of background information, including identification of previously recorded Aboriginal sites registered on the AHIMS register, sites known to the local Aboriginal community or others and any archaeologically sensitive landforms or areas or potential archaeological deposit in the M4MM project area. The investigation identified 33 Aboriginal archaeological sites within the M4MM corridor including two previously unrecorded artefact scatters. The survey revisited the previously recorded sites to assess subsequent disturbance and archaeological potential. The majority of sites were found to be highly disturbed with no intact archaeological deposit due to modern landuse practices and natural processes.

### **The Northern Road Upgrade**

Archaeological investigations were undertaken for The Northern Road Upgrade and included archaeological survey of sections of The Northern Road road corridor between Jamison Road, Penrith and Mersey Road, Bringelly (KNC 2016a; 2016b). The assessment areas included sections of The Northern Road corridor bordering the current study area, as well as several properties located within the northern portion of the current study area.

A total of 40 Aboriginal archaeological sites were identified within the project area as a result of archaeological survey. Three of these sites were identified within an existing AHIP area for the M4MM project. The sites comprised mostly artefact scatters, with several isolated artefacts and one PAD area also identified. The sites were mostly recorded on the crests and upper slopes of a north-south ridgeline or on lower slopes and elevated locations adjacent to creeks. Artefacts were predominantly silcrete and silicified tuff with smaller quantities of quartz, medium grained siliceous material, chert and mudstone. The majority of recorded artefact types were flakes or flake fragments with small numbers of cores, utilised flakes and retouched flakes.

The identified sites were a mixture of low and moderate archaeological significance. Low significance sites were identified in highly disturbed contexts with low archaeological potential. Urbanisation, infrastructure and erosion had all strongly impacted on the archaeological deposit. Only a minute remnant of the archaeological record exists for these disturbed archaeological sites. In most cases the sites exist as objects (one or two) devoid of all scientific context. Moderately significant sites were identified in areas where it appeared there was a relatively low level of disturbance and in areas which were considered spatially significant.

The archaeology present at each of these locations were likely to offer scientific insight into past Aboriginal activities in a transitional landscape between the Cumberland Plain and Nepean River.

Further assessment was undertaken for The Northern Road road corridor and included the preparation of two Cultural Heritage Archaeological Reports (CHARs), splitting The Northern Road Upgrade project area from Jamison Road, Penrith to Glenmore Parkway, Glenmore and from Glenmore Parkway, Glenmore Park to Mersey Road, Bringelly (KNC 2016c; 2017). The CHAR for The Northern Road Upgrade Stage 3 Jamison Rd to Glenmore Parkway concluded that two heavily disturbed, low density artefact scatters, Mulgoa Road 1 (AHIMS 45-50408) and Northern Road (45-5-2484) were located within the impact area for the project and would require an AHIP prior to any impacts from the proposed upgrade works. No mitigation was recommended for these site as they were of low archaeological significance.

The CHAR for The Northern Road Upgrade between Mersey Road and Glenmore Parkway identified that a total of 28 Aboriginal archaeological sites would be impacted by the proposed works within this section of The Northern Road corridor. This CHAR was undertaken in compliance with the Secretary's Environmental Assessment Requirements (SEARs) for the project. The sites comprised 23 artefact scatters and five isolated artefacts. Of the 28 Aboriginal archaeological sites affected, the assessment determined that all identified sites would be impacted by the proposal. Twelve sites would be totally impacted by the proposed works, whilst design refinements had partially reduced the impact to the remaining 16 archaeological sites.

The CHAR concluded that the range of sites identified an Aboriginal cultural highway where various activities took place in the past (similar to contemporary roadway and occupation). Aboriginal sites with greater levels of significance were considered to offer detailed information about the Aboriginal highway along the ridge and specific meeting spots (like the junction of Elizabeth Drive and The Northern Road). Survey and consultation with Aboriginal stakeholders identified 20 Aboriginal archaeological sites of at least moderate significance. The remaining archaeological sites contained disturbed or low value deposits. The assessment concluded that mitigative salvage excavation would be required for the 20 archaeological sites exhibiting moderate significance, while the remaining eight archaeological sites, exhibiting low levels of significance, required no mitigative action.

One Aboriginal archaeological site identified through archaeological survey for The Northern Road Upgrade was identified within the current study area, TNR AFT 05 (AHIMS 45-5-4804). TNR AFT 05 was not impacted by The Northern Road upgrade project and remains valid within the current study area. Several sites identified through these assessments were identified within the vicinity of the current study area, including: TNR AFT 06 (AHIMS 45-5-4785), TNR AFT 07 (AHIMS 45-5-4784), TNR AFT 08 (AHIMS 45-5-4789), TNR IF 01 (AHIMS 45-5-4805) and TNR AFT 32 (45-5-4803).

TNR AFT 06, TNR AFT 07 and TNR AFT 08 were subject to archaeological salvage excavation under State Significant Infrastructure Approval (SSI 7127). An archaeological salvage program was undertaken by KNC for The Northern Road Upgrade – Stage 5 Project in 2018 (KNC 2021) The Phase 1 units were excavated on a transect grid overlain on each site. The grid was positioned to ensure that transects intersected different landforms, including creek terrace, lower slope, mid slope, upper slope, and crest.

TNR AFT 06 was situated on a low terrace & creek flat of Surveyors Creek, on the eastern side of The Northern Road, in a pocket of vegetation. The soil landscape was South Creek Quaternary Alluvium. The Phase 1 program involved excavation of 27 Phase 1 units (1m<sup>2</sup>) distributed between three transects oriented north-south. A total of 144 artefacts were recovered from the Phase 1 units. Subsequent Phase 2/3 excavation involved the expansion of three Phase 1 squares. A total of 516 artefacts were recovered from three open excavation areas. Most artefacts (83.3%) were recovered from one open area excavated at the site. The artefacts recovered from the Phase 2/3 salvage were typically of silcrete (50.4%) and tuff (38%). A small quantity of quartz was recovered (5.4%). The least frequent (<1%) materials were quartzite and FGS. A total of 21 complete tools and tool fragments were recovered from the Phase 2/3 salvage at TNR AFT 06 and included four backed artefacts, four hammerstone fragments and four ground stone fragments. The combined TNR AFT 06 assemblage was interpreted as the remains of a mixed assemblage that had been disturbed by post depositional processes, such as flooding and ploughing. The best preserved deposit was situated on a rise with the highest elevation. The TNR AFT 06 assemblages exhibited characteristics consistent with low intensity activity which suggested resource gathering within the upper catchment of Surveyors Creek where lithic materials, other than silcrete and tuff, were in limited supply. The recovery of backed and retouched artefacts indicated that the remnant assemblage represented activity typical of domestic habitation and the casual maintenance of tools.

TNR AFT 07 was situated on a lower hillslope at the junction of Surveyors Creek tributaries within Blacktown/South Creek Soil landscapes and was located on the eastern side of The Northern Road. The Phase 1 program involved excavation of 11 Phase 1 (1m<sup>2</sup>) squares distributed between two main transects oriented north-south. A total of 89 artefacts were recovered from the Phase 1 units. Subsequent Phase 2/3 excavation involved the expansion of two Phase 1 squares. A total of 298 artefacts were recovered from two open areas. Most artefacts (83.3%) were from one open area. The artefacts recovered from the Phase 2/3 salvage were made of silcrete (50.9%) and tuff (35.3%). A small quantity of quartz was recovered (11.1%). The least frequent (<1%) materials were quartzite and FGS.

