

Appendix K

Aboriginal cultural heritage assessment



**TOWNSON ROAD UPGRADE STAGE 1
BETWEEN RICHMOND ROAD AND JERSEY ROAD**

Aboriginal Cultural Heritage Assessment

Prepared for GHD on behalf of Transport for NSW

Blacktown Local Government Area

November 2020

Ref. 1909

KELLEHER NIGHTINGALE CONSULTING PTY LTD
Archaeological and Heritage Management
ACN 120 187 671

Level 10, 25 Bligh Street
SYDNEY NSW 2000
Phone 02 9232 5373

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Prepared by	Dr Matthew Kelleher; Cristany Milicich; Madeline Harding; Ben Anderson
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Executive Summary

Transport for NSW (TfNSW, formerly Roads and Maritime Services) is proposing to construct a four-lane divided road along Townson Road/Burdekin Road corridor linking Richmond Road, Marsden Park in the west and Burdekin Road, Schofields in the east. The length of the overall program of work is about 3.6 kilometres.

The overall program of work consists of two stages:

- Stage 1 (referred to as ‘the proposal’ and ‘study area’ for the purposes of this assessment) involves an upgrade of about 1.6 kilometres of road extending from Richmond Road to south of Jersey Road
- Stage 2 is about two kilometres in length involving the construction of a new road between the Stage 1 tie-in and Burdekin Road.

Stage 2 is subject to a separate planning approval.

Staged delivery of the proposal would involve:

- Interim phase- two lanes plus earthworks
- Ultimate phase- completion of remainder of the works for a four-lane dual carriageway.

The proposal is located within the Marsden Park Industrial and West Schofields precincts of the North West Growth Area, about 37 kilometres north-west of the Sydney central business district and three kilometres west of Schofields. An environmental assessment in the form of a Review of Environmental factors (REF) is being prepared in accordance with the requirements of Division 5.1 of the *NSW Environmental Planning and Assessment Act 1979*.

Aboriginal archaeological survey undertaken as part of the TfNSW Stage 2 *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI) identified two Aboriginal archaeological sites within the study area. The assessment recommended a program of archaeological test excavation at the two sites and at one additional area south of Meadow Road to determine the condition, nature and extent of subsurface archaeological material and archaeological significance at each area.

Kelleher Nightingale Consulting Pty Ltd (KNC) was engaged by GHD on behalf of TfNSW to prepare an Aboriginal Cultural Heritage Assessment Report (CHAR) to inform the REF for the proposal. The CHAR has been prepared in accordance with Stage 3 of the PACHCI and the Department of Planning, Infrastructure and Environment (DPIE, formerly Office of Environment and Heritage) *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

KNC undertook an archaeological test excavation program at the three identified areas located within the Stage 1 proposal footprint, in accordance with the DPIE *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* and TfNSW PACHCI. The archaeological test excavation confirmed the presence of disturbed and very low to low-moderate density subsurface archaeological deposit at the three test areas, resulting in the confirmation of three Aboriginal archaeological sites within the study area:

- Schofields 2 (AHIMS 45-5-0827)
- TRU AFT 1 (AHIMS 45-5-5241)
- TRU AFT 2 (AHIMS 45-5-5310, identified within additional test area south of Meadow Road).

Archaeological significance of the identified Aboriginal sites was defined by the information exhibited by each site. The three archaeological sites displayed low archaeological significance. The sites have previously been and continue to be impacted by historical and contemporary land use and natural processes, resulting in a mixed and dispersed deposit of Aboriginal objects lacking meaningful archaeological context. The sites do not warrant salvage excavation.

An Aboriginal Heritage Impact Permit is being sought for the entirety of the lands subject to the proposal and specifically for Aboriginal objects associated with the following sites:

Site Name	AHIMS number	Level of impact	Assessed significance
Schofields 2	AHIMS 45-5-0827	Partial impact	Low significance
TRU AFT 1	AHIMS 45-5-5241	Total impact	Low significance
TRU AFT 2	AHIMS 45-5-5310	Total impact	Low significance

The CHAR has been prepared in accordance with Stage 3 of the TfNSW PACHCI and DPIE *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. It builds on the results of previous assessment and ongoing Aboriginal community consultation for the proposal.

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1 Introduction

1.1 Proposal background

Transport for NSW (TfNSW) is proposing to construct a four-lane divided road along Townson Road/Burdekin Road corridor linking Richmond Road, Marsden Park in the west and Burdekin Road, Schofields in the east. The length of the overall program of work is about 3.6 kilometres.

The overall program of work consists of two stages:

- Stage 1 (the proposal) involves an upgrade of about 1.6 kilometres of road extending from Richmond Road to south of Jersey Road (see Figure 3)
- Stage 2 is about two kilometres in length involving the construction of a new road between the Stage 1 tie-in and Burdekin Road.

Stage 2 is subject to a separate planning approval.

Staged delivery of the proposal would involve:

- Interim phase- two lanes plus earthworks (Figure 3).
- Ultimate phase- completion of remainder of the works for a four-lane dual carriageway.

The proposal is located within the Marsden Park Industrial and West Schofields precincts of the North West Growth Area, about 37 kilometres north-west of the Sydney central business district and three kilometres west of Schofields

TfNSW is the proponent of the proposal, and an environmental assessment in the form of a review of environmental factors (REF) is being prepared in accordance with the requirements of Division 5.1 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

1.2 Proponent and consultants

TfNSW is the proponent of the proposal, and an environmental assessment in the form of a Review of Environmental factors (REF) is being prepared in accordance with the requirements of Division 5.1 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

Kelleher Nightingale Consulting Pty Ltd (KNC) was engaged by GHD on behalf of TfNSW to prepare an Aboriginal Cultural Heritage Assessment Report (CHAR) for the proposal. The CHAR has been prepared in accordance with Stage 3 of the TfNSW *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI) (Roads and Maritime Services 2011) and the Department of Planning, Infrastructure and Environment (DPIE, formerly Office of Environment and Heritage (OEH)) *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011a).

1.3 Location and scope of activity

The study area for this assessment encompasses the existing Townson Road corridor between Richmond Road and Victory Road, as well as a portion of the existing Meadow Road corridor between Victory Road and Jersey Road/Durham Road. It is anticipated that the majority of proposed works will take place within the existing road corridor; however, minor widening may be required to accommodate road construction works. The study area is shown in Figures 1 and 2. Figure 3 shows the key features of the proposal.

The study area for this Stage 3 PACHCI assessment excludes the areas of the proposal that overlap with existing, active Aboriginal Heritage Impact Permits (AHIPs) related to the Richmond Road Stage 2 Upgrade (AHIP 1131725) and Townson Road Precinct Stage 2 (AHIP C0004137). The locations of the existing AHIP areas in relation to the proposal are shown on Figure 1. TfNSW should consult with relevant AHIP holders to complete the proposed works in these areas under their respective permits. Any works undertaken within existing AHIP areas must be undertaken in accordance with AHIP conditions.

The key features of the proposal are shown in Figure 3 and include:

- Widening and upgrading about 1.6 kilometres of Townson Road, between Richmond Road and Durham Road/Jersey Road, to provide:
 - Two traffic lanes, about 3.5 metres wide in each direction
 - A new section of Townson Road about 250 metres long, to the east of the existing alignment, between Meadow Road and Durham Road/Jersey Road
 - A temporary connection road extending from the stub to Durham Road/Jersey Road to maintain access and connectivity until Stage 2 is operational

- A new southbound slip lane at Richmond Road intersection from Townson Road.
- Constructing two bridges, each about 36 metres long, to reduce flooding afflux with one bridge over Bells Creek and another bridge about 50 metres east of Bells Creek
- Providing two new signalised intersections allowing all turning movements to and from Townson Road/Victory Road/A New Road, and formalised pedestrian crossings at each leg of the signalised intersections
- Constructing stubs for Victory Road north and the new road to the north and south of the Townson Road intersection, with a traffic lane in each direction about 3.5 metres wide and a footway on either side, about 1.2 metres wide
- Providing a shared path about three metres wide for pedestrians and cyclists on the southern side of Townson Road along the length of the proposal, and a pedestrian crossing across the new southbound slip lane from Townson Road to Richmond Road
- Providing a footpath about 1.2 metres wide on the northern side of Townson Road along the length of the proposal and at the intersections.

This interim phase allows the surrounding developments to progress and allows utilities to be relocated to their ultimate location. It is anticipated that construction of the interim phase would commence in early 2022 and would be open to traffic in 2023. Completion of the ultimate phase of the proposal would take place around five years after completion of the interim phase.

1.4 Statutory controls and development context

The proposal is for transport infrastructure to be constructed and maintained by TfNSW. The proposal is subject to assessment under Part 5 of the EP&A Act. Aboriginal objects would be harmed by the proposal and an application for an AHIP would be made under section 90A of the *National Parks and Wildlife Act 1974*.

This Aboriginal CHAR has been prepared to support the environmental assessment and the AHIP application. It has been prepared in accordance with the DPIE *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011a) and related guidelines and requirements. The CHAR complies with the TfNSW PACHCI (Roads and Maritime Services 2011).