A total of 17 complete tools and tool fragments were recovered from the salvage excavations at TNR AFT 07. Of these, five were backed artefacts, including one small quartz backed flake. Six tuff retouched flake fragments and one quartz retouched flake were recovered from the open areas and dispersed Phase 1 squares. In addition, a single FGS usewear flake was recovered from OA4. The remnant TNR AFT 07 assemblage exhibited characteristics consistent with low intensity activity within the upper catchment of Surveyors Creek where lithic materials were in limited supply. The recovery of ground stone fragments with backed and retouched artefacts in low densities indicated that the assemblage from TNR AFT 07 represented activity typical of domestic habitation and the casual maintenance of tools.

TNR AFT 08 was situated on a lower hillslope adjacent to a tributary of Surveyors Creek, within Blacktown/South Creek Soil Landscapes. The site was situated on the eastern side of The Northern Road. The Phase 1 program involved excavation of 30 squares (1m<sup>2</sup>). A total of 392 artefacts were recovered from Phase 1 units. Subsequent Phase 2/3 excavation involved the expansion of three Phase 1 units. A total of 5,229 artefacts were recovered from the Phase 2/3 salvage program. The bulk of the artefacts were recovered from two of the three open areas. The artefacts recovered from the Phase 2/3 salvage (combined assemblages) were mostly made of silcrete (59.4%) and Tuff (33.3%). A relatively small quantity of quartz was recovered (4.9%). The least frequent (<1%) materials were quartzite, FGS, MG, igneous, hornfels and sandstone.

The artefact assemblage from TNR AFT 08 represented the discard from at least several periods of occupation at Surveyors Creek during the late Holocene (from c. 6000 cal. BP). This occupation involved numerous episodes of core reduction and the production of tools, including backed and non-backed retouched flakes. The recovery of ground-stone fragments indicated that seed collection and grinding was also likely undertaken at Surveyors Creek. In all, the range of tools and multiple activity zones suggested that this section of Surveyors Creek was used as a residential 'base camp', perhaps by more than one family group at a time. Prior to land clearance, the creek channel would have formed a chain-of-ponds that presented an invaluable source of semipermanent freshwater to the Darug people as they travelled between the heavily forested Nepean River corridor and the open rolling plains in the east.

### 2.3 Previously identified sites in the study area

Previous archaeological investigations have identified two Aboriginal archaeological sites located within the current study area. These sites are discussed below.

**Site Name:** SP 11  
**AHIMS ID:** 45-5-0309

Site SP 11 was a low density artefact scatter that was identified on the crest of a hill approximately 30 metres west of the current project area. The artefact scatter consisted of one core, three flakes, three broken flakes and two flaked pieces which were found across an area measuring 120 x 50 metres. The area had been cleared and ploughed, with little to no topsoil remaining. A Section 90 consent to destroy was approved for the site in May 1990. The site is no longer extant.

**Site Name:** TNR AFT 05  
**AHIMS ID:** 45-5-4804

Site TNR AFT 05 was situated on a lower slope adjacent to the junction of two unnamed tributaries of Surveyors Creek (Figure 7). The site was located within Lot 9 DP26658 approximately 100 metres north west of The Northern Road and 450 metres south of the roundabout connecting The Northern Road to Glenmore Parkway and Wentworth Road. The site was identified during survey for The Northern Road Upgrade project (KNC 2016a). Survey identified two red silcrete flake fragments within a 25 x 10 metre area on a lower slope landform at the edge of a marsh. The lower slope had been formed into an artificial terrace that was constructed between a house and modified creek channel. Soils displayed some localised disturbance, with residual natural profile visible on the slopes.

### 2.4 Previously identified sites in the vicinity of study area

Previous archaeological investigations have identified three Aboriginal archaeological sites located within proximity to the study area. These sites are discussed below.

**Site name:** TNR AFT 06  
**AHIMS ID:** 45-5-4785

Site TNR AFT 06 was located on a creek flat approximately 140 metres east of an unnamed north flowing tributary of Surveyors Creek (Figure 6). The site was located within Lot 1 DP238092, approximately 50 metres east of The Northern Road and 430 metres south of the roundabout at the intersection of The Northern Road, Glenmore Parkway and Wentworth Road.

One silicified tuff medial flake fragment was identified within a 15 x 5 metre area of sheet erosion adjacent to a vehicle track on the north eastern side of small area of regrowth eucalypts. The site extent was identified by defined contours of the creek flat; however, modern disturbance from the construction of a road had bisected the site. The remainder of the site area had low levels of disturbance from vegetation clearance and erosion. Moderate depth of soil was evident across the landform and the site was assessed containing a moderate value archaeological deposit.

The site was subsequently subject to an archaeological salvage excavation program in 2018 (KNC 2021). A total of 660 artefacts were recovered from the site as a result of the salvage program. The site was interpreted as the remains of a mixed assemblage that had been disturbed by post depositional processes, such as flooding and ploughing. The TNR AFT 06 assemblage exhibited characteristics consistent with low intensity activity which suggested resource gathering within the upper catchment of Surveyors Creek where lithic materials, other than silcrete and tuff, were in limited supply. The recovery of backed and retouched artefacts indicated that the remnant assemblage represented activity typical of domestic habitation and the casual maintenance of tools.

**Site name:** TNR AFT 07  
**AHIMS ID:** 45-5-4784

Site TNR AFT 07 was situated on a gentle lower hillslope approximately 20 metres west of a north flowing tributary of Surveyors Creek (Figure 6). The site is located within a creek junction complex and associated with TNR AFT 08. The site was located within Lot 1 DP238092 approximately 80 metres east of The Northern Road and 240 metres north east of the intersection of The Northern Road and Bradley Street.

One silcrete flake fragment was identified within a 5 x 5 metre area of sheet erosion. Site boundaries were clearly defined by a triangular formation of the creek, dam and road. Modern disturbance was limited to vegetation clearance and erosion. Moderate depth of soil exhibiting a standard deflationary matrix allowing artefacts to remain in situ was evident across the landform and the site was assessed as containing a moderate value archaeological deposit.

The site was subsequently subject to an archaeological salvage excavation program in 2018 (KNC 2021). A total of 387 artefacts were recovered from the site as a result of the salvage excavation program. The remnant TNR AFT 07 assemblage exhibited characteristics consistent with low intensity activity within the upper catchment of Surveyors Creek where lithic materials were in limited supply. The recovery of ground stone fragments with backed and retouched artefacts in low densities indicated that the assemblage from TNR AFT 07 represented activity typical of domestic habitation and the casual maintenance of tools.

**Site name:** TNR AFT 08  
**AHIMS ID:** 45-5-4789

Site TNR AFT 08 was located on a lower slope adjacent to the eastern bank of a north flowing tributary of Surveyors Creek (Figure 6). The site is located within a creek junction complex and associated with TNR AFT 07. The site was situated within Lot 1 DP238092 approximately 60 metres east of the intersection of The Northern Road and Bradley Street.

The site contained 13 artefacts that were located in four surface concentrations. The first concentration consisted of six artefacts of silcrete and silicified tuff that were identified across a 30 x 50 metre area of sheet erosion. The artefacts included two retouched flakes and one utilised flake. The second concentration contained three silcrete artefacts that were identified in area of regrowth trees on the southern side of a dam. The artefacts comprised one flake, one proximal flake and one piece of debitage that had been heat affected. Dressed sandstone blocks were noted in the area and may have been the remains of a historical structure in the vicinity of the site.

The third surface concentration consisted of two silcrete artefacts that were identified on a 10 x 8 metre area of sheet erosion within a minor north west flowing drainage line. The artefacts comprised one flake and one medial flake fragment. The fourth surface concentration comprised one silcrete split flake and one silicified tuff flake that were identified in an area of low grass south of the north west flowing drainage line. The site had variable levels of ground surface visibility due to vegetation cover and erosion. The spatial extent of the site was well defined by the creek, minor drainage lines, flood level and slope gradient. These areas exhibited low disturbance, moderate depth of soil and a soil matrix conducive for artefact survivability. The subsurface archaeological deposit was assessed as moderate archaeological value in the areas unaffected by significant soil erosion and past landuse practices.

The site was subsequently subject to an archaeological salvage excavation program in 2018 (KNC 2021). A total of 5621 artefacts were recovered from the site as a result of the salvage excavation program. The artefact assemblage from TNR AFT 08 represented the discard from at least several periods of occupation at Surveyors Creek during the late Holocene (from c. 6000 cal. BP). In all, the range of tools and multiple activity zones suggested that this section of Surveyors Creek was used as a residential 'base camp', perhaps by more than one family group at a time.

### 3 Landscape context

The study area is located in the south west of the Cumberland Plain, a gently undulating and generally low-lying physiographic region of the Sydney Basin. The Sydney Basin is a large geological feature stretching from Batemans Bay in the south, Newcastle in the north and Lithgow to the west. The formation of the basin began between 300 to 250 million years ago when river deltas gradually replaced the ocean that had extended as far west as Lithgow (Pickett and Alder 1997). The oldest, Permian layers of the Sydney Basin consist of marine, alluvial and deltaic deposits that include shales and mudstone overlain by coal measures. The underlying geology of the Cumberland Plain is predominantly shale-based.

The project area is situated on the eastern side of a north-south oriented ridge containing broad and narrow crests and is characterised by moderately inclined slopes descending east across the study area. Drainage within the study area area comprises modified first and second order drainage tributaries which flow north west into Surveyors Creek.

The underlying geology of the project area is predominantly Bringelly Shale (Rwb) which underlies the crests, slopes and drainage lines (Figure 4). Bringelly Shale (Rwb) is part of the Late Triassic Wiannamatta Group of shales and is composed of shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff (Clark and Jones 1991). Cranebrook Formation geology (Qpc) is present along the low lying areas adjacent to tributaries of Surveyors Creek and is characterised by a basal layer of pebble and cobble clast gravels below sand, silt and clay. The gravels comprise clasts of quartz, quartzite, chert, porphyry, granite, hornfels, sandstone and silcrete. Cranebrook Formation geology contains raw material types that were utilised by past Aboriginal people. Areas where these materials were exposed at the surface, such as within creek channels, are likely to have been exploited by past Aboriginal people.

The basal geology is overlain by South Creek soils within the immediate vicinity of creeklines, transitioning to Blacktown and Luddenham soils on slopes and crests (Figure 5). The alluvial South Creek soil landscape is characterised by flat landforms with incised channels that are subject to frequent episodes of inundation, erosion and aggradation. The landscape contains deep structured loams and clays overlying bedrock or relict soils. The South Creek soil landscape may retain archaeological deposit but due to its location on active floodplains, integrity of deposit may be compromised due to repeated episodes of erosion and deposition caused by fluvial activity.

The residual Blacktown soil landscape is located on gently undulating rises with broad rounded ridges and crests with gently inclined concave slopes. The landscape is characterised by shallow to moderately deep red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and drainage lines. Erosional susceptibility of this soil landscape is relatively low, but is increased where surface vegetation is not maintained (Bannerman, Hazleton, and Tille 1990). Blacktown soils are conducive to artefact survivability, however their acid chemistry quickly removes organics and their deflationary tendency often results in a temporal collapse, where archaeological objects from multiple time periods accumulated within a single cultural soil layer.

The erosional Luddenham soil landscape is situated on low rolling to steep hills with local relief between 50 and 80 metres and slopes gradients of 5-20%. The hills have narrow convex ridges and crests, moderately inclined slopes and narrow drainage lines. The landscape comprises shallow dark podzolic soils or massive earthy clays on crests, moderately deep red podzolic soils on upper slopes and moderately deep yellow podzolic soils and prairie soils on lower slopes and drainage lines (Bannerman, Hazleton, and Tille 1990: 79). The Luddenham soil landscape has a high erosional susceptibility with moderate surface movement potential. The steeper hill slopes of the Luddenham soil landscapes are subject to minor gully erosion and moderate sheet erosion in areas that have been stripped of vegetation. The preservation of subsurface archaeological deposits of stone artefacts within Luddenham soils is unlikely due to erosion and, where present, stone artefacts are likely to be within disturbed low density surface artefact scatters exposed by the eroding landscape; however, landforms and vegetation that create soil stability can preserve subsurface archaeological deposits.

The distribution of native vegetation within the project area has been affected by historic and contemporary European landuse practices in the region. Prior to 1788, a mixture of native vegetation communities would have extended across the entirety of the Cumberland Plain with distribution determined by a combination of factors including soil, terrain and climate (NSW National Parks and Wildlife Service (NPWS) 2002). The clearance of native vegetation across the majority of the project area by European settlers has left only small areas of native vegetation. Within the study area, remnant vegetation is classified as Shale Plains Woodlands (Department of Environment 2010).

Landuse practices have had a variable impact on the landscape within the project area. The properties within the study area have been predominantly cleared of native vegetation and utilised for past farming activities, cattle grazing, as vineyards and orchards, market gardening and the cultivation of crops such as oats, clover and rye. Large areas have been also been ploughed. At present, an unfinished road has been cut through the centre of the study area and animal grazing continues. A number of large dams have been constructed throughout the area within former creek channels, altering the area's hydrology and drainage patterns.