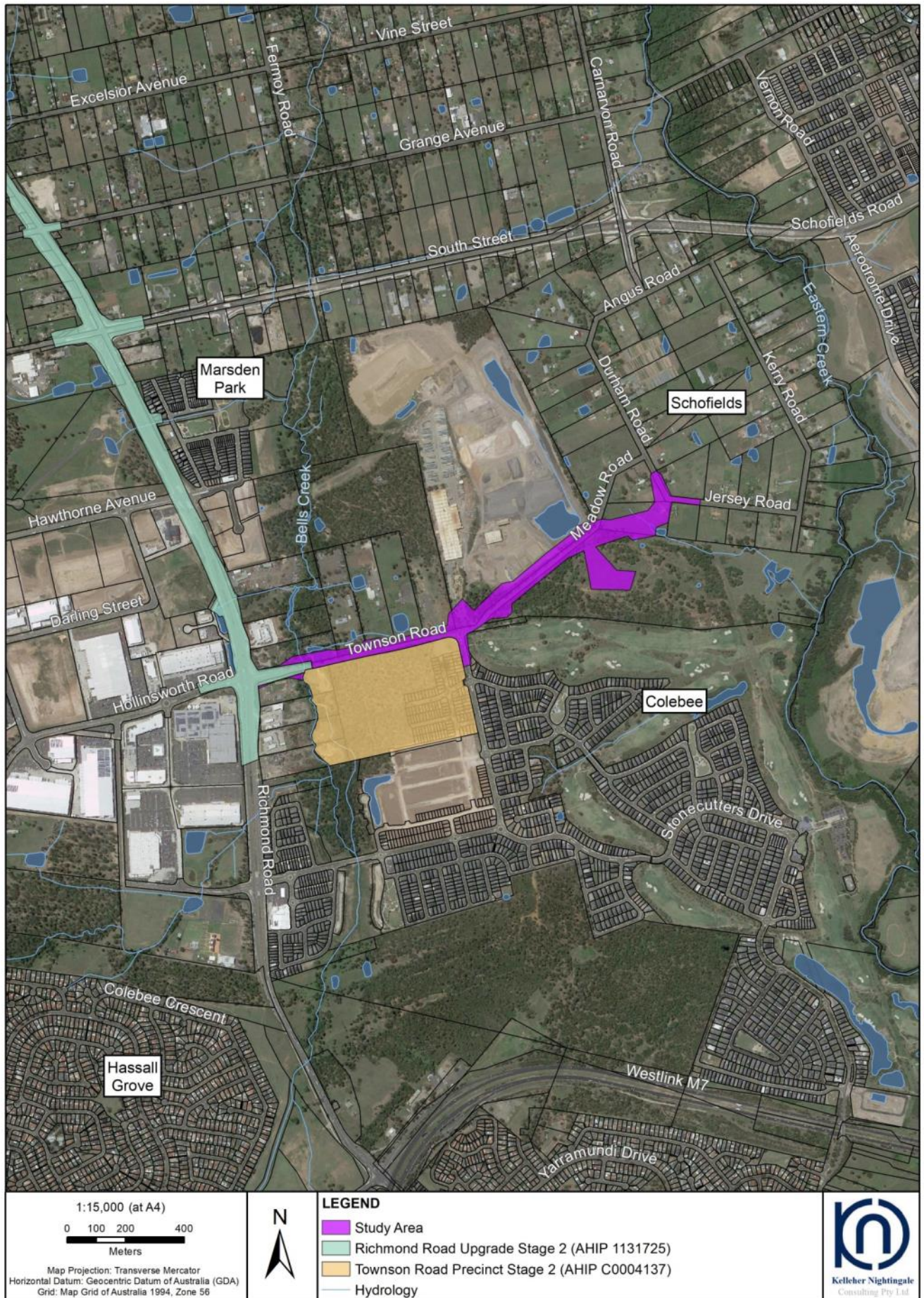


Figure 1. Location of the proposal and the study area and existing AHIPs

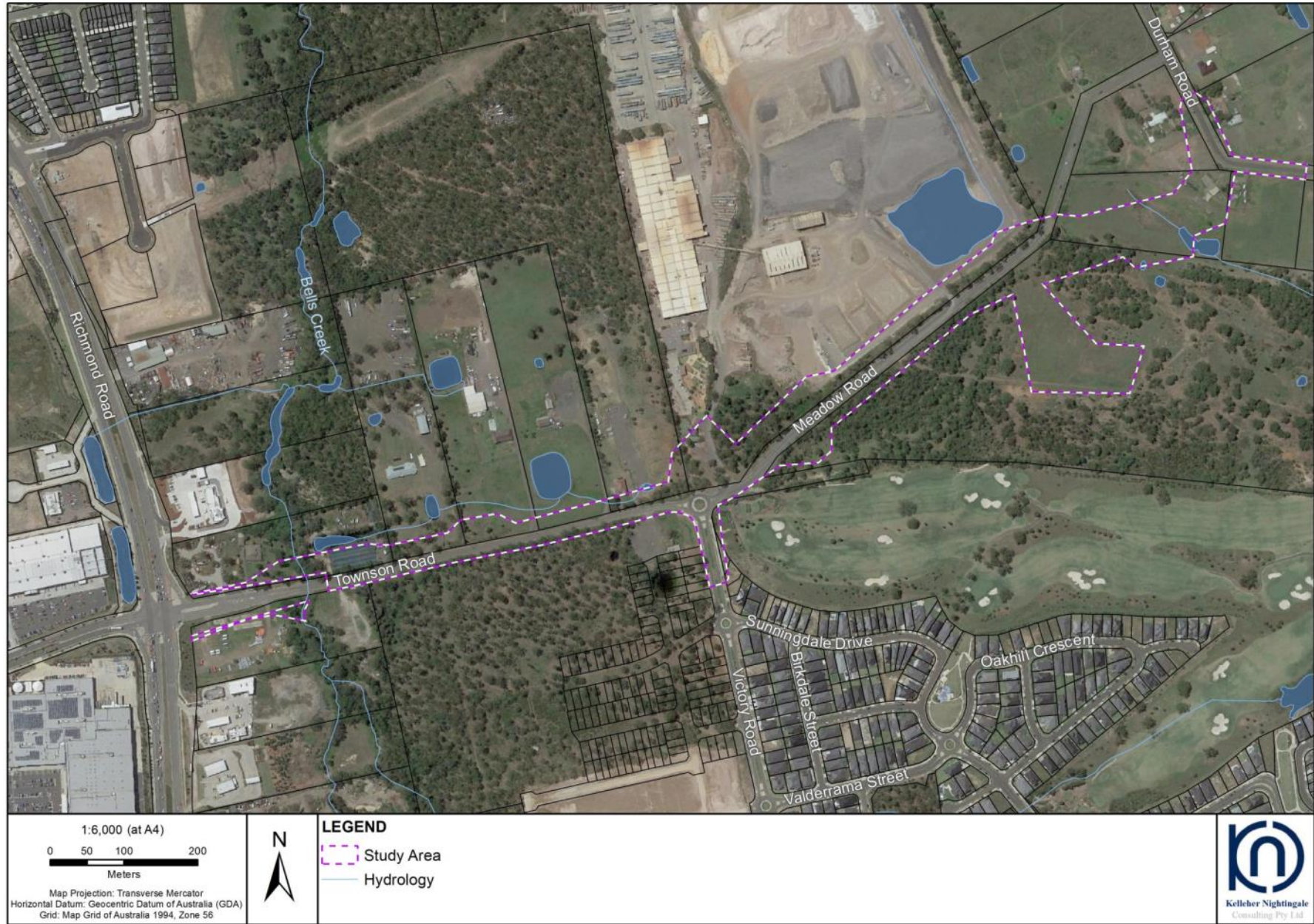


Figure 2. Detail of the study area

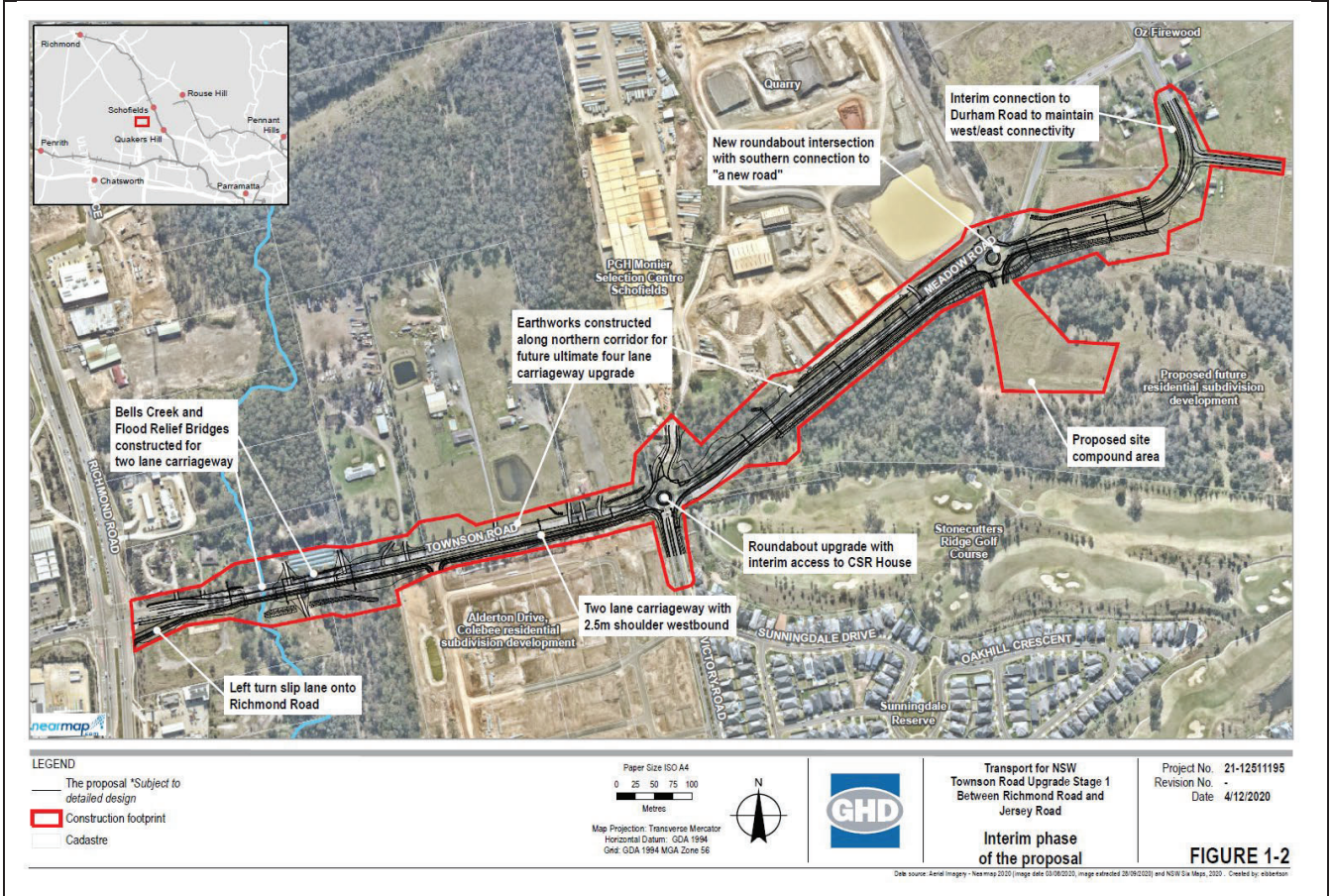
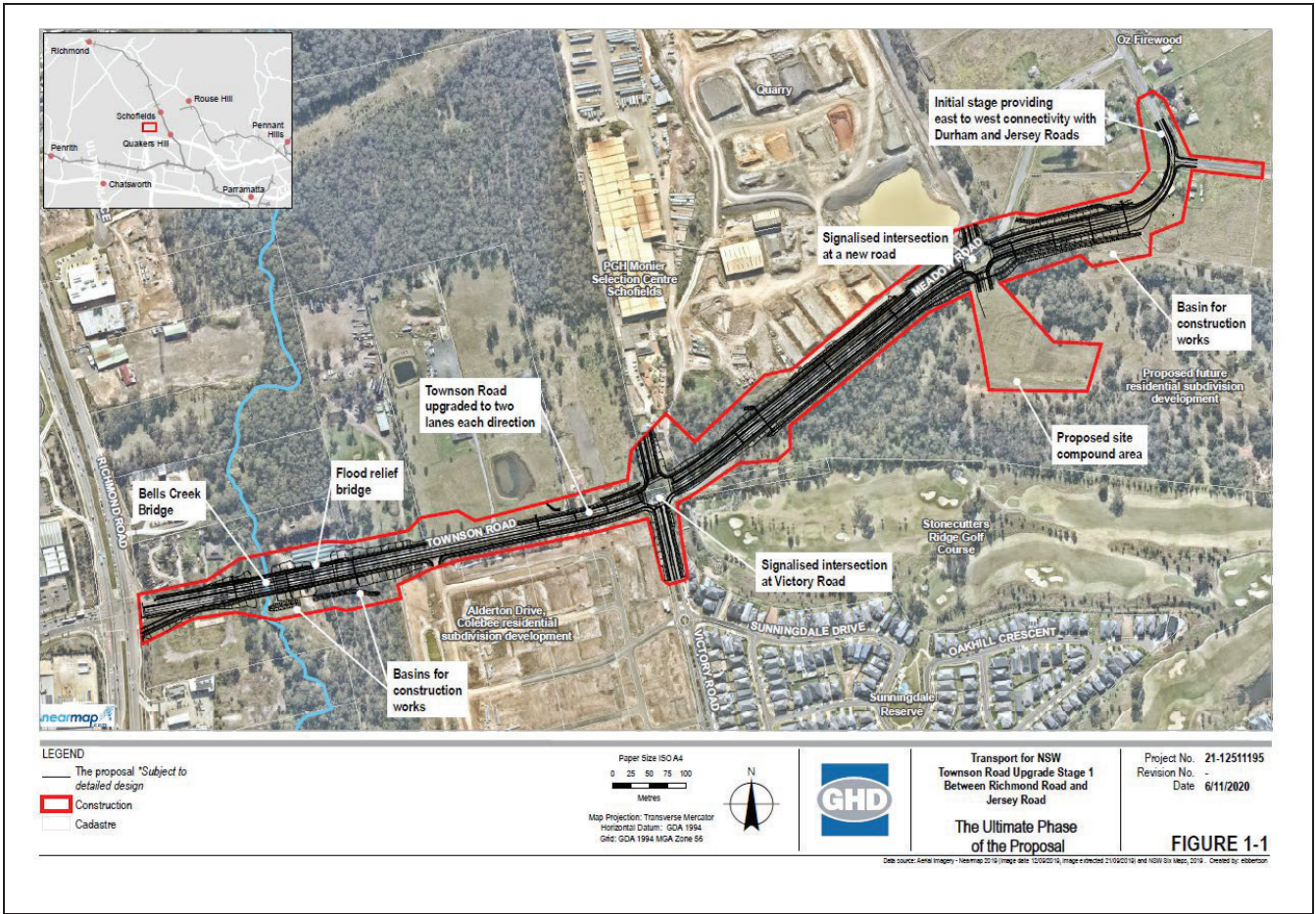


Figure 3. Key features of Stage 1 (top) and the interim proposal (bottom)

1.5 National Parks and Wildlife Act 1974

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 NPW 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 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)
- Contravention of any condition of an AHIP.

Under section 87 (1) it is a defence against prosecution 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 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”.

Section 89A of the Act relates to the notification of sites of Aboriginal objects, under which it is an offence if the location of an Aboriginal object is not notified to the Director-General in the prescribed manner within a reasonable time.

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 AHIP is required for an activity which will harm an Aboriginal object.

1.6 Objectives of the CHAR

The proposed infrastructure works will impact on some Aboriginal objects (sites). Approval obtained under the *National Parks and Wildlife Act 1974* is required for these Aboriginal objects prior to any impact or harm. The proponent would apply for an AHIP under section 90A of the Act.

- Clause 61 of the *National Parks and Wildlife Regulation 2019* requires that an application for an AHIP is accompanied by a CHAR. The CHAR is to provide information on:
 - The significance of the Aboriginal places that are the subject of the application
 - The actual or likely harm to those Aboriginal objects or Aboriginal places from the proposed activity that is the subject of the application
 - Any practical measures that may be taken to protect and conserve those Aboriginal objects or Aboriginal places
 - Any practical measures that may be taken to avoid or mitigate any actual or likely harm to those Aboriginal objects or Aboriginal places.

The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011a) provides further guidance on the preparation of a CHAR. This report has been prepared in accordance with the requirements of the Regulation and the guide.

This CHAR has been prepared to accompany an application for an AHIP made by TfNSW for Aboriginal objects within the proposal area, including those associated with Aboriginal sites Schofields 2 (partial), TRU AFT 1 and TRU AFT 2.

2 Consultation Process

2.1 Aboriginal stakeholder consultation

TfNSW is committed to effective consultation with Aboriginal communities regarding TfNSW activities and their potential for impact on Aboriginal cultural heritage. The TfNSW PACHCI was developed to provide a consistent means of effective consultation with Aboriginal communities regarding activities which may impact on Aboriginal cultural heritage and a consistent assessment process for TfNSW activities across NSW.

The aim of consultation is to integrate cultural and archaeological knowledge and ensure registered Aboriginal parties have information to make decisions on Aboriginal cultural heritage. For the preparation of this CHAR, consultation with Aboriginal people has been undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (OEH 2010a) and the requirements of Clause 60 of the *National Parks and Wildlife Regulation 2019*.

TfNSW advertised in local media (Appendix A) and contacted potential Aboriginal stakeholders identified from government agency notification responses. TfNSW invited Aboriginal people who hold knowledge relevant to determining the cultural heritage significance of Aboriginal objects and Aboriginal places in the area in which the proposed activity is to occur to register an interest in a process of community consultation. Investigations for the proposal have included consultation with the 16 Aboriginal community groups and individuals as listed in Table 1 below. The consultation log compiled by TfNSW is attached as Appendix E.

Table 1. Registered Aboriginal parties

Registered Aboriginal party	Representative and/or Contact Person
Deerubbin Local Aboriginal Lands Council	Steven Randall & Kevin Cavanagh
Kamilaroi-Yankuntjatjara Working Group	Phil Khan
Didge Ngunawal Clan	Paul Boyd & Lilly Carroll
Murra Bidgee Mullangari Aboriginal Corporation	Ryan Johnson
Muragadi	Jesse Johnson
Merrigarn	Shaun Carroll
Yurrandaali Cultural Services	Bo Field
Yulay Cultural Services	Arika Jalomaki
Barraby Cultural Services	Lee Field
Kawul Cultural Services	Vicki Slater
Wurrumay Consultancy	Kerri Slater
Gunjeewong Cultural Heritage Aboriginal Corporation	Cherie Carroll Turrise & Cheryl Carroll Lagerway
Darug Land Observations	Jamie & Anna Workman
Gulaga	Wendy Smith
Darug Aboriginal Land Care	Des Dyer & Ricky Field
Butucarbin Aboriginal Corporation	Lowanna Gibson

The formal consultation process has included:

- Advertising for registered Aboriginal parties (Appendix A)
- Government agency notification letters
- Notification of closing date for registration
- Provision of proposed archaeological and cultural heritage assessment methodology (allowing 28 day review) outlining the methodology to prepare the CHAR
- An Aboriginal Focus Group (AFG) meeting held on 17 October 2019 to discuss archaeological assessment methodology. Registered Aboriginal parties were also invited to identify individuals they regarded as knowledge holders for the area
- Ongoing compilation of registrants list, through continuing to register individuals and groups for consultation on the proposal
- Provision of draft CHAR for review (allowing a minimum 28 day review)
- Ongoing consultation with the local Aboriginal community.

2.2 Provision of test excavation methodology and CHAR methodology

All registered stakeholders were provided with a copy of the proposed test excavation methodology and CHAR methodology as part of an information package. Stakeholders were requested to review the information and provide comments or cultural information that may affect, inform or refine the methodology. Comments and information received from stakeholders during this period are attached in full in Appendix B.

Stakeholders were also invited to attend an AFG meeting during the review period to discuss the draft methodology. The AFG meeting was attended by representatives from TfNSW, KNC and registered Aboriginal stakeholder groups and individuals.

Responses to the proposed assessment methodology were received from Darug Aboriginal Land Care (DALC), Didge Ngunawal Clan (DNC), Kamilaroi Yankuntjatjara Working Group (KYWG), Murra Bidgee Mullangari Aboriginal Corporation (MBMAC), Muragadi and Yulay Cultural Services (YCS). Responses are summarised below.

- DALC stated that they had read the recommended assessment methodology for the proposal and agreed with the approach (email dated 21/10/2019)
- DNC advised that they supported the proposed assessment methodology (phone call 24/09/2019)
- KYWG stated that they had reviewed the proposed assessment methodology for the proposal and supported the proposed approach (email dated 25/09/2019)
- MBMAC stated that they had read the proposal information and methodology for the proposal, and endorsed the proposed assessment approach (email dated 08/10/2019)
- Muragadi agreed with the recommendations and assessment methodology (email dated 25/09/2019)
- YCS advised that they had read and reviewed the methodology and agreed with it (email dated 02/10/2019).

2.3 Review of draft CHAR

The draft CHAR was provided to registered Aboriginal stakeholders for review and comment in February 2020. All registered Aboriginal stakeholders were provided a 28 day period for review. No comments or feedback was received from stakeholders.

2.4 Aboriginal cultural values

It has been identified during the general consultation process that the wider study area has cultural heritage value to the local Aboriginal community. Some of the Aboriginal cultural heritage values expressed by stakeholders include:

- strong association with the land
- responsibility to look after the land, including the heritage sites, plants and animals, creeks and the land itself
- scarred trees
- artefact sites and landscape features such as Plumpton Ridge
- creek lines, especially Eastern Creek and Bells Creek, their tributaries and their floodplains
- indigenous plants and animals
- general concern for burials, as their locations are not always known and they can be found anywhere.

No specific cultural values for the archaeological sites identified within the study area have been expressed by registered stakeholders.

3 Landscape Context

3.1 Landform and hydrology

The study area is located on the Cumberland Plain, a physiographic region of the western Sydney Basin characterised by low lying, gently undulating low hills and plains atop the Wianamatta Group of Triassic Period sedimentary shales. The wider Sydney Basin is a large geological feature stretching from Batemans Bay in the south to Newcastle in the north and Lithgow in the west. The formation of the basin began between 250 to 300 million years ago when river deltas gradually replaced the ocean that had extended as far west as Lithgow.

Topography of the study area is primarily defined by Plumpton Ridge; a long, north-south running ridgeline present within the central portion of the study area (Figure 4). Plumpton Ridge is the dominant landform in the local area and offers a commanding view of Bells Creek to the west, and Eastern Creek approximately one kilometre east of the study area. The primary water course is Eastern Creek – a major drainage line of the Cumberland Plain that drains north to the Hawkesbury River and measures approximately 35 km in length. This waterway and its floodplain lie at the eastern boundary of the study area. Bells Creek is a 3rd order stream and a permanent watercourse flowing south to north across the western part of the study area.

The study area is characterised by gentle slopes leading down from the ridge to the flats of Bells Creek and the gentle to moderate slopes leading towards the Eastern Creek floodplain at the eastern end of the study area. Several minor drainage tributaries also intersect the study area.

3.2 Geology

Geology within the study area comprises two major lithology units and overlying alluvium (Figure 5). The majority of the study area is situated on Bringelly Shale of the late Triassic Period (Rwb), consisting of shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff (Clark and Jones 1991). The western portion of the study area contains more recent Quaternary Alluvium of fine-grained sand, silt, and clay, deposited in association with fluvial activity along Bells Creek. Bands of Quaternary Alluvium are present along most major watercourses of the Cumberland Plain.

The central portion of the study area is located along the northern margin of Plumpton Ridge and consists of a narrow band of the St Marys Formation, a Tertiary Period outcropping of laterised sand and clay with ferricrete bands, including silcrete, sandstone and shale boulders. Silcrete is the most common raw material encountered in artefact assemblages from the region and Plumpton Ridge is a well-documented source of this material. Large silcrete boulders and cobbles, along with occasional small quantities of silicified wood and quartz, exist at or near the surface and would have been a suitable source of raw lithic materials for stone tool-making. Other raw materials favoured for artefact manufacture such as quartz, chert, tuff and quartzite are also known to occur in the Rickabys Creek gravels, a widely-distributed Tertiary Period deposit of river gravels present in Marsden Park to the north west. Rickabys Creek gravels are common along larger watercourses of the region.

3.3 Soil landscapes

Soils in the study area are of two main types (Figure 5). Residual soils of the Blacktown soil landscape are present along the higher ridge spur in the east and the associated gentle slopes. The Blacktown soil landscape consists of shallow to moderately deep hard setting red, brown and yellow podzolic soils. Soil fertility and soil drainage are low. 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 accumulate within a single cultural soil layer (e.g. A1-A2 horizon). Archaeologically, these soils may retain intact archaeological deposit where disturbance levels are low but are likely to retain only horizontal integrity. Slope gradient contributes to rates of sediment erosion and deflation and disturbance of soils is common on steeper slopes and areas of ground disturbance.

The South Creek soil landscape is present within the western portion of the study area, associated with the Quaternary Alluvium deposits along the watercourse. This soil landscape is present on the floodplain and creek flats of Bells Creek and is present in a wide band along the creek channel. South Creek soils are characterised by deep to very deep alluvial sediments, loams, and clays and are susceptible to erosion and frequent flooding. Being on an active floodplain, this soil landscape is dynamic with multiple and frequent episodes of both erosion and deposition. Aboriginal objects may be present in this soil landscape but their context and stratigraphic integrity will be variably affected by disturbance from flood episodes, erosion and landuse.

3.4 Vegetation

The distribution of native vegetation within the study area has been affected by historic and contemporary European land use 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. Prior to European clearing, the study area would have been Cumberland Plain Woodland and dry sclerophyll open forest. Dominant trees of this community were Grey Box and Forest Red Gum, with Narrow-leaved Ironbark (*Eucalyptus crebra*). Understorey shrubs would have included *Bursaria*, *Dodonea*, and *Acacia* (Benson and Howell 1990:72), with native grasses such as *Themeda*, *Poa*, *Danthonia*, *Eragrostis*, and *Aristida* species, as well as small herbs, and tuberous orchids and lilies.