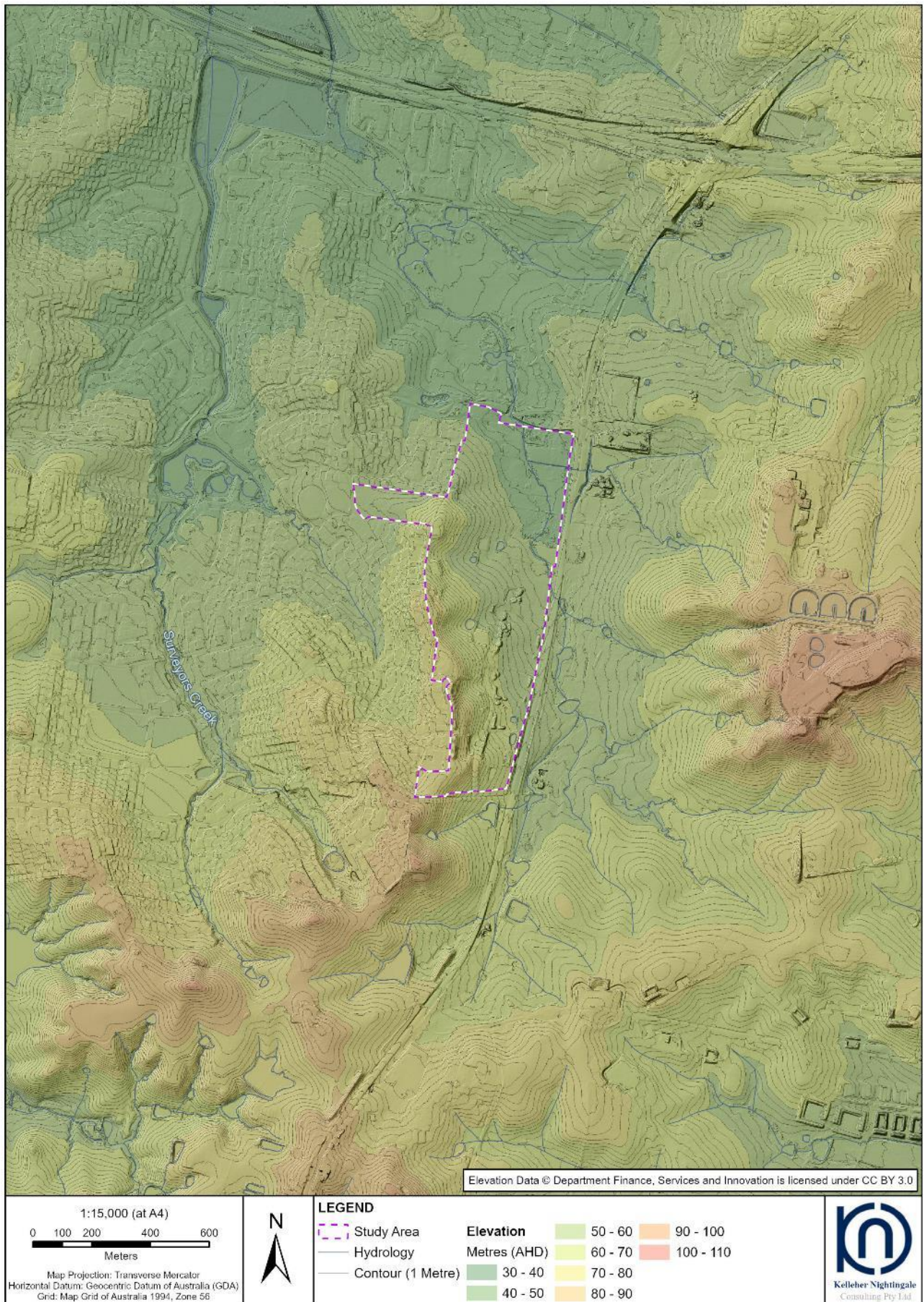


Figure 4. Topography of the study area

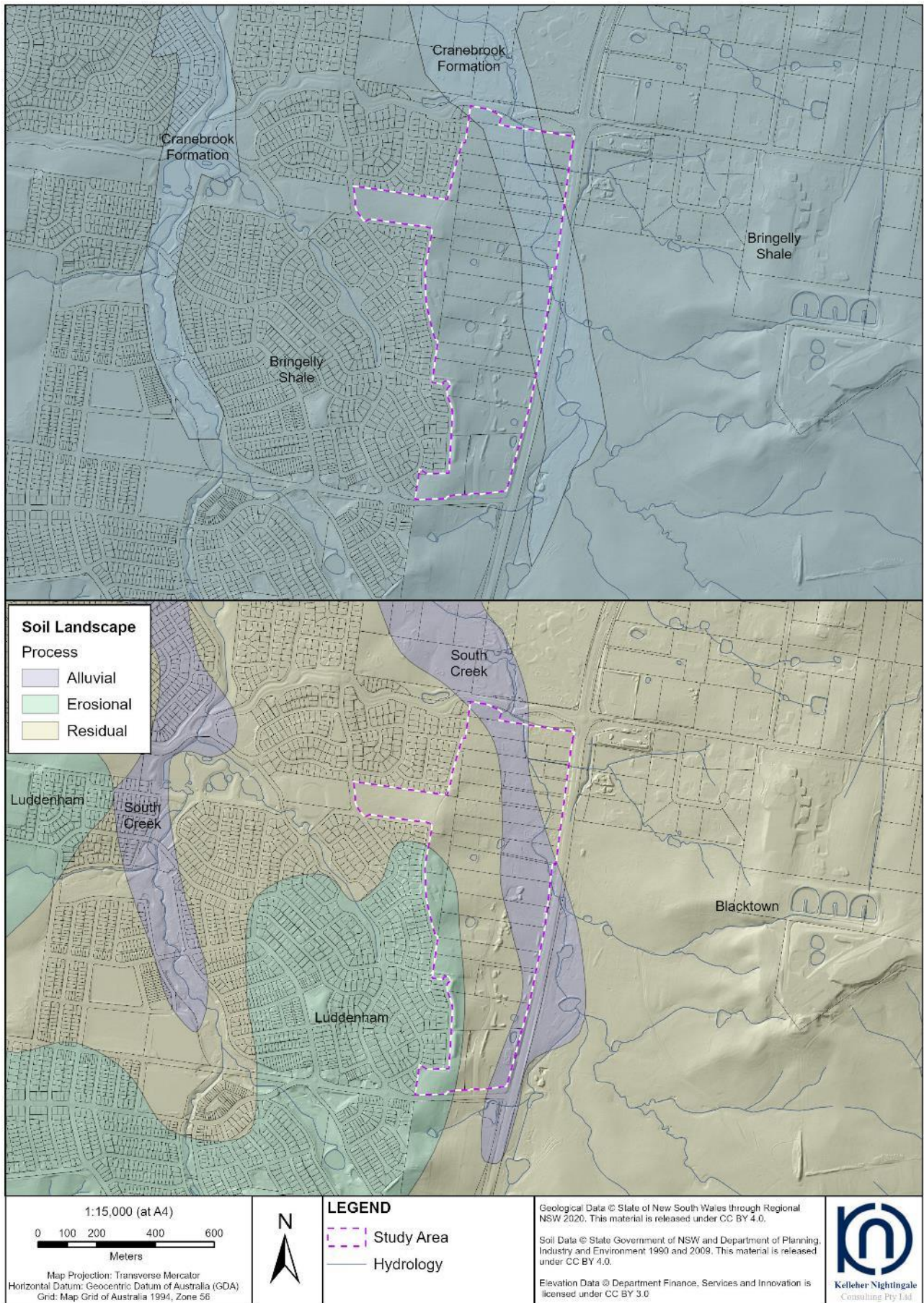


Figure 5. Geology and soil landscapes of the study area

## 4 Regional character and site predictions

Previous archaeological investigations have provided data on site distribution, site typology and lithic raw material use that aid in assessing the archaeological character of the region. Site frequency and density can be related to key landscape factors including distance to water, landform, degree of slope, soil landscape and proximity to environmental resources.

Archaeological sites in the region generally occur as surface artefact scatters and isolated artefacts. Relatively elevated landforms along the margins of creeks, especially those offering permanent water and associated environmental resources such as Surveyors Creek would have been favourable for occupation by Aboriginal people. This is reflected in the archaeological record by higher artefact densities recorded along the major creeklines, potentially reflecting repeated or more intensive use of these locations. Elevated locations on hilltops and ridge crests tend to display a different archaeological signature, chiefly a sparser artefact distribution and less evidence for ‘everyday’ or utilitarian activities, suggesting that these areas were often used differently.

The study area is located within a landscape with varying levels of natural and human disturbance. Activities associated with agricultural land use practices as well as erosional process associated with the landscape context have led to the disturbance of surface and subsurface deposits. Within these contexts Aboriginal objects are unlikely to survive in situ and the archaeological potential of such sites is generally low. Conversely, ground surface visibility is often increased by these processes, leading to increased identification of surface artefacts in these areas.

Based on information from previous archaeological investigations, landscape context and regional character, site predictions for the study area include the following:

- Archaeological sites are likely to consist of low density artefact scatters and/or isolated artefacts.
- It can be expected that silcrete will be the most commonly encountered artefact raw material, with occasional occurrences of indurated tuff/mudstone, chert and quartz.
- Clearance of the majority of original vegetation lessens the likelihood of identifying culturally modified trees, but old growth trees may be present in the study area and have the potential to display scars of Aboriginal origin.
- The identification of archaeological sites is likely to be affected by differential visibility of the ground surface, but successful assessment of areas of potential archaeological deposit can be made based on landform and other environmental factors such as disturbance, degree of slope, distance to the permanent watercourses and on land located above flood affected areas.

## 5 Sampling strategy and field methods

The aim of the archaeological survey was to conduct a full coverage, pedestrian survey of the study area and to record any Aboriginal archaeological sites or areas with potential to contain Aboriginal objects.

The study area was inspected by pedestrian survey where property access was available. The study area was assessed in one survey unit on 8 September 2023 by Mark Rawson (KNC) and Steve Randall (Deerubbin Local Aboriginal Land Council). The survey unit was divided by landforms elements (Figure 6).

Upper, mid and lower slopes descended from the crest of a south to north trending ridgeline located along the western boundary of the study area. Flat landforms border the drainage depression landform located in the north western corner of the study area. A series of on-line dams had been constructed along these ephemeral drainage lines. Land use comprised a mixture of large residential dwellings, extensive market gardening lots, animal grazing plots and ship container storage/scrap metal yards. Most of the dwellings and sheds throughout the study area had been constructed across the crests and upper/mid slopes.

Based on the archaeological background and landform context of the study area, the survey closely inspected any areas of surface exposure for artefacts, evidence of intact soils and any mature trees for evidence of culturally modified trees. Assessments of soil disturbance were also made during the survey. These included an assessment of surface visibility, vegetation coverage, modern disturbance and current land use.

The survey utilised high resolution aerial photography and topographic maps showing the study area boundary. A non-differential GPS receiver was used for spatial recordings. All GPS recordings were made using the Geocentric Datum of Australia (GDA) coordinate system. Detailed notes on the condition of each survey unit were compiled by the survey team including an assessment of surface visibility, vegetation coverage, modern disturbance and current land use.



Figure 6. Survey landforms

## 6 Survey results

The survey identified one Aboriginal archaeological site and three PAD area within the study area. The results of the survey are shown in Figure 7.

### 6.1 Identified archaeological features within the study area

<b>Site Name:</b>	TNR AFT 05
<b>AHIMS ID:</b>	45-5-4804
<b>Site Coordinates:</b>	286755E 6257934N
<b>Landform Context:</b>	Lower slope

Site TNR AFT 05 was a low density artefact scatter situated on a lower slope and flat landform adjacent to the junction of two unnamed tributaries of Surveyors Creek (Figure 7). The site was located within Lot 9 DP26658. Archaeological survey undertaken for The Northern Road Upgrade project identified two red silcrete flake fragments within a 25 x 10 metre area on a lower slope landform at the edge of a marsh (KNC 2016a). The lower slope had been formed into an artificial terrace that was constructed between a house and modified creek channel. Soils displayed some localised disturbance, with residual natural profile visible on the slopes.

TNR AFT 05 was assessed during the current survey. The survey could not relocate the previously recorded silcrete artefacts. Some pockets of natural soils were confirmed to be located on the lower slope landform. Survey identified further subsurface archaeological potential associated with the lower slope and flat landforms within the central portion of Lot 9 DP 26658. These landforms displayed limited visible disturbance. Despite some localised disturbance, the site location was assessed as displaying low-moderate potential for subsurface archaeological deposit.



Plate 1. View to west at TNR AFT 05. Photo showing western side of watercourse. Lower slopes to creek.



Plate 2. View to east at TNR AFT 05. Photo showing exposure of grey brown silty soils.

**Site Name:** Glenmore Park East PAD 1  
**AHIMS ID:** tbc  
**Site Coordinates:** 286765E 6257311N  
**Landform Context:** Lower slope

Glenmore Park East PAD 1 was a PAD area identified on the lower hillslope which looks down across tributaries of Surveyors Creek. The PAD area was identified at the eastern end of Lot 103 DP 1050042. The extent of the PAD was determined by the extent of disturbance related to a small dam, topographic contours and an assessment of soil stability possibly connected with regrowth trees.

Ground surface visibility across the PAD was low; no artefacts were identified within the PAD area. Disturbance surrounding the PAD area was moderate and characterised by agricultural land use activities. Despite some evidence of localised disturbance, the PAD location was assessed as displaying low-moderate potential for remnant subsurface archaeological deposit based on its proximity to Surveyors Creek and its tributaries.



**Plate 3. View to south-east at Glenmore Park East PAD 1. Cluster of Ironbark trees around small dam.**



**Plate 4. View to north at Glenmore Park East PAD 1. Photo showing gentle slopes below small dam.**

**Site Name:** Glenmore Park East PAD 2  
**AHIMS ID:** tbc  
**Site Coordinates:** 286797E 6257599N  
**Landform Context:** Lower slope

Glenmore Park East PAD 2 was a PAD area identified on the lower hillslope which looks down across tributaries of Surveyors Creek. The PAD area was identified at the eastern end of Lot 4 DP 26658. The extent of the PAD was determined by the extent of disturbance related to evidence of ploughing across the lower slope landform within the property, topographic contours and an assessment of soil stability possibly connected with regrowth trees.

Ground surface visibility across the PAD was low; no artefacts were identified within the PAD area. Disturbance surrounding the PAD area was moderate and characterised by agricultural land use activities. The PAD location was assessed as displaying low-moderate potential for remnant subsurface archaeological deposit based on its proximity to Surveyors Creek and its tributaries.



**Plate 5. View to north at Glenmore Park East PAD 2. Photo showing grove of old eucalypts on lower slope.**



**Plate 6. View to west at Glenmore Park East PAD 2. Upslope from grove of old eucalypts. Photo shows surrounding furrows running downslope in background.**

**Site Name:** Glenmore Park East PAD 3  
**AHIMS ID:** tbc  
**Site Coordinates:** 286510E 6257718N  
**Landform Context:** Crest

Glenmore Park East PAD 3 was a PAD area identified on the crest of a south to north trending ridgeline which overlooks tributaries of Surveyors Creek. The PAD area was identified at the western end of Lot 5 DP 26658. The extent of the PAD was determined by topographic contours of the crest, steep upper slopes and an assessment of soil stability possibly connected with regrowth trees.