Along the creek corridors, vegetation communities would have reflected the underlying alluvial soils and more frequent inundation. Common trees would have included Broad-leaved Apple, Cabbage Gum and Swamp Oak. Rushes, various *Juncus* species and knotweed are common along alluvial silts near channels. Shrubland of paperbark and tea tree would have been common on more elevated banks.

The majority of the study area has been cleared due to the construction of the existing Townson Road and Meadow Road corridors. Remnant and regrowth vegetation is limited to occasional larger trees located adjacent to the road corridor within bordering properties.

3.5 Land use and disturbance

European settlement of the area began in the early 19th century with several land grants in the region. The land grants were primarily utilised for agricultural or pastoral purposes and widespread native vegetation clearance was conducted in order to prepare the land. In the succeeding centuries, land use within the region has remained primarily associated with agriculture; however, recent urban and industrial development has begun to transform the area. Past and present land use practices have had a variable impact on the landscape within the study area.

Activities associated with the construction of the Richmond Road, Townson Road and Meadow Road corridors have modified the landscape. Drainage works along Bells Creek and several of the smaller tributary watercourses have included channelisation and bank stabilisation works. Lot 3 DP 232574 south of Meadow Road operated for many years as the Blacktown Mini Bike Club, with various tracks and areas of earthmoving and excavation. Large cuts and mounds are present. Lot 28 DP 12076 to the north of the mini bike club property also exhibits extensive disturbance associated with a cut drainage line and erosion. Construction activities related to nearby industrial and residential development and related infrastructure have also modified the surrounding landscape.

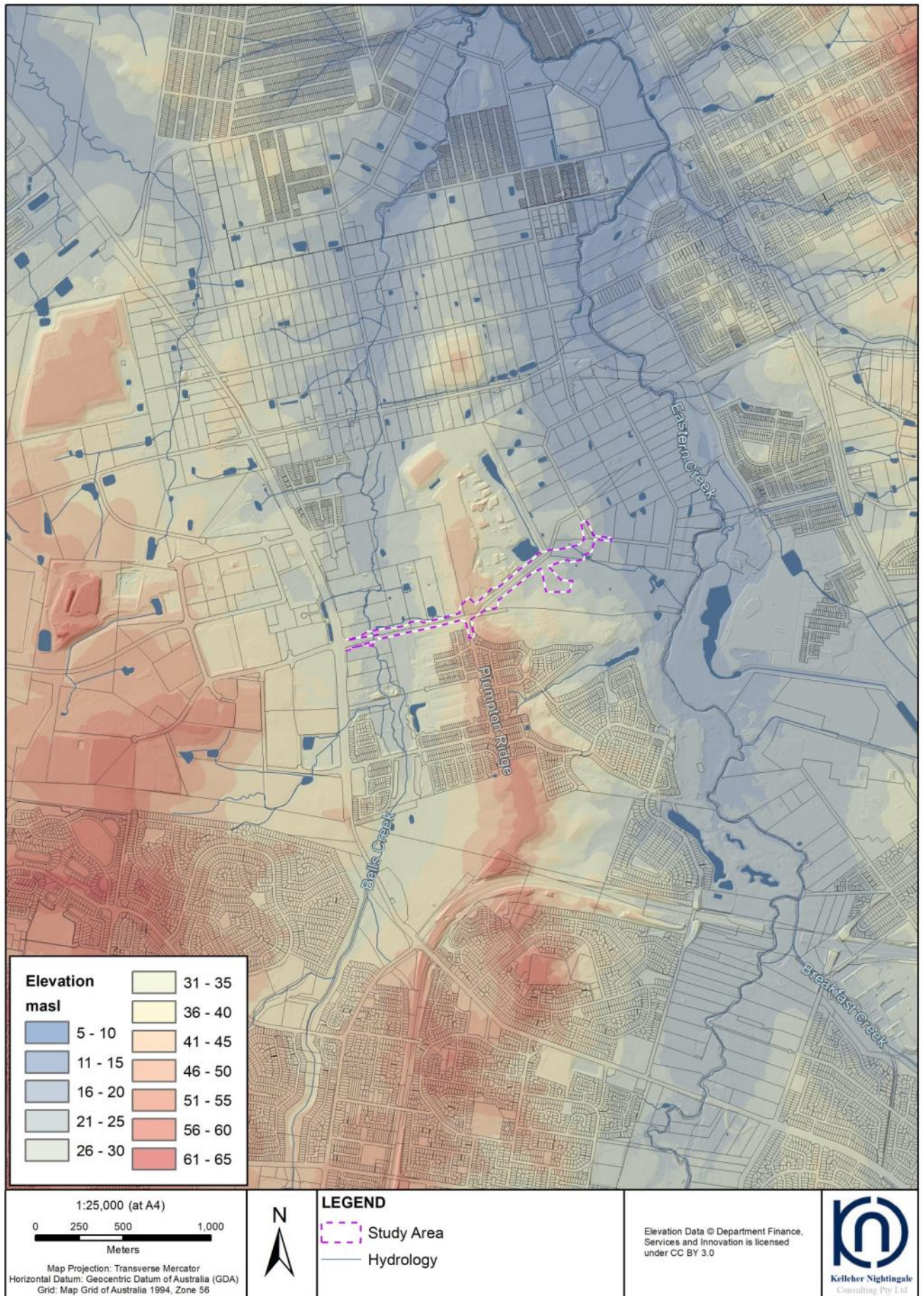


Figure 4. Topography of the study area

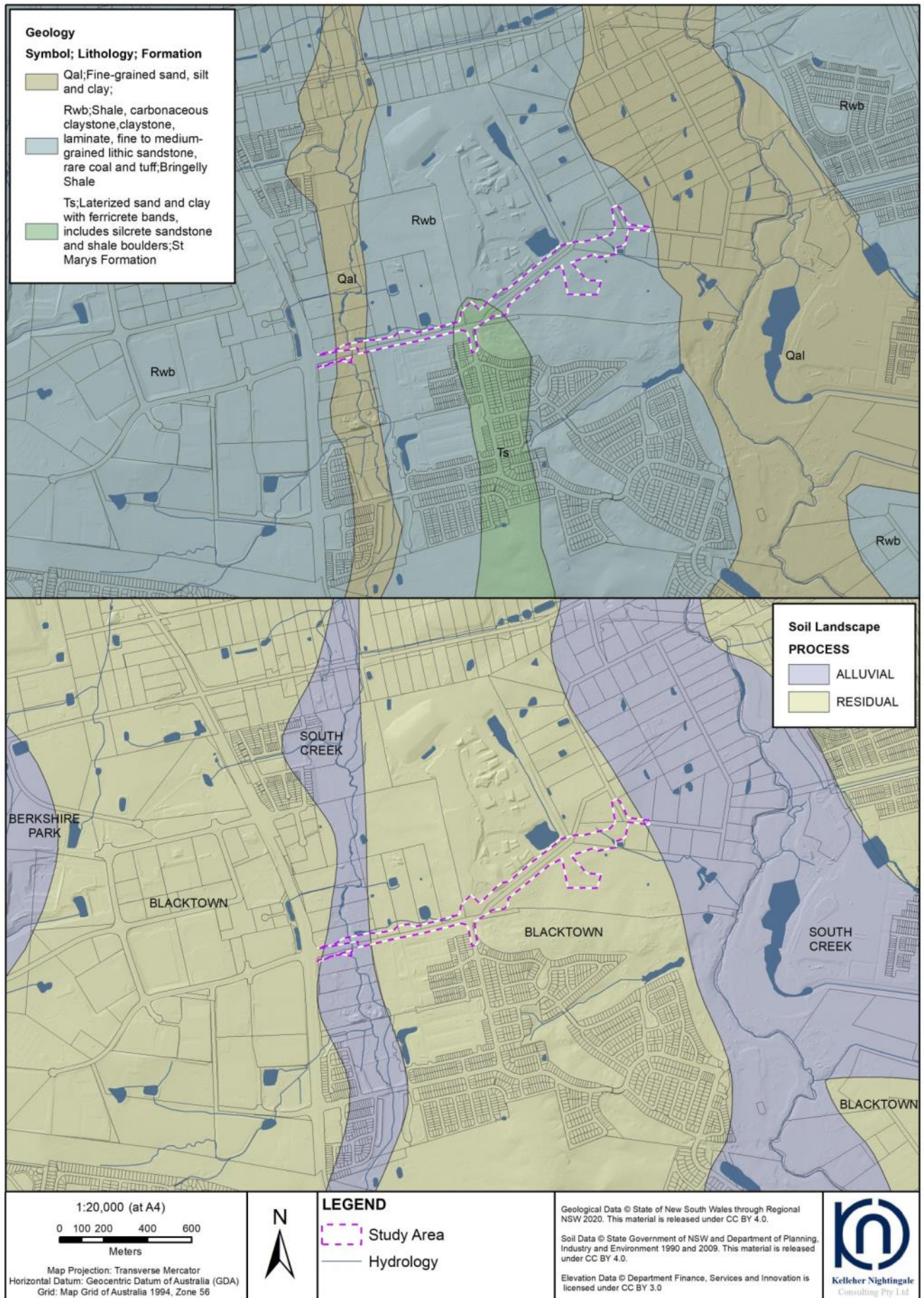


Figure 5. Geology and soil landscapes of the study area

4 Ethnohistoric context

The study area is located within a region that was important to and intensively used by Aboriginal people in the past. Members of the contemporary Aboriginal community continue to experience connection with the area through cultural and family associations. Historic accounts of the Indigenous inhabitants of the Sydney area provide an insight into Aboriginal life at the time of initial European exploration and settlement, however these accounts must be considered within an 18th century Eurocentric context.

Early observations made by British Officers described named groups of Aboriginal people associated with particular areas of land (Attenbrow 2002). However, no reference was made to the names and traditional lands of these groups until the late 1800s, when the name Darug was used to refer to the language of the traditional inhabitants of the Cumberland Plain (Attenbrow 2002:33, Brook and Kohen 1991:2). Darug lands “adjoined the Thurralwal on the north, extending along the coast to the Hawkesbury River, and inland to what are now Windsor, Penrith, Campbelltown, and intervening towns” (Matthews 1901:155 [in Attenbrow 2002: 32]).

It is likely that Aboriginal people formed small territorial extended family groups or ‘clans’. Individual clans would come together regularly to form larger ‘bands’ for communal participation in subsistence and sociocultural activities. The modes of subsistence used varied between inland and coastal groups (Tench 1793). Tench (1793: 230) observed that inland groups “depend but little on fish, as the river yields only mullets... their principal support is derived from small animals which they kill, and some roots (a species of wild yam chiefly) which they dig out of the earth.” Berries, Banksia flowers and wild honey were also recorded as foods of Aboriginal people in the area (Collins 1798 [2003]). Locations for campsites were usually chosen based on the level of comfort and shelter they provided, as well as their proximity to resources such as food, water and raw materials for artefact manufacture. Early historic accounts (e.g. Collins 1798 [2003]) also note variation in campsite locations related to seasonal changes in climate and access to food resources.

Many traditional campsites and hunting and gathering resources were lost to Aboriginal peoples as British settlers expanded throughout the Cumberland Plain and claimed arable and resource rich areas for their own. Misunderstandings occurred as Aboriginal peoples, cut off from their own food supplies, took food from the settlers to survive. These actions were viewed as theft by the settlers, resulting in a strained relationship between Aboriginal people and the settlers (Attenbrow 2002, Brook and Kohen 1991). Severe droughts from 1814 – 1816 exacerbated food supply issues and violence ensued throughout the Sydney region as ‘thefts’ increased. Aboriginal people were shot by settlers in an attempt to prevent them raiding food resources, which resulted in retaliation by the Aboriginal people and further deaths in both groups.

While state officials such as Governor Macquarie recognised that these conflicts were often initiated by the settlers, protecting farmers and valuable food supplies during the drought was priority. The punitive expedition of 1816 was organised as an attempt to end conflict and satisfy this priority (Brook and Kohen 1991: 23). Troop detachments were sent to Cowpastures and the Airds and Appin district to seek out ‘hostile tribes’ (Brook and Kohen 1991: 22). A third group covered the areas around Parramatta and Windsor as well as the banks of the Grose and Nepean rivers (Brook and Kohen 1991: 23). Several Aboriginal guides took part in the punitive expeditions. Of the three detachments sent out, only the party without Indigenous guides encountered ‘hostile tribes’, leading to the suggestion that the guides were “cunningly and successfully shielding their ‘wild’ compatriots” (Brook and Kohen 1991: 22 - 34).

Two of the guides, Colebee and Nurragingy, were rewarded for their service during the punitive missions despite the possible deception involved. This reward consisted of a 30 acre land grant at a location of Colebee and Nurragingy’s choosing, which was selected along Bells Creek. Brook and Kohen (1991: 44-45) suggest that Colebee and Nurragingy chose the final location based on its proximity to raw materials suitable for artefact manufacture along Plumpton Ridge, proximity to important watercourses (Bells Creek and Eastern Creek) and because of long ‘tribal’ affiliation with the land. The Colebee and Nurragingy Grant was the first land grant to Aboriginal people by the settlers and formed the basis of the area later known as Blacktown. The site of Colebee and Nurragingy’s Land Grant is contained within a reserve approximately 1.2km south of the current study area. An historical archaeological investigation conducted by Environmental Resources Management (ERM) in 2003 for the Medallist lands covered the area of the land grant and concluded that physical remains directly relating to the time period of the land grant were unlikely due to various land use practices and disturbance (ERM 2003). Nevertheless the historical and cultural value of the grant area remains significant.

Governor Macquarie later established the Native Institution of NSW in Parramatta in an attempt to assimilate the local Aboriginal people into the colony. Macquarie believed educating Aboriginal children in European skills, customs and beliefs would assist the assimilation process (Brook 1983). The Institution was moved adjacent to Colebee and Nurragingy’s Land Grant in 1823, and remained in use there until 1833. The Blacktown Native Institution is highly culturally significant both to Aboriginal people and to the European settlement history of Sydney, and it played a key role in the history of colonial assimilation policies and race relations. The site of the Blacktown Native Institution is approximately 1.7km to the southwest of the study area.

5 Archaeological Context

5.1 AHIMS web services

The Aboriginal Heritage Information Management System (AHIMS) is a database operated by the DPIE (formerly OEH) and regulated under section 90(Q) of the 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 in January 2020 to identify registered (known) Aboriginal sites or declared Aboriginal places within or adjacent to the study area (Client service ID 476794).

The AHIMS Web Service database search was conducted within the following coordinates (GDA, Zone 56):

Eastings:	299746 - 302210
Northings:	6266438 - 6268232
Buffer:	0 metres (the search coordinates included a buffer around the study area).

The AHIMS search results showed:

82	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location

The distribution of registered Aboriginal sites within these coordinates are shown in Figure 6. The frequencies of site types within the search area are shown in Table 2.

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

Site Context	Site Feature	Number	Frequency
Open	Artefact	61	74.4
	Artefact; Potential Archaeological Deposit (PAD)	9	11
	Artefact; Stone quarry	6	7.3
	Potential Archaeological Deposit (PAD)	5	6.1
	Stone Quarry	1	1.2
Total		82	100

AHIMS records showed that there are three previously registered sites (AHIMS 45-5-3998, 45-5-0827 and 45-5-5241) located within the study area. One of these (AHIMS 45-5-3998) has been destroyed according to the AHIMS register. The nature of previously recorded sites and previous archaeological investigations in the area are discussed further in sections 5.3 and 5.4.

An additional AHIMS search using the same parameters was undertaken in April 2020 prior to finalisation of the CHAR. Results were consistent with the January 2020 search, with the addition of newly identified site TRU AFT 2 which was registered on AHIMS following the test excavation (see section 6.3.3). Updated April 2020 AHIMS search results are attached as Appendix C.

5.2 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:

- Blacktown Local Environmental Plan (LEP) 2015
- Roads and Maritime Heritage Register
- Sydney Water Heritage Register
- State Heritage Register and State Heritage Inventory
- Commonwealth Heritage List
- National Heritage List
- Australian Heritage Places Inventory
- Register of the National Estate.

No Aboriginal archaeological sites or Aboriginal heritage items were recorded on these databases within the study area.