Ground surface visibility across the PAD was low; no artefacts were identified within the PAD area. Disturbance surrounding the PAD area was generally low and characterised by low impact agricultural land use activities. The PAD location was assessed as displaying moderate potential for intact subsurface archaeological deposit based on its proximity to Surveyors Creek and its tributaries and low levels of visible disturbance.



**Plate 7. View to north at Glenmore Park East PAD 3.** Photo shows crest landform and view across the slopes descending to tributaries of Surveyors Creek.



**Plate 8. View to north-east at Glenmore Park East PAD 3.** Photo shows the crest landform and steep slope delineating the PAD extent.





Figure 7. Survey results

## 6.2 Survey coverage

Survey commenced in the southern half of the assessment area on the western ridge crest landform present in Lot 3 DP 1067073. Survey proceeded east, across the upper, mid slopes to the lower slopes fronting The Northern Road. A grove of eucalypts present surrounding a small dam in Lot 103 DP 1050042 were closely inspected. Trees present in this area included regrowth Ironbarks. Evidence of ploughing was visible up to the margins of the treed area. Some exposure was identified around the dam wall, but this consisted of excavated yellowish subsoil. No Aboriginal objects were identified on the exposures along the dam wall. An overground driveway was also identified north of the dam leading upslope.



**Plate 9. View to north-east. Towards Lot 101 of DP 597243, from Lot 3 DP1067073. Photo shows previously cultivated steep upper slopes off ridgeline along western boundary.**



**Plate 10. View to north-west. Looking to Lot 3 DP 1067073. House in background is one of two on the crest of a south to north trending ridge. At left is artificial mound.**



**Plate 11. View to south-east. Upper slopes of Lot 103 DP1050042. Looking down a former drive, once part of previous Bentley farm. Slopes are steep and previously cultivated as part of a vineyard. In distance is a small grove of regrowth Ironbark trees around a small dam. These are on gentle lower slopes looking down to Surveyors Creek.**



**Plate 12. Patches of exposure of fine grey loamy unit A soil, between small dam and The Northern Road verge.**

The treed area surrounding the dam was considered to contain archaeological potential for subsurface deposits. Parts of this area displayed less visible disturbance from surrounding land use disturbance. This area was identified as an area of PAD and designated as Glenmore Park East PAD 1 (Figure 7). Glenmore Park East PAD 1 was identified on the lower hillslope which looks down across tributaries of Surveyors Creek.

Survey continued north, inspecting the remainder of Lot 103 DP 1050042. The midslopes were found to have been disturbed by a wide, unfinished road which had been constructed using large earthmoving machinery. The road started at Bradley Street and ran north through Lot 3 DP 1240377, into Lot 103 DP 1050042, Lot 101 DP 597243, Lots 3, 4 and 5 of DP26658, and ended in Lot 16 DP 1239760. High mounds of excavated spoil lined the road which had been filled in with compacted sandstone rubble. Some exposures were present on the midslopes at the cuttings of the road. Soils were red and clayey, with some ironstone concretions present. No artefacts were identified on exposures. The upper slopes above the mid slope were considered too steep to be suitable as Aboriginal campsite locations. These slopes had also previously been cultivated for use as a vineyard.



**Plate 13. View to west. Photo shows exposure on road cutting and steep upper slopes. Red brown clayey soil were exposed, and exotic sandstone boulders used as fill.**



**Plate 14. Detail of exotic sandstone rubble used as top dressing for road, excavated to approximately 1.25 metres depth.**



**Plate 15. View to east at Lot 101 DP 597243. Mid slopes contain spoil heaps from unfinished road. In background, lower slopes run to The Northern Road. Slopes are covered by pasture grasses.**



**Plate 16. View to north from Lot 5 DP 26658 looking to Lot 16 DP 1239760. These lower slopes have been ploughed and ripped. There are mounds along the eastern boundary at right, and a drain parallel to The Northern Road.**

Lower slopes fronting The Northern Road and facing the tributary in Lot 101 DP 597243 were closely inspected. Whilst the landform would likely have been a suitable location for Aboriginal occupation, this paddock had been extensively ploughed and was covered in low pasture grasses. Lower slopes further to the north in Lots 3, 4 and 5 of DP 26658 were also assessed. These areas contained uneven ground with furrows running west to east, and grass covered earth mounds along the eastern property fence line. Additional disturbance was present in the form of a sealed driveway running from The Northern Road up to two small houses, located on the ridge crest. No Aboriginal objects or areas of archaeological potential was identified in these parts of the study area.

A small, isolated grove of tall old eucalypts located in Lot 4 DP 26658 was carefully inspected. Ploughed ground was evidenced surrounding the grove, however the grove itself contained areas which displayed limited disturbance from past agricultural activities. This area was identified as having low to moderate potential for subsurface archaeological deposit. This area was identified as an area of PAD and designated as Glenmore Park East PAD 2 (Figure 7).

Survey proceeded west up to the mid slopes in Lot 17 DP1239760, then continued up to the upper slopes along the western boundary of the study area. Patches of good exposure were identified along a fenceline next to Lot 82 DP1055149. No artefacts were identified in exposures present along the fenceline.

Additional exposures (up to 50%) were present in two groves of young regrowth Grey Box eucalyptus along the western boundary of the study area in Lots 16 and 17 DP 1239760. No Aboriginal objects were identified on these exposures. Vegetated patches were present on the upper slopes off the ridge. The upper slopes to the east of the crest landforms were steep and did not display archaeological potential. Survey continued back towards the driveway to 2093-2095 The Northern Road, inspecting the slopes of Lot 3 DP26658.

Survey continued south along the western boundary fence, to inspect another grove of eucalypts on an elevated knoll on the ridge crest landform present at the western end of Lot 5 DP 26658. This ridge crest landform displayed moderate potential for subsurface archaeological deposit and demonstrated extensive views to the east and north-east, overlooking tributaries of Surveyors Creek. This area was subsequently recorded as an area of potential archaeological deposit and designated as Glenmore Park East PAD 3 (Figure 7).



**Plate 17. View to east. Looking downslope in north-western corner of Lot 17 DP 1239760. There is a slight bench here, off the eastern flanks of a ridge crest, covered with small patch of young Grey Box trees.**



**Plate 18. View to south. From north-western corner of Lot 17 DP 1239760. Looking along western boundary of study area (fence at right). Patches of exposure were recorded surrounding trees.**

The survey team proceeded north to view and assess the northernmost lots from Glenmore Parkway and The Northern Road. These lots contained drainage tributaries of Surveyors Creek which had been modified for agricultural land use. Several online dams were present in these properties. These properties included Lot 111 of DP 1030865, Lot 121 of DP 870188, Lot 2 of DP1033226, and Lot 15 of DP 26658. Flat landforms on either side of the drainage tributary were covered with thick kikuyu grass and weeds, and partly filled. Lot 113 was completely cleared with low grass cover except for some tall eucalypts seen from a distance on the lower slopes near a tributary of Surveyors Creek. There were signs of fill spoil spread across the western end of this lot.