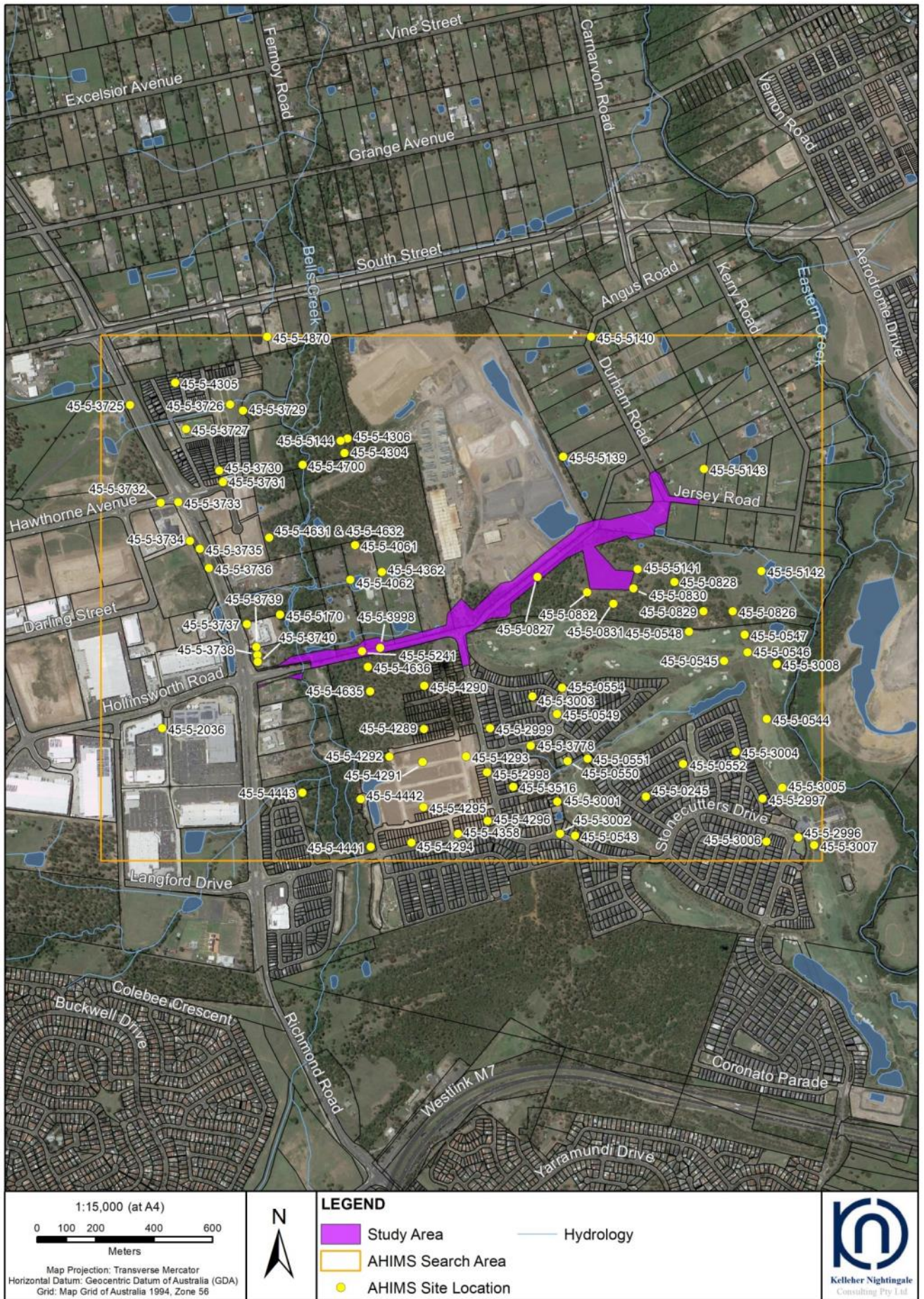


Figure 6. AHIMS extensive search results

5.3 Previous archaeological investigations

Several archaeological investigations have been undertaken within and around the study area as part of proposed infrastructure and precinct development projects. A summary of the relevant investigations is presented in this section.

An archaeological study was undertaken within the Blacktown LGA to collate known information on Aboriginal sites and resources within the LGA area (Kohen 1986). The assessment did not identify any Aboriginal archaeological sites within the current study area. The assessment noted that whilst archaeological sites occurred across the Blacktown LGA, the majority of archaeological sites were located adjacent to creeks and on the ridges. Sites were also likely to be concentrated closer to sources of silcrete present along Plumpton Ridge and at Eastern Creek and South Creek. A variety of site types had been identified including artefact scatters, scarred trees, possible burials and a potential stone arrangement. In addition to these sites, Kohen expressed that several areas within the City of Blacktown were of local and regional importance. Based on the local oral history, location of the Colebee and Nurragingy land grant, the presence of silcrete nodules and silicified wood and the abundance of archaeological sites extending over the length of the ridge, it was concluded that Plumpton Ridge should be viewed as an area of great significance to the Aboriginal community (Kohen 1986). The current study area was identified as an area of archaeological potential, given the limited amount of archaeological survey that had taken place at the time of this assessment, as well as the presence of Bells Creek and Plumpton Ridge within the study area. It was recommended that further archaeological assessment take place in areas of high archaeological significance or with archaeological potential prior to any development of these areas.

An archaeological survey was undertaken for the proposed expansion of a quarry and brickworks site at Schofields, immediately south of Meadow Road (National Heritage Studies 1990a). This assessment encompassed the portion of the study area immediately south of Meadow Road, including the proposed compound location. The assessment included a review of previous archaeological assessments, with particular focus paid to previously identified sites on Plumpton Ridge. Archaeological field survey noted use of the land for mini bike activities, with several tracks criss-crossing the surveyed area. The numerous bike tracks led to increased exposure within the surveyed area and visibility was recorded as 90-100% on tracks and in small eroded areas. The remainder of the assessment area not exposed by land use activities consisted of Eucalypt forest and its dense understory. Visibility within these areas was considered low to nil. A total of seven artefact scatter sites were recorded as a result of the survey. The majority of artefacts identified across the sites were made of silcrete (80%) with instances of other raw materials such as black chert, volcanics and quartz. Artefact types identified included flaked pieces and flakes. Several silcrete cores and utilised flakes made were also identified. Natural silcrete pebbles and broken pebbles were also identified at site locations. Disturbance varied across the assessment area, resulting from utilities infrastructure, existing quarrying activities, land use related to bike and vehicle activity and areas of erosion/deflation and soil movement

One site, Schofields 2 (45-5-0827), is located within the current study area and consisted of two artefacts recorded at the junction of two tracks, immediately inside the main bike club access gate at Meadow Road. The site was determined to be heavily disturbed as a result of land use activities leading to deflated soils and heavy erosion, but with some potential in the surrounding less disturbed area. Three further sites recorded during this assessment (Schofields 5, 6 and 7 (AHIMS 45-5-0830-32)) are located in proximity to the study area, near the proposed compound location south of Meadow Road. Schofields 5 comprised 14 silcrete artefacts recorded in an area of ground disturbance near the mini bike clubhouse and kiosk, approximately 15 metres outside the current study area boundary. Schofields 6 was located to the south west, approximately 50 metres outside the study area boundary. The site comprised 22 silcrete artefacts scattered over a raised, deflated area on the gentle midslope adjacent to the main bike circuit, heavily disturbed by vehicle traffic. The artefacts were not considered to be in situ. Schofields 7 was located to the west, approximately 14 metres from the study area boundary. Schofields 7 included 51 artefacts spread over a 150 metre x 30 metre area south of the main access track into the bike club property. The site was heavily disturbed, with none of the artefacts considered to be in context, resting on an exposed and deflated B horizon surface. The assessment considered that the seven sites identified as a result of survey were part of a large archaeological complex extending across Plumpton Ridge. It was recommended that a Consent to Destroy Permit be sought for impacts to the assessment area as more intact, higher density sites associated with Plumpton Ridge were present on raised ground further south of the assessment area.

Schofields 5, 6 and 7 were later subject to test excavation (National Heritage Studies 1990b), in order to determine whether the sites had a subsurface component or lower levels of disturbance on the slightly higher ground to the south of the surface objects. A total of 14 50cm x 50cm test squares were excavated, as well as three series of auger holes positioned to complement the test square locations. Only two squares were found to contain artefacts, located on the surface or near-surface. Test square 1, located midway between Schofields 5 and Schofields 6, had a single flaked piece of silcrete found on the surface of the topsoil. Test square 12 at the western end of Schofields 7 contained a yellow silcrete flake at 3cm depth. This area was sheet eroded from water runoff and the artefact was not considered to be in situ.

Test squares were generally shallow and disturbed, with little topsoil remaining, and heavily impacted by erosion and disturbance from the bike club. It was concluded that no in situ subsurface deposit was likely to remain across the three sites investigated, with disturbance and subsequent erosion leaving surface artefacts exposed as a secondary lag deposit. These artefacts were considered to be part of the wider spread of archaeological material associated with

Aboriginal landscape use of Plumpton Ridge, but in and of themselves did not offer any further scientific information. It was recommended that a surface collection of material be undertaken prior to the proposed quarry expansion, with no further archaeological work recommended. The sites are still listed as valid on the AHIMS database.

An area further south of Meadow Road was further assessed for Aboriginal archaeology during the design process for a proposed golf course development in the Colebee Release Area (JMCHM 2003a). The assessment mapped land use and previous disturbance thought to impact archaeology and divided the assessment area into zones of varying archaeological potential. Sixteen areas displaying high and good archaeological potential were subsequently designated as PAD. The property immediately south of Townson Road was assessed as part of the adjoining lands to the previously investigated Colebee Release Area (JMCHM 2003b). The 'adjoining lands' were included in the assessment for a Draft LES commissioned by Blacktown Council. Based on land use mapping, McDonald characterised the majority of the area south of Townson Road as displaying 'high archaeological sensitivity', meaning that based on land use mapping it appeared less disturbed than other parts of her assessment area and thus retained the potential to contain intact archaeology (2003b:29-31). Disturbance that would limit archaeological sensitivity within the assessment area was generally assessed as low, with areas of high disturbance associated with a trotting track and associated buildings and along the margins of Bells Creek.

A substantial amount of archaeological investigation has taken place south of the current study area. Initial archaeological investigation undertaken for the Metropolitan Waste Disposal Authority (McDonald 1986) and included archaeological field survey and limited test excavation. McDonald reported that surface scatters of artefacts were present across the entire area, with test pit results indicating the presence of stratified archaeological deposit (McDonald 1986). Artefact raw material was 99.5% silcrete.

Further south along Plumpton Ridge, archaeological investigation has occurred in relation to the Western Sydney Orbital Road project. Initial field survey and test excavation described a low density archaeological deposit, consisting of large flakes, broken flakes and cores of predominantly silcrete with tuff and petrified wood also observed. It was noted that test pits contained a large number of silcrete fragments that were determined to not be artefactual, that is they were naturally fractured silcrete (Baker 1996 [in AMBS 2002]). An amendment to the road design prompted further investigation in 2002. It was determined that the low southeastern spurs of Plumpton Ridge retained a very low density of artefacts (AMBS 2002). Test excavation conducted on the main ridgeline revealed slightly higher densities, with one test pit in particular on the 50m contour containing a large proportion of the total assemblage (60%).

A subsequent archaeological salvage excavation of 10 of the 16 PADs originally identified in the Colebee Release Area (JMCHM 2003a) took place ahead of residential and golf course development by Medallist Golf Holdings Pty Ltd (JMCHM 2006). This salvage excavation represents the most comprehensive archaeological investigation undertaken in the surrounding area. The investigation split the previously identified PADs into seven 'Sample Areas' (SA20-26) based on landform. Samples Areas were distributed as follows: one on the Eastern Creek floodplain, one on a high bank of Eastern Creek, three in a mid-slope context and two in upper slope contexts on the eastern margin of Plumpton Ridge at the silcrete quarry. The excavation was carried out over five months in 2005 and included the excavation of 687m² from which over 80,000 artefacts were retrieved. The highest density of archaeological material was located on the high bank next to Eastern Creek at the site designated SA23. SA23 revealed a density of artefacts in excess of 45,000 from 60m² of excavation, including around 1,100 backed artefacts. It was suggested that the location of this site may have been a preferred location for repeated occupation throughout prehistory (JMCD CHM 2006: 133). Overall artefact analysis from the excavation program revealed that cores and artefacts over 50mm were rare. The general size of artefacts was found to decrease with distance from the silcrete quarry. Results of the artefact analysis found that the main activity at the quarry was silcrete processing, with no evidence for the production of backed artefacts, whereas within a few hundred metres of the quarry (e.g. at SA23) the assemblages indicated the reduction of silcrete that had already been prepared in some way and included large scale knapping floors and bulk production of backed artefacts (JMCHM 2006:133).

In May 2009, KNC was engaged to carry out Aboriginal archaeological assessment prior to the rezoning of land in the Marsden Park Industrial Precinct (MPIP) for employment purposes (KNC 2009). The assessment area covered the western portion of the current study area and was generally bound by South Street to the north and west, Bells Creek to the east and the suburbs of Bidwell and Hassall Grove to the south. The area also incorporated some smaller land parcels to the east of Bells Creek and west of South Street. The assessment included the Richmond Road/ Townson Road intersection located in the western portion of the study area up to Bells Creek. The assessment included an archaeological survey and a desktop review of previous investigations, the environmental and ethno-historical background of the area.

The assessment identified 63 artefact scatters, one area of high cultural significance (Colebee and Nurragingy's Land Grant) and four potential archaeological deposits. Analysis of the spatial distribution of the artefact scatters determined that 31 of the artefact scatters were located within 12 distinct concentrations with lower levels of disturbance and moderate to high heritage significance. The remaining 32 artefact scatters were found in disturbed contexts and were assessed as having low heritage significance. The predominant artefact raw material identified at the sites was silcrete, with occasional occurrences of chert, tuff, quartz, petrified wood and other materials. Naturally fractured silcrete was also observed.

Aboriginal heritage assessment was undertaken for Stage 2 of the Richmond Road Upgrade. This assessment included the Richmond Road/ Townson Road intersection and a portion of Townson Road located within the current study area. Archaeological survey and background research identified eight previously recorded MPIP sites located within the assessment area. One site, MPIP 11 (comprising AHIMS registrations 45-5-3738, 45-5-3739 and 45-5-3740) is located within proximity to the current study area bordering the Richmond Road/Townson Road intersection. It was determined that MPIP 11 would be partially impacted by the proposed works, resulting in the southern and western portions of MPIP 11 located within the road corridor being destroyed in accordance with an AHIP. AHIP 1131725 was granted on 18 June 2012 and covers the westernmost portion of the current study area. The remaining valid portion of site MPIP 11 (45-5-3738) is not located within the current study area.

Previous salvage activities for Stage 2 of the Richmond Road upgrade were undertaken as part of AHIPs 1131725 & C000247 for archaeological sites MPIP 7 and MPIP 8 (KNC 2014). These sites were located approximately 600 metres northwest of the current study area, on a hill crest overlooking Bells Creek approximately 350 metres to the east. Non-artefactual silcrete cobbles were identified at the sites, part of a concentration of silcrete material in the wider area resulting from the formation of a 'crust' over portions of the Wianamatta Group. A total of 182m² was excavated at MPIP 7 and 8 combined, with a total of 3,898 artefacts recovered from the salvage excavation. This number was split roughly evenly between MPIP 7 (1,962 artefacts) and MPIP 8 (1,936 artefacts). An additional thirteen artefacts were collected from the surface at sites MPIP 7 and MPIP 8. Silcrete artefacts made up 98% of the assemblages at both MPIP 7 and MPIP 8. The results of the salvage excavation suggested that the hill top on which MPIP 7 and MPIP 8 were positioned was a location where primary and secondary reduction of cores had occurred. The primary reduction of silcrete cobbles appeared to have been broadly confined to MPIP 7, while secondary reduction occurred in distinct locations at both MPIP 7 and MPIP 8.

Aboriginal heritage assessment was undertaken for the Townson Road Precinct by KNC in 2013 (KNC 2013). The assessment area included a parcel of land adjacent to Bells Creek, and included a portion of the current study area immediately south of Townson Road. Archaeological field survey resulted in the identification of eight previously unrecorded Aboriginal archaeological sites (named TRS1 – TRS8, AHIMS 45-5-4289 – 45-5-4296). Sites consisted of isolated artefacts and low density artefact scatters (open camp sites) of predominantly silcrete artefacts. Large quantities of naturally fractured and heat shattered silcrete as well as pebbles and cobbles were also observed. A large part of the property was found to have been disturbed by modern land use, limiting the remaining archaeological potential of the area. Four sites were considered to have moderate archaeological significance, based on the apparent intactness of potential subsurface deposits. A further four sites were considered to have low archaeological significance due to disturbance and erosion/deflation of soils leaving a lower likelihood of intact subsurface deposit.

Test excavation was subsequently undertaken across the Townson Road Precinct area (KNC 2017). Test excavation confirmed the presence of subsurface archaeological deposit at previously identified surface sites including TRS3 and TRS5. Surface artefacts at other previously identified sites were not considered to be manifestations of subsurface archaeological deposits (isolated artefacts TRS1, 4, 7, 8 and the low density artefact scatter TRS2) and no test excavation was required in these areas. Additional test areas were selected on the basis of landform and disturbance. The excavations also resulted in the identification of two previously unrecorded sites (TRS11 and TRS12). TRS12 (AHIMS 45-5-4636) was centred on a localised high density artefact deposit representing one or more knapping events. Site TRS12 was located in close proximity to the current study area along the southern border of Townson Road.

A total of 1784 artefacts were retrieved from the test excavation program. The most commonly encountered raw material was silcrete (98.9% of the test assemblage) followed by tuff, chert and petrified wood. Artefact types were dominated by flakes and flake fragments. Twelve cores were identified, with no backed artefacts or other formal tool types recovered. The presence of cores, cortical flakes, and smaller flake fragments across the assemblage indicated that the activities across the study area included both primary and secondary lithic reduction. Characteristics of two of the cores recovered from the excavation indicated the preferential selection and use of raw material in the production of blades and elongated flakes. Artefact densities along the lower slope/alluvial terrace interface adjacent to Bells Creek indicated that the area may have been utilised frequently and/or extensively by past Aboriginal people. The surrounding slopes were also utilised; however, artefact densities were considerably less in these locations, suggesting a differing pattern of landscape use on these landforms. Conversely, severe erosion and deflation of sediments along the ridge and spurs had effectively decontextualized the majority of archaeological deposit on the ridge slopes, with only remnant areas of stability. Soils within the stable areas displayed better structure and a differentiated A horizon.