The transmission easement in Lot 8723 DP 1040626 was also assessed. This easement included a crest landform present across the north-south ridge, as well as moderate to gentle slopes running down off the ridge to the west. The easement had been cleared and was covered with mown lawns. Large clusters of regrowth and planted native trees were also present. The southerly extension to this easement had been utilised as a dog exercise park and car park area, with large sandstone boulders brought in for landscaping. No areas of archaeological potential, Aboriginal objects or Aboriginal archaeological sites were identified within this part of the study area.

Aboriginal archaeological site TNR AFT 05 was revisited during the survey. Survey identified further subsurface archaeological potential associated with the lower slope and flat landforms within the central portion of Lot 9 DP 26658 (see Figure 7). These landforms displayed limited visible disturbance. TNR AFT 05 was confirmed to display low-moderate archaeological significance based on soil matrix and extrapolation of results from TNR AFT 06.



**Plate 19. View to east along Transmission line easement. Photo taken from ridge crest in Lot 8723 DP 1040626, looking to fenceline with Lots 9 and 10 of DP26658.**



**Plate 20. View to west along Transmission line easement. This area was cleared and covered by mown lawn and strips of planted and regrowth trees.**

Survey then proceeded south to Harold Bentleys Way, to inspect the southern end of the study. Part of Lot 2 of DP 1240377 was not able to be accessed at the time of survey; this included a ridge crest landform at this location. Large parts of this lot had previously been cultivated. A large dam had also been excavated in the northeastern corner of the lot contributing to disturbance within this part of the study area.

### 6.3 Survey coverage analysis

Surface exposure across the study area was generally low, visibility on surface exposures was also low. Surface exposure was dependant on vegetation density, natural processes such as erosion and modern land use practices. Details of survey and landform coverage are outlined in Table 3 below.

**Table 3. Landform coverage**

Survey Unit	Landform	Area (m <sup>2</sup> )	Exposure (%)	Visibility (%)	Effective Coverage (m <sup>2</sup> )	Effective Coverage (%)	# of Sites
1	Crest	64025	20	40	5122	8	1
	Upper Slope	67255	10	30	2017.6	3	0
	Mid Slope	122070	10	30	3662.1	3	0
	Lower Slope	138105	20	40	11048.4	8	3
	Flat	71680	10	10	716.8	1	0
	Drainage Depression	16645	10	20	332.9	2	0

## 7 Analysis and discussion

Background research, AHIMS records and archaeological field survey identified one previously registered artefact scatter (TNR AFT 05) and three newly recorded PAD areas (Glenmore Park East PAD 1, Glenmore Park East PAD 2 and Glenmore Park East PAD 3) within the study area.

Previous archaeological investigations have shown that higher density artefact scatters are often located along prominent watercourse such as the Surveyors Creek, where permanent and semi-permanent water and associated environmental resources would have been favourable for occupation by Aboriginal people.

The archaeological field survey found that overall ground surface exposure across the study area was low and restricted to areas where land use practices had removed vegetation or restricted its growth. Visibility within exposed areas was generally low, impeded by gravels, introduced gravels and leaf litter.

The ground surface was not visible within the majority of the study area due to the presence of maintained grazing paddock grasses and other vegetation cover in addition to farm related structures, market gardens, dams, residences, landscaping and driveways. Despite the lack of surface visibility it was still possible to assess the archaeological potential based on landform and disturbance.

The sites were identified across the crest and creek bank landforms, with greater potential present in areas displaying limited ground surface disturbance. The remainder of the study area was either heavily disturbed by modern land use practices, or not located on favourable landforms for intact archaeological deposit.

## 8 Significance assessment

One of the primary steps in the process of cultural heritage management is the assessment of significance. Not all sites are equally significant and not all are worthy of equal consideration and management (Sullivan and Bowdler 1984; Pearson and Sullivan 1995:7). The determination of significance can be a difficult process as the social and scientific context within which these decisions are made is subject to change (Sullivan and Bowdler 1984). This does not lessen the value of the heritage approach, but enriches both the process and the long term outcomes for future generations as the nature of what is conserved and why, also changes over time.

The assessment of significance is a key step in the process of impact assessment for a proposed activity as the significance or value of an object, site or place will be reflected in resultant recommendations for conservation, management or mitigation.

The *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) requires significance assessment according to criteria established in the *Australia ICOMOS Burra Charter* (Australia ICOMOS 2013). The *Burra Charter* and its accompanying Practice Notes are considered best practice standard for cultural heritage management, specifically conservation, in Australia. The *Burra Charter* defines cultural significance as “aesthetic, historic, scientific, social or spiritual value for past, present and future generations” (Australia ICOMOS 2013:2) and the accompanying Practice Note on *Understanding and assessing cultural significance* sets out five key criteria for assessing cultural significance:

- Aesthetic value - relates to the sense of the beauty of a place, object, site or item;
- Historic value - relates to the association of a place, object, site or item with historical events, people, activities or periods;
- Scientific value - scientific (or research) value relates to the importance of the data available for a place, object, site or item, based on its rarity, quality or representativeness, as well as on the degree to which the place (object, site or item) may contribute further substantial information;
- Social value - relates to the qualities for which a place, object, site or item has become a focus of spiritual, political, national or other cultural sentiment to a group of people. In accordance with the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, the social or cultural value of a place (object, site or item) may be related to spiritual, traditional, historical or contemporary associations. “Social or cultural value can only be identified through consultation with Aboriginal people” (OEH 2011:8) and
- Spiritual value - refers to the intangible values and meanings embodied in or evoked by a place which make it important to the spiritual identity, traditional knowledge, art or practices of a cultural group. Spiritual value is strongly connected to social value.

### 8.1 Statements of significance

Background research and survey identified one Aboriginal archaeological site and three PAD areas within the study area. Statements of significance have been developed based on background research and the current archaeological assessment (field survey). The statements of significance are presented below.

Glenmore Park East PAD 3 exhibits *moderate archaeological potential*. Although the site represents a commonly occurring site type in the region, the site displays relatively low levels of disturbance and is located in an archaeologically significant location overlooking Surveyors Creek and its tributaries. It is likely that further archaeological investigation of the elevated crest landform would contribute to our understanding of how the resources of Surveyors Creek and its tributaries were utilised by past Aboriginal people.

TNR AFT 05, Glenmore Park East PAD 1 and Glenmore Park East PAD 2 exhibit *low-moderate archaeological significance/potential*. These sites represent commonly occurring types of sites in the region. The sites are located across lower slope landforms adjacent to tributaries of Surveyors Creek. Although these sites have been subject to localised disturbance, archaeological potential remains. It is likely that further archaeological investigation of these sites would contribute to our understanding of how the resources of Surveyors Creek and its tributaries were utilised by past Aboriginal people.

**Table 4. Identified Aboriginal archaeological sites and significance assessment**

Site Name	AHIMS ID	Assessed Significance/ Potential
TNR AFT 05	45-5-4804	Low-Moderate
Glenmore Park East PAD 1	tbc	Low-Moderate
Glenmore Park East PAD 2	tbc	Low-Moderate
Glenmore Park East PAD 3	tbc	Moderate

## 9 Impact assessment

Nerpl Developments Pty Ltd seek to rezone approximately 43 hectares of land within Glenmore Park to enable urban development for new housing, open space and recreation, major roads and stormwater management. The proposed activities associated with future development would likely include:

- Vegetation clearance and demolition of any existing structures
- Earthworks (including cut/fill operations)
- Subdivision into new residential lots
- Construction of houses and other structures
- Installation of associated residential infrastructure and utilities
- Drainage and stormwater management works
- New major and key local roads, paths and access ways
- Landscaping activities

Based on the preliminary design, the sites will be impacted by the future development (Figure 8). Future detailed design for the project should take the location of the identified sites into consideration and avoid impact where possible. If impact to identified sites cannot be avoided an AHIP for the proposal would be required.

The impact assessment for these sites based on the current design is listed in Table 5 and shown on Figure 8.

**Table 5. Impact assessment for identified Aboriginal archaeological sites**

Site Name	AHIMS ID	Impact Assessment
TNR AFT 05	tbc	Total
Glenmore Park East PAD 1	tbc	Total
Glenmore Park East PAD 2	tbc	Total
Glenmore Park East PAD 3	tbc	Total





Figure 8. Impact area and archaeological sites

## 10 Legislative considerations

The *National Parks and Wildlife Act 1974* (NPW Act) is the primary statutory control dealing with Aboriginal heritage in New South Wales. Items of Aboriginal heritage (Aboriginal objects) or Aboriginal places (declared under section 84) are protected and regulated under the Act.

Under the Act, an “Aboriginal object” is defined as “any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains”. As such, Aboriginal objects are confined to physical evidence and are commonly referred to as Aboriginal sites.

Aboriginal objects are protected under section 86 of the Act. It is an offence to harm or desecrate an Aboriginal object, either knowingly [section 86 (1)] or unknowingly [section 86 (2)].

There are offences and penalties relating to harm to, or desecration of, an Aboriginal object or declared Aboriginal place. Harm includes to destroy, deface, damage or move. Penalties are tiered according to offences, which include:

- a person must not harm or desecrate an Aboriginal object that the person knows is an Aboriginal object;
- a person must not harm or desecrate an Aboriginal object (strict liability offence);
- a person must not harm or desecrate an Aboriginal place (strict liability offence);
- failure to notify Office of Environment and Heritage of the location of an Aboriginal object (existing offence and penalty); and
- contravention of any condition of an Aboriginal Heritage Impact Permit.

Under section 87 (1) it is a defence if “(a) the harm or desecration concerned was authorised by an Aboriginal heritage impact permit, and (b) the conditions to which that Aboriginal heritage impact permit was subject were not contravened”.

Section 87 (2) of the Act provides a defence against prosecution under section 86 (2) if “the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed”.

Under section 90 (1) of the Act “the Director-General may issue an Aboriginal heritage impact permit”. The regulation of Aboriginal heritage impact permits is provided in Part 6 Division 2 of the Act, including regulations relating to consultation (section 90N).

An Aboriginal Heritage Impact Permit (AHIP) is required for an activity which will harm an Aboriginal object.

## 11 Conclusions and recommendations

Background research and archaeological survey identified one previously registered artefact scatter site (TNR AFT 05) and three newly recorded PAD areas (Glenmore Park East PAD 1, Glenmore Park East PAD 2 and Glenmore Park East PAD 3) within the study area. Outside of the identified Aboriginal sites, the remainder of the study area displayed low archaeological potential due to ongoing land use practices or unfavourable landform contexts.

Significance assessment was undertaken on the basis of intactness/integrity, landform context and archaeological research potential. Glenmore Park East PAD 3 was determined to be of moderate archaeological potential. TNR AFT 05, Glenmore Park East PAD 1 and Glenmore Park East PAD 2 were determined to have low-moderate archaeological significance/potential.

The identified site and PADs do not pose a constraint to future rezoning, subdivision or development but they will require a process of further assessment, consultation and mitigation to comply with relevant legislation and associated requirements prior to any impact.

Based on the preliminary design, the sites will be at least partially impacted by proposed rezoning and subsequent development. Future subdivision and development of the land should avoid impact to identified Aboriginal archaeological sites and PADs where possible.

If avoidance is not possible, the identified site and PADs do not pose a constraint to future rezoning, subdivision or development but they will require a process of further assessment, consultation and mitigation to comply with relevant legislation and associated requirements prior to any impact. Specifically, a program of archaeological test excavation is proposed for the identified site and PAD areas located within the study area.

An AHIP issued under section 90 (1) of the NPW Act would also be required prior to impacting Aboriginal archaeological sites. This would include a process of Aboriginal community consultation in accordance with the Heritage NSW *Aboriginal cultural heritage consultation requirements for proponents 2010* and preparation of an Aboriginal Cultural Heritage Assessment Report (CHAR) in accordance with the Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

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## Appendix A AHIMS Extensive Search Results



## AHIMS Web Services (AWS)

### Extensive search - Site list report

Your Ref/PO Number : 2309

Client Service ID : 815445

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-3112	GPS, Mulgoa Quarry	GDA	56	285796	6256906	Open site	Valid	Artefact : 7		
	<b>Contact</b> T Russell							<b>Permits</b>		
45-5-0309	SP 11;	AGD	56	286400	6257810	Open site	Valid	Artefact : -	Open Camp Site	256,260,1018,1567
	<b>Contact</b>							<b>Permits</b>	173	
45-5-4785	TNR AFT 06	GDA	56	286953	6257872	Open site	Valid	Artefact : -		
	<b>Contact</b>							<b>Permits</b>		
45-5-0413	SP 15 South Penrith	AGD	56	285710	6257860	Open site	Valid	Artefact : -	Open Camp Site	256,369,1018,1567
	<b>Contact</b>							<b>Permits</b>	173	
45-5-0310	SP 12;	AGD	56	285860	6257840	Open site	Valid	Artefact : -	Open Camp Site	256,260,1018,1567
	<b>Contact</b>							<b>Permits</b>		
45-5-4805	TNR IF 01	GDA	56	286701	6256838	Open site	Valid	Artefact : -		
	<b>Contact</b>							<b>Permits</b>		
45-5-4803	TNR AFT 32	GDA	56	286992	6258676	Open site	Valid	Artefact : -		
	<b>Contact</b>							<b>Permits</b>		
45-5-4789	TNR ATF 08	GDA	56	286838	6257139	Open site	Valid	Artefact : -		
	<b>Contact</b>							<b>Permits</b>		
45-5-4784	TNR AFT 07	GDA	56	286839	6257234	Open site	Valid	Artefact : -		
	<b>Contact</b>							<b>Permits</b>		
45-5-0311	SP 13;	AGD	56	285800	6257820	Open site	Valid	Artefact : -	Open Camp Site	256,260,1018,1567
	<b>Contact</b>							<b>Permits</b>	173	
45-5-0412	SP 14 South Penrith	AGD	56	285750	6257860	Open site	Valid	Artefact : -	Open Camp Site	256,369,1018,1567
	<b>Contact</b>							<b>Permits</b>	173	
45-5-4804	TNR AFT 05	GDA	56	286755	6257934	Open site	Valid	Artefact : -		
	<b>Contact</b>							<b>Permits</b>		

**\*\* Site Status**

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

**Destroyed** - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.**Partially Destroyed** - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground**Not a site** - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 01/09/2023 for Matthew Kelleher for the following area at Datum :GDA, Zone : 56, Eastings : 285698.0 - 287450.0, Northings : 6256540.0 - 6258888.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 12

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