AHIP C0004137 was subsequently granted in November 2018 for the Stage 2 development area of the Townson Road Precinct and covers a portion of the current study area. Conditions of the AHIP included salvage excavation of both moderate archaeological significance sites, TRS9 and TRS12. A salvage excavation program for sites TRS9 and TRS12 located within the Townson Road Stage 2 assessment area took place in late 2018. The results of the Townson Road Stage 2 salvage excavation program are currently in preparation (KNC in prep). Both site TRS9 and TRS12 were destroyed as part of AHIP C0004137.

Immediately north of the Townson Road corridor, an archaeological survey of 51 Townson Rd identified three Aboriginal archaeological sites (Artefact Heritage Services 2011). Sites identified included two open artefact scatters, TR1 and TR3 (AHIMS 45-5-4061 and 45-5-3998) and one isolated find, TR2 (AHIMS 45-5-4062). Site TR3 was registered within the current study area. Artefacts included cores and flaked debitage and all were composed of silcrete, except for the single occurrence of a broken quartz flake at site TR3. Site TR1 comprised 21 artefacts scattered across an area of approximately 100m x 40m. Site TR2 comprised an isolated stone artefact in a disturbed context on a dam wall. Site TR3 was located within the current study area, comprising a very low density artefact scatter identified in the southern section of a surface exposure adjacent to Townson Road. The site was located within the property at 51 Townson Road. The site area measured 80 x 10 metres and was defined by the presence of three artefacts within the exposure. Artefacts identified included one pink silcrete broken flake, one white quartz broken flake (possibly retouched) and one pink silcrete broken flake. The site also comprised many pieces of natural (unworked) silcrete. At the time of recording, the site area had been subject to erosion resulting from sheet wash off the road, along with stock trampling. A clayey deposit was observed at the surface in exposed patches. The site was assessed as having moderate archaeological significance based on assessment of moderate archaeological potential for the area.

It was determined that site TR3 would be partially impacted by the proposed construction of a light industrial facility on the property and it was recommended that an AHIP be sought for the proposed development area. It was also recommended that an AHIP be granted on the condition that subsurface excavation related to construction works not take place within the boundary of TR3 and that any access roads related to construction works be built on raised earth over the site area. A five year AHIP (AHIP 1131165) was issued on 18 October 2011 and has since expired. Site TR3 (AHIMS 45-5-3998) is listed as 'destroyed' on the AHIMS database. Subsequent survey of the area determined that although the site is listed as destroyed on the AHIMS database the site remains intact (see section 5.4 below). A new site TRU AFT 1 was subsequently recorded to replace the defunct TR3 AHIMS registration.

5.4 Townson Rd and Burdekin Rd Stage 1: Aboriginal archaeological survey report (PACHCI Stage 2)

An Aboriginal archaeological survey report was prepared to inform the initial strategic design development and environmental assessment for the proposal (KNC 2019a). This assessment was prepared in accordance with the Stage 2 requirements of the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010a) The assessment comprised an archaeological survey in addition to a desktop review of previous archaeological investigations and the environmental context.

The desktop review of previous investigations showed that archaeological sites in the region generally occurred as surface artefact scatters and isolated artefacts that have been identified across the various landforms, geologies and soil landscapes within the study area. Relatively elevated landforms along the margins of creeks, especially those offering permanent water and associated environmental resources would have been favourable for occupation by Aboriginal people. This is reflected in the archaeological record by higher artefact densities recorded at these sites, especially along Bells Creek and Eastern Creek, potentially reflecting repeated or more intensive use of these locations.

Numerous raw material sources have been documented in the region and are known to have been utilised by Aboriginal people in the past. The prevalence of silcrete in assemblages from the area is related to the raw material source of the St Marys Formation outcropping at several locations, most notably at Plumpton Ridge. Numerous studies in the area have recorded the presence of silcrete cobbles and naturally fractured silcrete pieces in high numbers, reflecting the wide distribution and easy availability of this material. Many have also noted the difficulty in distinguishing definitively artefactual silcrete objects from non-artefactual ones. Investigations at Plumpton Ridge have confirmed the intensive use of this resource by Aboriginal people, with the highest density and most significant archaeological deposit located on high bank terraces near the significant waterway of Eastern Creek, rather than on the Ridge crest or upper slopes.

The proposal area was subject to field survey and found to be located within a landscape with varying levels of natural and human disturbance including the construction of roads, utilities and structures in addition to earthworks, landscaping and natural process such as erosion and fluvial activity. Within such disturbed contexts Aboriginal objects are unlikely to survive in situ and the archaeological potential of such sites is generally low.

The archaeological field survey confirmed the high levels of previous disturbance along much of the proposal corridor. The majority of the study area had been disturbed to varying degrees by historic and contemporary land use practices, residential and light industrial development, and the construction of the Meadow Road and Townson Road corridors. Two sites were identified within the PACHCI Stage 2 assessment area (Figure 7). The survey revisited previously recorded site locations and confirmed that site Schofields 2 (AHIMS 45-5-0827) was located within the study area. Schofields 2 extended along the Meadow Road corridor into the timbered area within Lot 3 DP 232574. Parts of the timbered landform appeared intact and displayed potential for subsurface archaeological deposit outside of the area of fill closer to the road and erosion/contamination along the track. The landform was a fairly well defined, east-west orientated, gently sloping spur that dropped away to the south and east.

One newly recorded site was identified during the field survey. TRU AFT 1 (AHIMS 45-5-5241) was identified on a slope landform associated with previously registered (now destroyed) site TR3 located within a property north of Townson Road. Two artefacts were identified at the site, eroding out of an exposure present in the northern road verge. The road corridor portion of TRU AFT 1 had been highly disturbed by services. Abundant natural silcrete fragments were evident on exposures caused by service trenches as well as roadworks. The site extended north of the existing Townson Road corridor into a grazing paddock which appeared relatively intact. It was determined that the property had likely been subject to some historical land clearing and possibly ploughing. The site was assessed as displaying potential for intact subsurface archaeological deposit due to low levels of visible disturbance north of the fenceline bordering Townson Road and its position on an elevated landform adjacent to Bells Creek.

Significance assessment was undertaken of the archaeological features on the basis of site intactness/integrity, landform context and archaeological research potential. Both sites (Schofields 2 and TRU AFT 1) exhibited moderate archaeological significance. Based on a study area wide impact assessment, it was considered that both sites would be at least partially impacted by the proposed works. Further investigation and assessment was recommended if the sites could not be avoided by the proposal, including a test excavation program and assessment under Stage 3 of the PACHCI. It was also noted that the proposal overlapped several areas that are covered under existing AHIPs. It was recommended that TfNSW consult with relevant AHIP holders to complete the proposed works in these areas under their respective permits. Any works undertaken within existing AHIP areas must be undertaken in accordance with AHIP conditions.

Following completion of the Stage 2 PACHCI assessment, the study area was modified to its current extent (cf. Figures 2 and 7). As part of PACHCI Stage 3 investigations, a new AHIMS search and updated review of background information was undertaken. This additional assessment identified the proximity of Schofields 5, 6 and 7 to the updated study area extent (see section 5.3). A field inspection was subsequently undertaken of the proposed compound location south of Meadow Road and identified additional surface artefacts. These were in highly disturbed contexts, located on deflated and exposed B horizon clays. Mounding and earthmoving associated with former mini bike club installations and drainage works was widespread across the area. One smaller area of lower apparent disturbance was identified, north of the severely disturbed undulating area (Figure 7). Given the presence of surface artefacts (albeit not in situ), it was decided to include this location in the subsequent test program to confirm the extent of subsurface disturbance.

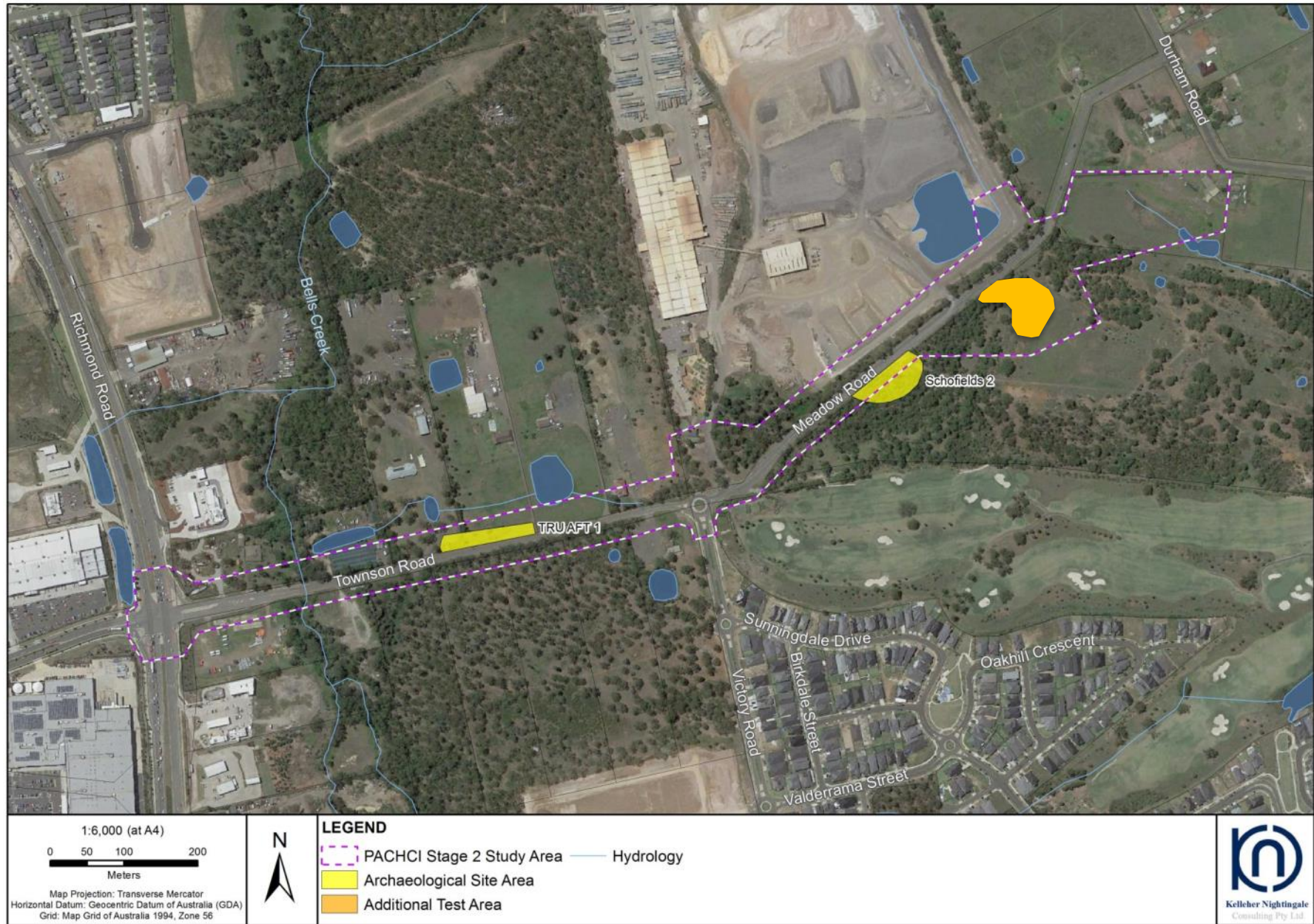


Figure 7. PACHCI Stage 2 assessment results and additional recommended test area

6 Archaeological Test Excavation

Previous investigation undertaken as part of the PACHCI Stage 2 assessment identified two Aboriginal archaeological sites and associated areas of archaeological potential within the study area: Schofields 2 (AHIMS 45-5-0827) and TRU AFT 1 (AHIMS 45-5-5241). The PACHCI Stage 2 assessment recommended a program of archaeological test excavation at the sites to obtain further information in regards to the nature and significance of the Aboriginal cultural heritage resource at these locations. The purpose of the test excavation program was to collect information about the nature and extent of subsurface Aboriginal objects through excavation of a sample of the identified site areas. One additional test area was selected in Lot 3 DP 232574 south of Meadow Road at the proposed compound location.

Archaeological test excavation was carried out by KNC and field representatives of registered Aboriginal parties in December 2019 as recommended by the PACHCI Stage 2 assessment and in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*.

Aims, methodology and results of the test excavation program are presented below.

6.1 Aims

The purpose of the test excavation program was to collect information about the presence/absence, nature, extent and condition of subsurface Aboriginal objects through excavation of a sample of the test areas. Test excavation aimed to build on the information already obtained through archaeological survey and existing archaeological assessment for the area carried out in accordance with the requirements of the *Code of Practice* and Stage 2 PACHCI assessment. Test excavation results were then used to inform the archaeological assessment. The first priority during the archaeological program was to minimise, as far as practicable, the risk of harm to objects under investigation.

Additional goals of the test excavation were: to assess the boundary of any archaeological deposits in relation to the proposal, to investigate the relationship between specific topographic features and archaeological deposits and to observe the effects of disturbance on archaeological deposits. This information was sought to assist in interpreting the archaeological landscape that remains in the proposal area and aid management of the archaeological resource. The sampling area was restricted to ensure an adequate sample without having significant impact on any archaeological value of the identified sites.

6.2 Sampling strategy and methodology

Field methodology was developed and carried out in accordance with requirement 16a of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. The test excavation program was specifically designed to target questions of artefact survivability through assessing the intactness of the deposit.

In accordance with the *Code of Practice*, test excavation units measured 50cm x 50cm (0.25m²). Site datums were recorded at each test area, with test units then aligned along transects. The spacing of units along transects was between 15-20 metres and varied by excavation area depending on localised disturbances and the size of the investigation area. Squares were occasionally offset from transects to avoid vegetation or localised disturbance. Where more than one transect was present, test squares were generally staggered by 5 metres between transects, in order to sample the maximum amount of the area under investigation.

Eastings/northing GPS coordinates (GDA 94, Zone 56) were taken at the north-west corner of each excavation unit. The test units were then given an arbitrary identifying number (e.g. TS 1, TS 2, TS 3). A total of nineteen 50cm x 50cm units were excavated during the program across the three areas. Excavated totals for each test area are shown in Table 3. It was considered that sufficient information was recovered from the excavated sample at each area to adequately characterise the presence/absence and nature of the archaeology. Following DPIE/OEH guidelines, the first excavation unit at each test area was excavated in 5cm spits onto a culturally sterile deposit (basal clay) to determine the nature of the subsurface deposit and the presence or absence of artefactual material. Based on the results of the first excavation square, subsequent squares in each area were excavated in 10cm spits until culturally sterile soils (B horizon clays) were reached.

Data including a detailed deposit description, excavated features and unit depths, was recorded by the excavators on standardised excavation unit recording sheets. At the end of the excavation program, all squares were photographed and soil section profiles were drawn.

Site plans were prepared for each excavated area showing the location of test squares and their relationship to the surrounding environment including landform/topography, creeklines and dams, infrastructure, and areas of disturbance. Additional photographs were taken showing the field conditions at each area during testing. Plates 1-4 show typical test conditions at each area.

All excavation was undertaken using hand tools. All excavated material was placed in buckets and transported to an adjacent sieving area and sieved using a combination of nested 5mm and 2.5mm wire mesh screens. Sieved spoil was retained for backfilling the test excavation squares.

A field catalogue of recovered artefacts was maintained to track artefact counts and recovery locations as the test excavation progressed. Following the completion of the excavation program, artefacts were retained for more detailed analysis including a precise recording of size, raw material and technical attributes. This information was compiled into a lithics database (Appendix D).

Table 3. Test excavation sample

Test Area	No. of test squares	TS numbers	Total sample
TRU AFT 1	7	TS1-TS7	1.75m ²
Schofields 2	4	TS8-9, TS18-19	1m ²
Lot 3 DP 232574	8	TS10-TS17	2m ²



Plate 1. TRU AFT 1, view north across test area. TS2 in foreground.



Plate 2. TRU AFT 1, view to east. Townson Road at right. TS7 in foreground.



Plate 3. Lot 3 DP 232574, TS12 excavation complete and adjacent sieve station. View to east.



Plate 4. Schofields 2, view north from TS 8. Meadow Road at rear.

6.3 Results

6.3.1 TRU AFT 1 (AHIMS 45-5-5241)

TRU AFT 1 was identified on a slope landform associated with previously registered (now destroyed) site TR3 along the northern side of Townson Road, approximately 430 metres from the Richmond Road intersection. The site was located in the western part of the study area and extended from the road corridor north into a paddock covered with pasture grasses. Two artefacts were identified at the site, eroding out of an exposure present in the northern road verge. The road corridor portion of TRU AFT 1 had been highly disturbed by installation of services and abundant natural silcrete fragments were evident on exposures caused by service trenches as well as roadworks.

The site extended north of the existing Townson Road corridor into a grazing paddock which appeared relatively intact. It was determined that the property had likely been subject to some historical land clearing and possibly ploughing. The site was assessed during PACHCI Stage 2 investigations to contain potential for intact subsurface archaeological deposit due to low levels of visible disturbance north of the fenceline bordering Townson Road and its presence on an elevated landform adjacent to Bells Creek. Testing at this location aimed to confirm whether subsurface deposit was associated with the site and its extent.

A total of seven 50cm x 50cm test squares were excavated across TRU AFT 1, giving a total excavated sample of 1.75m². Squares were aligned along a single east-west transect running parallel to the road corridor approximately six metres north of the property fenceline (Plates 5 and 6). Squares were spaced at 15 metre intervals along the transect running from TS 1 in the west to TS6 in the east. TS7 was offset from the main transect 20 metres to the west and 10 metres to the south in order to test a small area of remnant natural soils south of a dam and drainage bund, along the road verge immediately east of the property driveway into 35 Townson Road. Figure 8 shows square locations and the test excavation results at the site.



Plate 5. View to east across site and test area, looking down transect, TS1 in foreground. Townson Road at right.



Plate 6. View to west across site and test area down slope towards Bells Creek. TS6 in foreground, Townson Road at left.

Soils and disturbance

Soils across the test area were mostly uniform, with some slight variation in colour, particularly the underlying clay B horizon. Soils were poorly structured and developed, very gravelly, and showed a homogenous A horizon averaging 25cm depth above basal clay. The deepest square was TS5, reaching 26cm in the south eastern corner, while the shallowest was TS6 at the western end of the transect which was between 20-23cm depth.

The A unit comprised a silty loam with little to no humic layer, moderately compact with abundant ironstone gravels. Naturally fractured non-artefactual silcrete gravels and coarse fragments were also common, including some rounded pebbles of quartz, quartzite and tuff. Silcrete gravels were sub-angular in form and varied in size from <1cm to larger nodules up to 5cm in diameter. Charcoal flecking was evident in most test squares, with larger fragments in TS1, 2, 4, 5 and 7. This appeared to be natural from burnt roots. Bioturbation in the form of insects, ant activity and fine grass roots was also present. Other disturbance was noted in TS1, with small fragments of modern glass found within Sp14 of this square (15-20cm depth). No textural, structural or colour change was evident within the A horizon, which comprised a homogenous unit from the surface to the base.

B horizons comprised compact orange silty clay to clay in TS 1, 2 and 6, with a yellowish-brown silty clay to clay in TS3, 4, 5 and 7. Ironstone gravels continued into the clay base. Figures 9 and 10 show the typical soil profiles encountered at TRU AFT 1.



Figure 8. Test excavation results – TRU AFT 1



0-24cm: Little to no humic layer above brown silty loam, moderately compact with fine grass roots throughout. Abundant ironstone gravels throughout, 15-20%.
Base: Yellowish-brown silty clay, ironstone gravel continues, compact.

Figure 9. TS 3 north section and soil profile description



0-23cm: Little to no humic layer above light orange-brown silty loam, moderately compact with fine grass roots throughout. Abundant ironstone gravels throughout, 15%.
Base: Very compact, orange brown silty clay, ironstone gravels continuing.

Figure 10. TS 6 north section and soil profile description

Artefact distribution

A total of 16 artefacts were recovered from the test excavation at TRU AFT 1, confirming the presence of subsurface archaeological material at the site. Six of the seven excavated test squares contained artefacts, with only TS4 containing none. Extrapolated to square metres, the mean artefact density across the site was 9.1/m². Table 4 shows the artefact distribution across the test area.

Table 4. TRU AFT 1 test squares and artefact counts

Test square	n	Test square	n
TS 1	4	TS 5	1
TS 2	1	TS 6	6
TS 3	1	TS 7	3
TS 4	0		

The highest count was in TS 6 at the eastern end of the test area (n=6), with an extrapolated density of 24/m² at this location. This was followed by TS1 with four artefacts and TS 7 with three artefacts. The remaining positive squares contained isolated artefacts. No spatial patterning was evident and no high density deposits were encountered.

Artefacts were predominantly found in the upper part of the profile, most commonly in Spit 2 between 10-20cm depth (n=8), followed by a shallower deposit in Spit 1 (0-10cm) (n=6). Only two artefacts were found below 20cm depth, despite all seven squares being excavated into a third spit. There was no stratigraphic differentiation between spits within the A unit, with all depths comprising a uniform deposit of the same gravelly silty loam.

Lithics

The majority of artefacts were of silcrete (n=15) with one chert (TS1, 15-20cm depth). Silcrete material varied in colour and quality, and variation was evident amongst both artefactual material, and the abundant natural gravels and pebble/cobble fragments that occurred at the site (Plate 7). The effects of heating were also evident including dark red colouration, glossy and lustrous surfaces and pitting and crenate fracture on many surfaces. Both artefacts and the natural material displayed patinated surfaces, in some cases over heat damage.

Reduction types were primarily flaking debitage (Table 5), with complete flakes the most common (31.3%, n=5). This was followed by cores, of which four examples were recovered (25% of assemblage). Proximal flake fragments, distal flake fragments and angular fragments each had two examples (12.5%), and a single medial flake fragment was also recorded. The single chert artefact was a complete flake (Plate 8).

Table 5. TRU AFT 1 reduction types

Raw material	Core	Flake	Proximal fragment	Medial fragment	Distal Fragment	Angular fragment	Total
Silcrete	4	4	2	1	2	2	15
Chert		1					1
Total n	4	5	2	1	2	2	16
%	25.0	31.3	12.5	6.3	12.5	12.5	100

Artefact sizes were varied, with the most frequent size class being 25-29mm (n=6, 37.5%) followed by slightly smaller artefacts measuring 20-24mm (n=3, 18.8%). Two artefacts were between 15-19mm (12.5%) and one each from 10-14mm, 30-34mm, 40-44mm, 60-64mm and the largest between 75-79mm (Table 6). The largest artefacts (>30mm) included three of the cores and an angular fragment of heat damaged red silcrete.

Table 6. TRU AFT 1 artefact size ranges

Size range	10-14mm	15-19mm	20-24mm	25-29mm	30-34mm	40-44mm	60-64mm	75-79mm	Total
Silcrete	1	2	3	5	1	1	1	1	15
Chert				1					1
Total n	1	2	3	6	1	1	1	1	16
%	6.3	12.5	18.8	37.5	6.3	6.3	6.3	6.3	100

All four cores displayed multidirectional flaking patterns. The largest (75-79mm) weighed 124g and was broken into two refitting pieces (Plate 9). It displayed five negative scars, the longest being 30mm, and retained 31-69% cortex. This was found between 0-5cm depth in Spit 1 of TS1. Two cores were found in TS 6, also both in Spit 1 at 0-10cm depth. These included a small (25-29mm) core with four negative scars revealing a red interior and pale brown patina on older flake scars. It weighed 8.9g and displayed 1-30% cortex. The larger core from TS 6 displayed six small flake scars on an angular core of variable quality with 31-69% cortex. The last core was found in TS7 between 10-20cm depth in Spit 2, comprising two small scars on an angular core with 31-69% light brown cortex (Plate 10).

Flake debitage retaining a platform displayed mostly cortical examples (n=3) followed by plain (n=2) and one each of ridged and focal examples. Terminations were plunging (n=3), two feather and one step. The shape of complete flakes was equal proportions of longer than wide and wider than long (each n=2), with one example where length equalled width. The majority of artefacts retained some level of cortex (Table 7). Cortical surfaces were generally in cobble and pebble form and a pale brown or grey in colour. Many of the artefacts displayed a waxy brown patina both on cortex and on their flaked surfaces.

Table 7. TRU AFT 1 raw material and cortex

Cortex %	0%	1-30%	31-69%	Total
Silcrete	2	6	7	15
Chert	1			1
Total n	3	6	7	16
%	18.8	37.5	43.8	100

None of the flake debitage showed signs of modification (backing, retouch or usewear) and no tools were found at the site.



Plate 7. Variation in non-artefactual silcrete gravels, TS 6



Plate 8. Chert complete flake, ID3. TS1 Spit 4 (15-20cm depth).



Plate 9. Broken multidirectional core, ID1. TS1 Spit 1 (0-5cm depth).



Plate 10. Silcrete cores, L-R IDs 8&9 (TS6 Spit 1) and ID14 (TS7 Spit 2).

6.3.2 Schofields 2 (AHIMS 45-5-0827)

Schofields 2 was originally recorded as a low density surface artefact scatter on a track junction just inside the main access gate to the mini bike club south of Meadow Road. Two silcrete flaked pieces were identified on the surface of the track amongst abundant fractured non-artefactual silcrete. Landform was a flattened area of the upper to mid-slope running east from Plumpton Ridge down to the Eastern Creek floodplain. The site location was revisited and confirmed during the PACHCI Stage 2 investigation. The site was assessed as having moderate archaeological potential due to the potential for intact subsurface deposits to occur within an adjacent forested area extending to the south west, just inside the adjacent property boundary. This area was the focus of the test excavation program.

Testing at this location aimed to confirm whether subsurface deposit was associated with the site and its extent. A total of four 50cm x 50cm squares were excavated at the site, giving a total excavated sample of one square metre. Squares were aligned along a single north east – south west transect running parallel to Meadow Road. The transect was placed midway between the road corridor and the study area boundary, approximately 10 metres south of the fenceline.

Squares were spaced 15 metres apart along the transect. TS8 was placed just to the south of the vehicle track where the artefacts were originally recorded (Plate 11), with TS9 placed 15 metres to the south west. TS18 and TS19 were also spaced 15 metres apart, with TS18 positioned 30 metres along the transect from TS9 and slightly closer to the road (Plate 12). The additional offset was necessary to avoid an area of thick vegetation and dumped rubbish adjacent to the road verge. Figure 11 shows the square locations and the test excavation results at Schofields 2.



Plate 11. View to east, TS8 in foreground. Main gate and vehicle track at rear



Plate 12. View to north west, TS18 in foreground. Meadow Road at rear.

Soils and disturbance

Soil profiles were generally shallow and similar across the test area at Schofield 2, with some variation in excavated depths along the transect. TS 8, 18 and 19 all displayed relatively shallow profiles <10cm depth, but a slightly deeper deposit was encountered at TS 19 which was excavated to a maximum depth of 20cm. Soils were heavily affected by bioturbation and tree root activity. Other disturbance included modern glass shards in the upper part of TS8.

All test squares retained a thin unit of overlying humic topsoil, from the surface to a maximum of 6cm depth. This had a higher organic content and fine grass roots throughout. TS18 and 19 at the western end of the transect retained only a thin humic upper layer. Below the topsoil was a shallow silty loam to silty clay, moderately compacted and gravelly.

Coarse fragments were primarily ironstone and some fractured non-artefactual silcrete was also observed, however this was present in a much lower proportion than was recorded at TRU AFT 1. TS 18 also displayed some ferromanganese flecking. The deeper profile at TS9 did not show any differentiation within the A unit, the soil being homogenous throughout. B horizons comprised compact and undulating bioturbated orange clay, with ironstone gravels continuing into the base.

Figures 12 and 13 show the typical soil profiles encountered at Schofields 2.

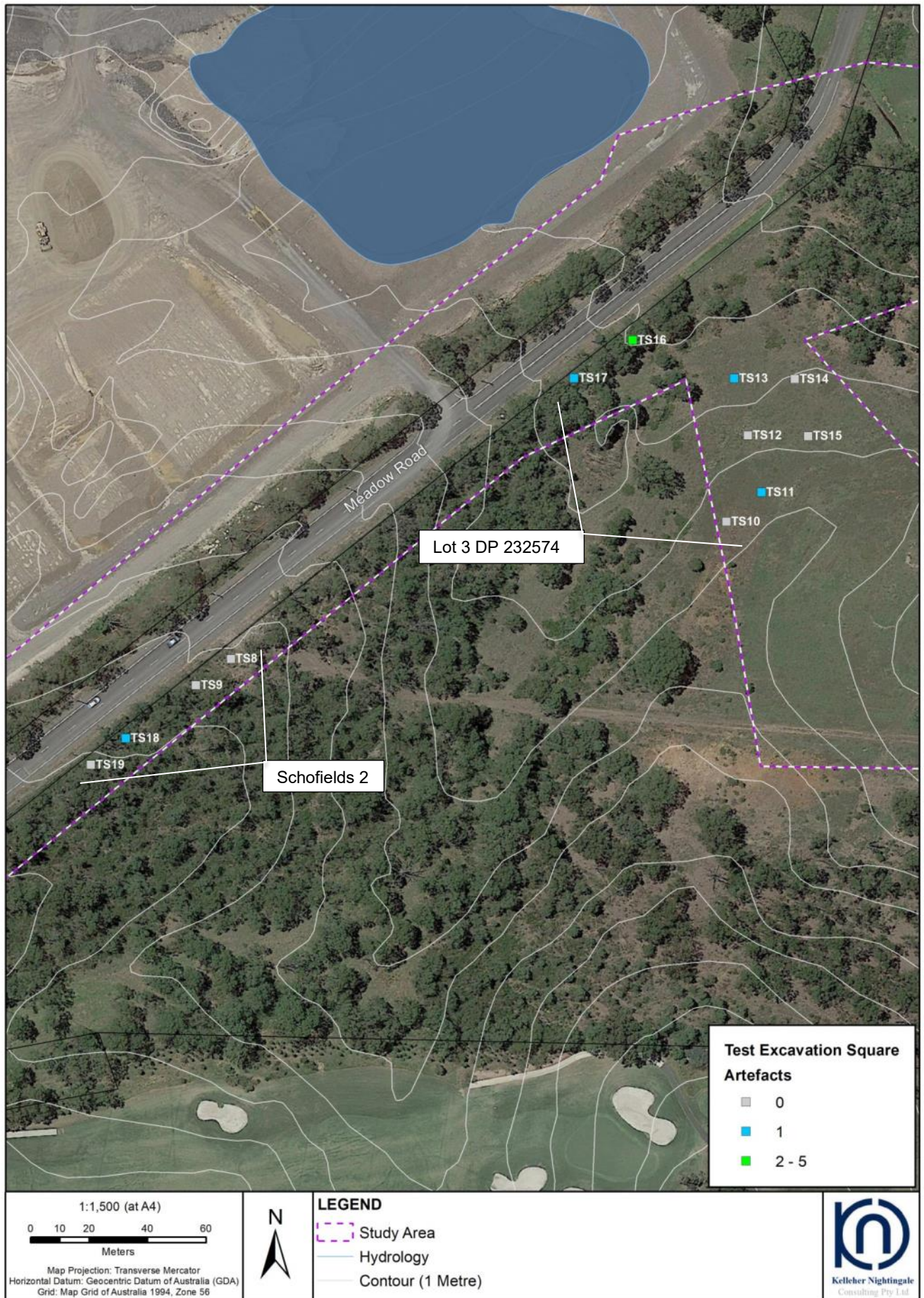


Figure 11. Test excavation results – Schofields 2 and Lot 3 DP 232574



0-6cm: Light brown silty topsoil, fine grass roots throughout
 6cm-base: Mixed orange-brown clay loam to silty clay, friable, moderately compact, ironstone gravels throughout up to 15%, slight increase in clay content with depth
 Base: Bioturbated orange clay, very compact, ironstone gravels continue.

Figure 12. TS 9 west section and soil profile description



0-base: Orange-brown silty loam, moderately compact, scattered Fe/Mn flecks, ironstone gravels, disturbed orange clay towards base
 Base: Bioturbated, undulating orange clay, compact, ironstone gravels continue.

Figure 13. TS 18 south section and soil profile description

Artefact distribution

One artefact was recovered from the test program at Schofields 2. It was found in Spit 1 of TS18 (0-10cm depth). The other three test squares did not contain artefacts (Table 8). This yielded a very low mean artefact density of 1/m².

Table 8. Schofields 2 test squares and artefact counts

Test square	n
TS 8	0
TS 9	0
TS 18	1
TS 19	0

Lithics

The single artefact recovered from subsurface testing at Schofields 2 was a distal flake fragment of pinkish grey silcrete with a feather termination (Plate 13). It measured 10-14mm in size and had edge damage along both margins. The dorsal surface displayed a ridge, and the ventral surface retained the lower portion of an éraillure scar below the absent platform.



Plate 13. Distal flake fragment (dorsal), ID22. TS18, Spit 1 (0-10cm depth). Scale bars 1mm.

6.3.3 Lot 3 DP 232574

The additional test area within Lot 3 DP 232574 was located south of Meadow Road, in a cleared area approximately 200 metres north east of Schofields 2. This was the proposed location of a compound for the road upgrade proposal, running south and east from the existing road corridor. The area has been heavily disturbed by previous earthmoving and drainage works associated with the mini bike club installations. Large mounds of heaped spoil (now grassed) were evident across the clearing, with intervening areas of sheet eroded exposures and deflation. Previous field inspection identified scattered surface artefacts in the area, none of which were associated with areas of intact soil or potential archaeological deposit. One smaller area of lower apparent disturbance was identified, north of the more severely disturbed undulating area. Test excavation at this additional location was undertaken in order to confirm the extent of subsurface disturbance and assess the likelihood of any intact archaeological deposit.

The landform context of the additional test location was comparable to previously recorded surrounding sites Schofields 2, Schofields 5, Schofields 6 and Schofields 7, being a gently inclined midslope running east from Plumpton Ridge down to the Eastern Creek floodplain. However, the additional test area was located at a lower elevation, being approximately six metres lower than the upper slope investigated at Schofields 2. A small drainage line runs approximately 200 metres to the north east. A total of eight 50cm x 50cm squares were excavated at the site, giving a total excavated sample of two square metres. Three transects were positioned across the area of interest. Two transects were placed in parallel running approximately north-south through the centre of the cleared area (Plate 14). One test square (TS10) was positioned to the south west of the central transect, at a five metre offset. One further transect was positioned at the north west of the area running parallel to Meadow Road (Plate 15). This contained two test squares and aimed to test the extent of disturbance closer to the road corridor.

Squares were spaced 20 metres apart along each transect. The central transect contained three squares (TS11-TS13), the eastern transect contained two (TS14 and TS15) while the transect closest to Meadow Road also contained two (TS16 and TS17). Transects were spaced 20 metres apart, with TS10 being slightly closer at 15 metres from the central transect due to the position of the study area boundary. TS16 and TS17 were spaced 25 metres apart. Figure 11 shows the square locations and the test excavation results at the Lot 3 test area.



Plate 14. View to north west across cleared area to Meadow Road, TS 15 in foreground.



Plate 15. View to south east from TS16 to cleared test area in background.

Soils and disturbance

Soils varied across the test area, with depth and composition related to their position on the slope landform and surrounding landscape features, as well as the extent and nature of previous disturbance. Excavated depths ranged from 7-9cm at TS10 to the deepest deposit at TS17 which was 38-40cm depth.

Shallower squares (<15cm) were recorded in the southwestern part of the test area on the higher part of the slope at TS10, 11 and 12. These squares displayed shallow, gravelly (10-15%) deposits of orange-red silty loam to silty clay above red clay B horizons, and appear to have been affected by soil movement and subsequent erosion/deflation related to the former mini bike installations. Lag gravel deposits were evident on the surface. Coarse fragments within the deposit included naturally fractured silcrete cobbles/pebbles and ironstone (Plate 16).

Downslope to the north east, towards the drainage line, TS13, 14 and 15 displayed deeper (20-35cm) homogenous A units of a yellowish grey brown fine silty loam above compact red brown silty clay. These squares displayed a high ironstone gravel content (15-20%), subangular to subrounded in form and ranging from <1cm-3cm in diameter. No developed soil horizons were evident in these squares, which displayed homogenous and eluviated sediment comprising a gravelly silty loam from the surface to the base. Profiles had a textured, sandpaper-like appearance.

These characteristics are consistent with repeated slopewash events which have leached the profile and contributed to mixing of the deposit. Surrounding ground disturbance was high, with mounded earth and areas of excavation for the former mini bike tracks.

The two squares excavated to the north west, closer to the Meadow Road corridor, were separated from the rest of the test area by a marshy area surrounding a pond and were at a lower elevation than the mid-slope squares. Soils at TS16 and 17 were comparable, comprising an average deposit depth of 38-40cm. The deposit at TS16 and 17 was less gravelly (c.10%) but displayed frequent ferromanganese flecking and inclusions, consistent with waterlogging. These squares also displayed more bioturbation and charcoal from tree root activity and burning events. Typical deposit in this area comprised a greyish brown silty loam A horizon over mixed orange-brown silty clay.

Figures 14-16 show the typical soil profiles encountered across the Lot 3 test area.



0-base: Orange-red fine silty loam, ironstone gravels throughout 5-10%, uneven surface due to mini bike track, charcoal patches
Base: Orange red clay, charcoal patches

Figure 14. TS 10 north section and soil profile description



0-20cm: Pale orange brown silty clay loam to silty clay, friable with fine grass roots throughout, low humic content but some organic staining from grass cover, 5-10% ironstone gravels
20cm-base: As per (I) with fewer grass roots and higher ironstone content to 20%
Base: Orange silty clay, very compact and gravelly. Whole profile has a textured, sandpaper like appearance.

Figure 15. TS 15 west section and soil profile description



0-8cm: Light brown silty topsoil, fine grass roots
8-35cm: Light brown silty loam, moderately compact, Fe/Mn flecking and inclusions scattered throughout (10-15%), small tree roots and charcoal flecking
Base: Orange brown silty clay

Figure 16. TS 16 north section and soil profile description

Artefact distribution

Five artefacts were recovered from the additional test excavation area within Lot 3 (Table 9). These were found in low densities, dispersed across the test area. TS 16 had the highest artefact count with two recovered from this test square, followed by TS11, TS13 and TS17 with one in each. The extrapolated mean artefact density across the test area was low at 2.5/m².

Table 9. Lot 3 DP 232574 test squares and artefact counts

Test square	n	Test square	n
TS 10	0	TS 14	0
TS 11	1	TS 15	0
TS 12	0	TS 16	2
TS 13	1	TS 17	1

Artefacts were found throughout the deposit, with two in Spit 1 (0-10cm depth) at TS11 and TS16, one in Spit 2 (10-20cm depth) at TS13 and two in Spit 4 (30-40cm) within the deeper deposits at TS16 and TS17.

Lithics

The five recovered artefacts were all of silcrete. Table 10 summarises the lithic attributes.

Table 10. Lot 3 DP 232574 test squares and artefact counts

ID	TS	Spit	Reduction type	Cortex %	Size range	Weight (g)
17	TS11	1	Flake	0%	10-14mm	0.2
18	TS13	2	Proximal flake	31-69%	40-44mm	24.4
19	TS16	1	Angular fragment	0%	20-24mm	1.7
20	TS16	4	Angular fragment	0%	30-34mm	10.3
21	TS17	4	Core fragment	1-30%	20-24mm	9.5

The complete flake from TS11 displayed a plain platform and a plunging termination, and was shaped longer than wide. The large proximal flake fragment from TS13 had a cortical platform and a smooth, waterworn dark brown cortex (Plate 17).



Plate 16. Example of non-artefactual silcrete and ironstone gravel content, TS15 Spit 4 (30-40cm depth)



Plate 17. Proximal flake fragment, ID18. TS13 Spit 2 (10-20cm depth).

The two angular fragments from TS16 were of the same red silcrete material and both were badly heat-damaged with potlid scars and some crazed, crenate fractured surfaces (Plate 18). The core fragment from TS17 comprised the distal portion of a likely single platform core with two partial parallel scars, broken through the middle of the flake scars and missing the platform (Plate 19).

Given the presence of Aboriginal objects within the test area, it has been designated as archaeological site TRU AFT 2 (Figure 17) and registered on the AHIMS database.



Plate 18. Angular fragments, IDs 19 and 20. TS16 Spits 1 and 4.



Plate 19. Core fragment, ID 21. TS17 Spit 4 (30-40cm depth).

6.4 Discussion

The test excavation program confirmed the presence of subsurface Aboriginal objects at all three tested areas, however no high density or intact archaeological deposit was identified. The highest artefact density encountered was at TRU AFT 1 which contained 16 artefacts across seven test squares, giving a mean artefact density of 9.1/m² for this test area. This was followed by newly identified site TRU AFT 2 within Lot 3 DP 232574 south of Meadow Road, which contained five artefacts across eight test squares (2.5/m²), and a very low density at Schofields 2 where one artefact was present from four test squares (1/m²).

The low densities at Schofields 2 and TRU AFT 2 conform with previous test results in the immediate vicinity (National Heritage Studies 1990b). Testing at Schofields 2 confirmed the extent of the shallow and disturbed soils previously recorded at the site, and did not identify any intact or high density archaeological deposit within the study area. Previous testing at nearby sites Schofields 5, 6 and 7 on the same slope landform recovered just two artefacts from 14 test squares. Profiles were found to be shallow and disturbed from mini bike installations, and deflated from down slope soil movement and erosion. Similar profiles were encountered at both Schofields 2 and the slightly higher portion of TRU AFT 2 (TS10, 11 and 12). Further down the slope, profiles were homogenous and gravelly, with an eluviated silty A horizon. Soils showed no textural or structural development across the A horizon. These characteristics are consistent with repeated slope washing events, likely due to historical European vegetation clearance and the resulting destabilisation of soils from the midslopes of this portion of Plumpton Ridge.

Lot 3 DP 232574 has a long history of agriculture (see KNC 2019b) and was fully cleared of native vegetation by the early 1800s. The result is mass movement and washing of soils down slope towards the drainage channel to the north east, yielding over time a mixed and homogenous deposit which does not show the vertical horizon differentiation that would be expected in intact soils on this landform. Excavation of the comparable western ridge slopes within the Townson Road Precinct, which have retained some mature tree cover and have not been intensely cultivated, displayed a different and more structured profile in remnant intact areas (KNC 2017; KNC in prep). Deposits encountered during the current program suggest repeated waterlogging and water movement, and a soil movement model closer to detachment-limited erosion rather than the transport-limited erosion more commonly encountered on the Cumberland Plain. The resulting deeper deposits on the lower slope (e.g. 13-17) are the result of downslope creep and deposition with repeated waterlogging, evidenced by eluviation of the A horizon and Fe/Mn deposits in TS16 and 17 near the pond.

Similar soil profiles at TRU AFT 1 also show the influence of water, likely reflecting the fluvial activity of nearby Bells Creek, whose flood extent may have extended further prior to European land modifications and drainage. The proposal requirement for an additional bridge structure at this location suggests that flood afflux is an ongoing issue affecting this part of the study area. Soils at TRU AFT 1 were poorly structured and developed, very gravelly, and showed a homogenous A horizon. This area has also undergone ploughing in the past, which has contributed to the uniform mixing of the deposit. Rounding on alluvial pebbles of quartz, quartzite and tuff were indicative of water transport, while the more angular non-artefactual silcrete displayed natural cortical surfaces and patination.

There was also an abundance of heat fractured silcrete present at all three investigated areas. These fragments displayed the patinated surfaces and potlidding associated with heat effects, but displayed none of the morphological features that would indicate that they were artefactual.

In general, the artefacts recovered from the test excavation indicate low density, early stage reduction of locally abundant silcrete raw material. Most artefacts retained cortex, platform debitage often displayed cortical platforms, and cores were relatively large in size and showed multidirectional reduction patterns indicative of opportunistic, casual reduction. More carefully rationed or controlled reduction techniques were absent from the assemblage and no tools or modified artefacts were present.

Aboriginal objects recovered from the eroded and slope washed deposits at Schofields 2 and TRU AFT 2 are a mixed and disturbed collection, lacking any meaningful archaeological context related to Aboriginal landscape activity within the study area. They are unable to contribute more information than is intrinsic to the objects themselves. These artefacts are considered to be part of the wider spread of archaeological material associated with Aboriginal landscape use of Plumpton Ridge, but in and of themselves do not offer any further scientific information. The larger assemblage from TRU AFT 1 comprises a mixed deposit generally indicative of decontextualised, casual reduction activities along Bells Creek. While Aboriginal objects remain distributed across this landscape, potential for intact deposit and scientifically significant information is low.

7 Summary and Analysis of Background Information

Analysis of the background information presented in the preceding chapters allows an assessment of the cultural heritage values within the study area to be made. Combining data from historical/ethnographic sources, landscape evaluation and archaeological context provides an insight into how the landscape was used and what sort of events took place in the past. Culturally, the Marsden Park/Schofields area has demonstrated importance to the contemporary Aboriginal community. Registered stakeholders have previously expressed their personal family connection to the area over a long period of time. Stakeholders have also expressed the importance of looking after the land, including the heritage sites, plants and animals, creeks and the land itself. The interconnectivity of sites through the landscape and across varying landforms has also been highlighted. Sites in proximity to Eastern Creek and Plumpton Ridge have been highlighted as particularly significant as these are often larger or more complex sites with higher artefact densities and evidence of repeated occupation.

The local area contains a number of resources which would have been important to local Aboriginal groups. Varied environmental settings including creeks, alluvial flats and terraces, gentle slopes, crests and elevated ridgelines were all accessible and useful for Aboriginal land use activities. A wide variety of plant and animal resources would have been available to Aboriginal people to collect and use as they moved around the various parts of the landscape. Outcropping silcrete on crests and slopes forming part of the St Marys Formation, particularly Plumpton Ridge, would have provided ready access to raw lithic material. Other raw materials suitable for stone tool-making would have been readily available along the creek systems, having been transported in gravel and cobble form across the branching drainage networks of the Cumberland Plain. Site frequency in the region is also influenced by the reliability and permanence of fresh water sources, with higher site frequency and artefact density in the vicinity of the higher order watercourses such as Eastern Creek, reflecting Aboriginal people's more frequent and/or intensive use of these locations and their associated resources.

The archaeological evidence of Aboriginal landscape use in the region generally comprises stone artefacts. Archaeological sites have been identified in a variety of landscape contexts, including disturbed areas, indicating that archaeological materials remain distributed across the landscape. The chief factors affecting the preservation of archaeological deposit in the study area are flooding, soil movement/erosion and both historical and contemporary landscape disturbance. While Aboriginal objects may exist in any location within the landscape, stable areas of low disturbance retain the archaeological context that gives these objects meaning.

The study area has been subject to archaeological investigations as part of the current proposal. An archaeological survey was undertaken as part of the PACHCI Stage 2 assessment and identified two Aboriginal archaeological sites within the study area (TRU AFT 1 and Schofields 2). Outside of the identified sites, the majority of the study area was found to display low archaeological potential for intact deposits due to disturbance. One area of potentially lower disturbance was identified within Lot 3 DP 232574 south of Meadow Rad near the location of the proposed compound. Test excavation was subsequently undertaken at the two sites and additional Lot 3 test area.

Results of the testing confirmed the presence of subsurface Aboriginal objects at all three locations, however no intact or high density archaeological deposit was identified. Soils profiles across the sites were found to have been affected by erosion/deflation, mass movement creep, slopewash and flooding. Soils were homogenous, gravelly, and did not display the differentiation expected from intact A horizon soils on the tested landforms. For the north western Cumberland Plain, open artefact scatters with stratigraphic integrity provide the most archaeological research potential. The relatively disturbed archaeological deposit identified during the current program also reflects the effects of European vegetation clearance and subsequent landscape modification: while Aboriginal objects occur within this landscape, they do not retain the archaeological context that gives them meaning.

Artefacts recovered from Schofields 2 and TRU AFT 2 on the eastern ridge slopes are considered to be part of the wider spread of archaeological material associated with Aboriginal landscape use of Plumpton Ridge, but in and of themselves do not offer any further scientific information. The larger assemblage from TRU AFT 1 comprises a mixed deposit generally indicative of casual reduction activities along Bells Creek. While Aboriginal objects remain distributed across the study area, potential for intact deposit and scientifically significant information is low.

Three sites have been identified within the study area as a result of the PACHCI assessment. Sites are shown on Figure 17 and listed in Table 11 below.

Table 11. Identified Aboriginal archaeological sites within the study area

Site Name	AHIMS ID	Site Feature
Schofields 2	45-5-0827	Artefact
TRU AFT 1	45-5-5241	Artefact
TRU AFT 2	45-5-5310	Artefact

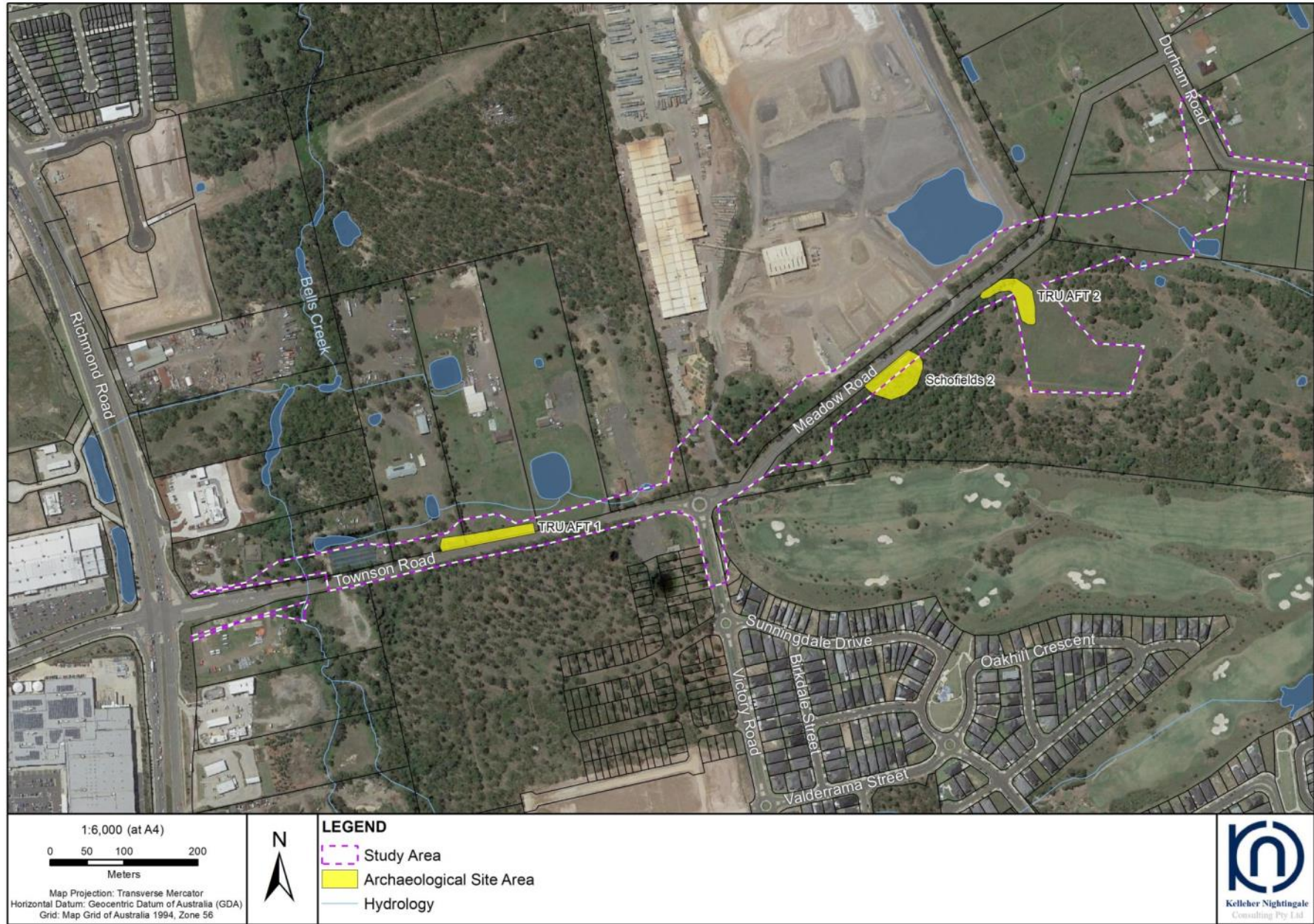


Figure 17. Identified Aboriginal archaeological sites within the study area

8 Cultural Heritage Values and Statements of Significance

8.1 Significance Assessment Criteria

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.

Significance assessments can generally be described under three broad headings (Pearson and Sullivan 1995:7):

- Value to groups such as Aboriginal communities
- Value to scientists and other information gatherers
- Value to the general public in the context of regional, state and national heritage.

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* (OEH 2010b) requires significance assessment according to criteria established in the *Australia ICOMOS Burra Charter* (Australia ICOMOS 2013). The *Burra Charter* and its accompanying guidelines are considered best practice standard for cultural heritage management, specifically conservation, in Australia. Guidelines to the *Burra Charter* set out four criteria for the assessment of 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. According to DPIE/OEH, "social or cultural value can only be identified through consultation with Aboriginal people" (OEH 2011a:8).

There are three locations of recorded Aboriginal cultural heritage value within the study area. The significance assessment for the identified archaeological sites has focussed on the social/cultural, historic, scientific and aesthetic significance of Aboriginal heritage values as identified in *The Burra Charter*.

Social Values

This area of assessment concerns the value/s of a place, feature or site to a particular community group, in this case the local Aboriginal community. Aspects of social significance are relevant to sites, objects and landscapes that are important or have become important to the local Aboriginal community. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for sites generally and their continued protection. Aboriginal cultural significance may include social, spiritual, historic and archaeological values.

It has been identified during the consultation process that the local area has cultural heritage value (social value) to the local Aboriginal community. Regarding Aboriginal sites identified within the study area, no specific cultural or social values expressed by these sites have been identified to date. No additional values were provided by registered Aboriginal stakeholders following review of the draft CHAR.

Historic Values

Historical research did not identify any information regarding specific historical significance of identified Aboriginal archaeological sites within the proposal area. No historical significance for the sites within the proposal area has been provided by the registered Aboriginal parties. Archaeologically, the study area and identified archaeological sites do not contain these values in relation to Aboriginal heritage.

Scientific Values

For archaeologists, scientific significance refers to the potential of a site to contribute to current research questions. Alternately, a site may be an in situ repository of demonstrably important information, for example rare artefacts of unusually high antiquity.

Scientific significance is assessed using criteria to evaluate the contents of a site, state of preservation, integrity of deposits, representativeness of the site type, rarity/uniqueness and potential to answer research questions on past human behaviour. Three recommended criteria for assessing archaeological significance include:

- Archaeological Research Potential - significance may be based on the potential of a site or landscape to explain past human behaviour and can incorporate the intactness, stratigraphic integrity or state of preservation of a site, the association of the site to other sites in the region (connectivity), or a datable chronology.
- Representativeness - all sites are representative of those in their class (site type/subtype) however the issue here relates to whether particular sites should be conserved to ensure a representative sample of the archaeological record is retained. Representativeness is based on an understanding of the regional archaeological context in terms of site variability in and around the study area, the resources already conserved and the relationship of sites across the landscape.
- Rarity – which defines how distinctive a site may be, based on an understanding of what is unique in the archaeological record and consideration of key archaeological research questions (i.e. some sites are considered more important due to their ability to provide certain information). It may be assessed at local, regional, state and national levels.

High significance is usually attributed to sites which are so rare or unique that the loss of the site would affect our ability to understand an aspect of past Aboriginal use/occupation of an area. In some cases a site may be considered highly significant because it is now rare due to destruction of the archaeological record through development. Moderate (medium) significance is attributed to sites which provide information on an established research question. Sites with moderate significance are those that offer the potential to yield information that will contribute to the holistic understanding of the Aboriginal cultural landscape of the proposal area. Archaeological investigation of moderately significant sites will contribute knowledge regarding site type interrelationships, cultural use of landscape features and occupation patterns. Low significance is attributed to sites which cannot contribute new information about past Aboriginal use/occupation of an area. This may be due to site disturbance or the nature of the site's contents.

Aesthetic Values

Aesthetic values are often closely related to the social values of a site or broader cultural landscape. Aspects may include scenic sights, smells and sounds, architectural fabric and creative aspects of a place.

Regarding Aboriginal sites identified within the proposal area, no associated aesthetic values have been identified by registered Aboriginal parties to date. Archaeologically, the study area and identified archaeological sites do not contain these values in relation to Aboriginal heritage.

8.2 Statements of Significance

The study area contains three identified Aboriginal archaeological sites as defined under the *National Parks and Wildlife Act 1974*. The three identified Aboriginal archaeological sites within the proposal area are:

Schofields 2	AHIMS 45-5-0827
TRU AFT 1	AHIMS 45-5-5241
TRU AFT 2	AHIMS 45-5-5310

Based on the values assessment, the following levels of significance were ascribed to the sites within the study area:

Schofields 2

Schofields 2 represents a commonly occurring type of site in the region, consisting of an open artefact scatter of low density on a slope landform in close proximity to Plumpton Ridge. The artefacts at the site are typical of the region in terms of type and raw material. The portion of the site within the study area has been subject to moderate to high levels of disturbance from modern land use practices and subsequent erosion. Test excavation identified a single subsurface artefact in a disturbed context. While surface objects occur across the site area, there is low potential for intact deposit. The site demonstrates low scientific value and it is unlikely that further investigation could contribute to our understanding of Aboriginal landscape use in the region. Based on the intactness, representativeness and research potential of the site, Schofields 2 is determined to have *low archaeological significance*.

TRU AFT 1

TRU AFT 1 represents a commonly occurring type of site in the region, consisting of an open artefact scatter of low density on an elevated landform adjacent to a watercourse. The artefacts at the site are typical of the region in terms of type and raw material. Test excavation determined that the subsurface deposit at the site comprises a low-moderate density of Aboriginal objects in a mixed, disturbed deposit affected by fluvial activity and European land use. Objects were dispersed across the test area with no spatial focus or patterning. While objects remain at the site, they have lost any meaningful archaeological context. There is low potential for any intact deposit. The site therefore demonstrates low scientific value and it is unlikely that further investigation could contribute to our understanding of Aboriginal landscape use in the region. Based on the intactness, representativeness and research potential of the site, TRU AFT 1 is determined to have *low archaeological significance*.

TRU AFT 2

TRU AFT 2 represents a commonly occurring type of site in the region, consisting of an open artefact scatter of low density on a slope landform in close proximity to Plumpton Ridge. The artefacts at the site are typical of the region in terms of type and raw material. Test excavation determined that the site area has been subject to severe disturbance due to modern land use (mini bike club) and slopewash mass movement of soils following European land clearance in the early 1800s. Test excavation identified a low density of scattered subsurface objects in a disturbed context. While surface objects occur across the site area, there is low to nil potential for any intact subsurface deposit. The site demonstrates low scientific value and it is unlikely that further investigation could contribute to our understanding of Aboriginal landscape use in the region. Based on the intactness, representativeness and research potential of the site, TRU AFT 2 is determined to have *low archaeological significance*.

9 The Proposed Activity and Impact Assessment

A description of the proposal is provided in section 1.3. The proposal area encompasses both the construction and operational footprints allowing for space to construct the proposal and temporary ancillary facilities, including the proposed compound south of Meadow Road.

The entirety of the proposal area would be impacted by construction and associated works. In total three Aboriginal archaeological sites would be impacted by the proposal. Proposed impacts to sites identified within the proposal area are detailed in Table 12 and shown in Figure 18.

Table 12. Proposed impact to Aboriginal archaeological sites within the proposal area

Site Name	AHIMS	Description	Significance	Type / Degree of Harm	Consequence of Harm
Schofields 2	45-5-0827	Very low density surface artefact scatter located within a disturbed context on a slope landform	Low	Direct / Partial	Partial loss of value
TRU AFT 1	45-5-5241	Low density surface scatter with low-moderate density dispersed subsurface objects on elevated landform adjacent to Bells creek	Low	Direct / Total	Total loss of value
TRU AFT 2	45-5-5310	Low density dispersed surface and subsurface artefacts in severely disturbed context on a slope landform	Low	Direct / Total	Total loss of value

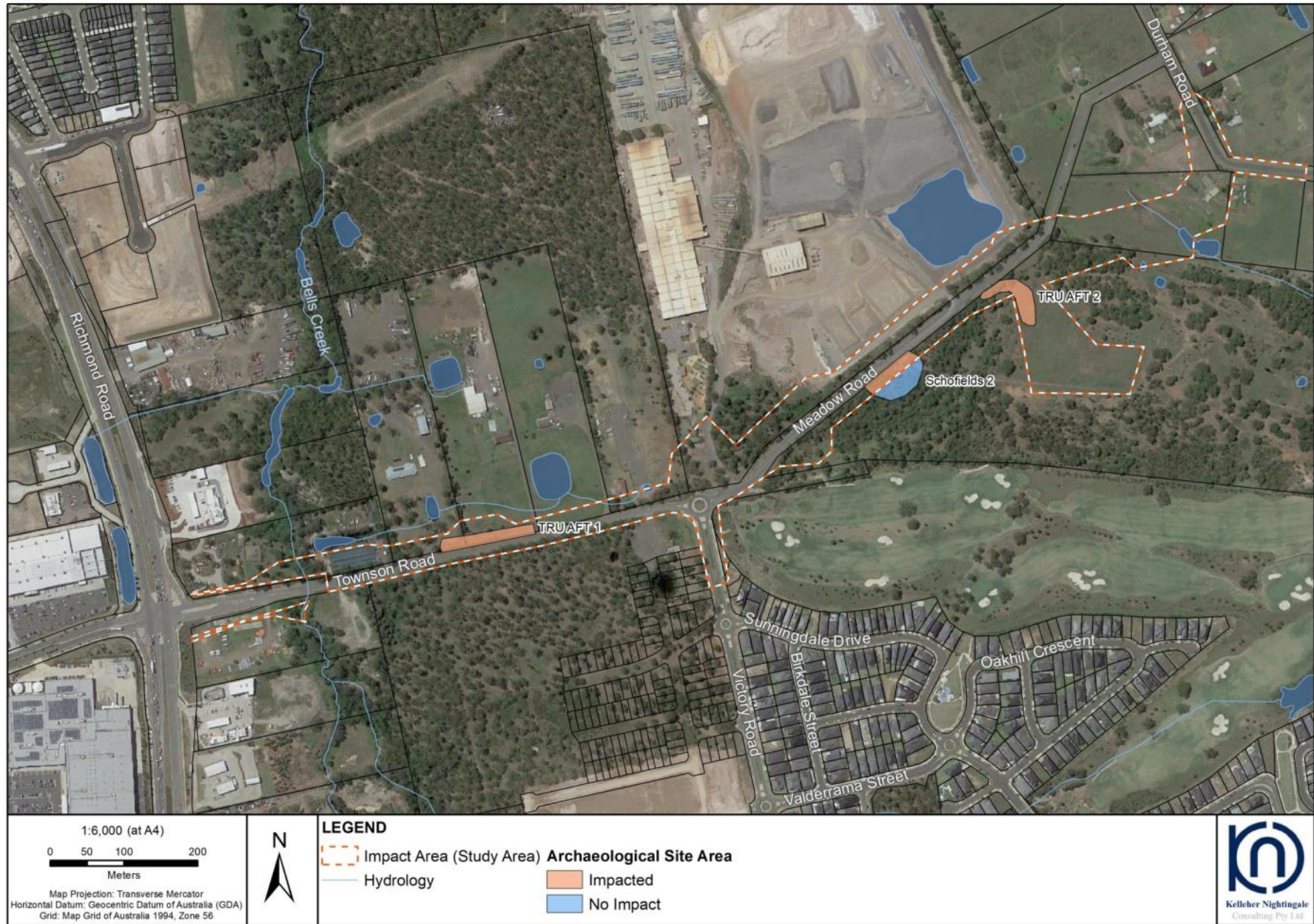


Figure 18. Proposal area (impact area) and Aboriginal heritage

10 Mitigating Harm

10.1 Ecologically Sustainable Development Principles

The assessment applied the principles of Ecologically Sustainable Development (ESD) to the current proposal. The principles of Ecologically Sustainable Development are defined in Section 6 of the *NSW Protection of the Environment Administration Act 1991*. The ESD principles relevant to Aboriginal cultural heritage within the proposal area are: the Precautionary Principle and the Principle of Inter-Generational Equity. The application of these principles in relation to the current proposal is discussed below.

10.1.1 The Precautionary Principle

The Precautionary Principle states “that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation”.

The identified Aboriginal archaeological sites have been considered by TfNSW in relation to the proposed road construction upgrade and associated activities. A larger area was surveyed as part of the PACHCI Stage 2 assessment in order to provide options for Aboriginal archaeological site avoidance where possible. Use of the existing and highly disturbed road corridor has reduced the impact to surrounding undeveloped land, and resulted in only a partial impact to identified site Schofields 2. While conservation is the best approach when considering Aboriginal heritage, the avoidance of Aboriginal archaeological sites within the study area was not possible due to the requirements of the proposal and limited area in which it could occur.

The Aboriginal sites located within the proposal area have been impacted by past landuse activities and soil movement and would continue to be impacted by these factors regardless of impacts from the proposal. Scientific confidence regarding the condition, nature and extent of the sites has been achieved through archaeological investigations which have included both survey (section 5) and test excavation (section 6). Aboriginal cultural heritage value confidence has been achieved through consultation with Aboriginal stakeholders (section 2). As detailed in sections 7 and 8, it has been determined that the study area contains Aboriginal archaeological sites displaying a low level of assessed significance.

10.1.2 The Principle of Inter-Generational Equity

The Principle of Inter-Generational Equity states “that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations”.

The archaeological sites located within the study area were evaluated in relation to intergenerational equality and in particular, the cumulative impact of the proposal on the Aboriginal heritage of the region. As discussed in section 5, previous archaeological investigations have recorded a large number of artefact scatters in the region. These occur in landscape contexts similar to those investigated during the current study, including along Bells Creek and similar watercourses, and on the slopes of ridges associated with outcropping silcrete throughout Marsden Park and Riverstone.

While some sites have subsequently been impacted by development, the majority of identified sites remain valid. Landforms along the larger watercourses are frequently not subject to residential development, instead becoming part of environmental conservation or open space areas. A Voluntary Conservation Agreement (VCA) area is also present within the Stonecutters Ridge development to the south, which conserves archaeological deposit associated with Aboriginal activities on the eastern slopes of Plumpton Ridge.

The significance of the Aboriginal archaeological sites within the proposal area, with regards to integrity, rarity and representativeness, has been assessed as low. The sites have previously been and continue to be impacted by historical and contemporary land use practices and natural processes. Impact to the sites as a result of the proposal is therefore not considered likely to increase cumulative harm to Aboriginal sites in the local area or wider region. The archaeological sites within the study area exhibit minimal to no information and offer no significant value as conservation items. Impact to the sites is therefore considered to result in a neutral change to the cumulative index.

10.2 Management Measures

Suitable recommendations for the identified impacts to the sites within the study area have been developed based on ESD, environmental context and condition, background research and consultation with registered Aboriginal stakeholders. The study area contains sites with low assessed significance, based on their scientific value and potential to inform on Aboriginal landscape use along Bells Creek and the eastern slopes of Plumpton Ridge.

Low significance sites exhibit minimal archaeological value and contain low (some) cultural value. Impact to low significance sites does not warrant non-practicable avoidance or mitigation.

An AHIP is required for impacts to land and identified sites/objects prior to the commencement of pre-construction or construction activities associated with the proposal that would affect the sites. Management recommendations and measures for mitigating harm to the sites are outlined in Table 13 below.

Table 13. Mitigation measures for impacted Aboriginal sites

Site Name	AHIMS number	Management and mitigation
Schofields 2	45-5-0827	<ul style="list-style-type: none"> Archaeological mitigation not required. AHIP required prior to commencement of works affecting the site. Non-impacted portion to be protected during construction (see section 11)
TRU AFT 1	45-5-5241	<ul style="list-style-type: none"> Archaeological mitigation not required. AHIP required prior to commencement of works affecting the site.
TRU AFT 2	45-5-5310	<ul style="list-style-type: none"> Archaeological mitigation not required. AHIP required prior to commencement of works affecting the site.

11 Summary and Recommendations

A total of three Aboriginal sites are wholly or partially situated within the study area. An AHIP should be sought for Aboriginal objects within the boundaries of the study area, incorporating archaeological sites listed in Table 14.

AHIP

An application for an AHIP should be made under section 90A of the *National Parks and Wildlife Act 1974* for three Aboriginal archaeological sites. The application should be prepared in accordance with the *DPIE Applying for an Aboriginal Heritage Impact Permit: Guide for Applicants* (OEH 2011b).

No current AHIPs or planned future AHIPs exist within the area which is the subject of this application. The application area covers the study area and has been designed with reference to existing AHIP areas to the west for the Richmond Road upgrade and Townson Road Precinct to ensure no overlap (Figure 19).

An AHIP would be sought for the land and associated objects within the boundaries of the proposal area (Figure 19). The AHIP would also be sought for the specified Aboriginal sites and objects contained within the sites listed in Table 14.

Table 14. Known archaeological sites requiring AHIP and degree of harm

Site Name	AHIMS	Degree of Harm	Consequence of harm	Significance of harm	Mitigation
Schofields 2	45-5-0827	Partial	Partial loss of value	Low	Disturbed no salvage warranted
TRU AFT 1	45-5-5241	Total	Total loss of value	Low	Disturbed no salvage warranted
TRU AFT 2	45-5-5310	Total	Total loss of value	Low	Disturbed no salvage warranted

Site Protection

- The non-impacted portion of site Schofields 2 (outside of construction and AHIP boundary) will be marked on the Construction Environmental Management Plan (CEMP) prior to construction activities to ensure this part of the site is avoided and not impacted by the proposed works. The site area will be marked as an environmentally sensitive “no-go zone”.
- Temporary fencing will be installed around the edge of the AHIP area prior to construction to provide a physical barrier against accidental access or impact.
- Workers will be inducted as to appropriate Aboriginal heritage protection measures.

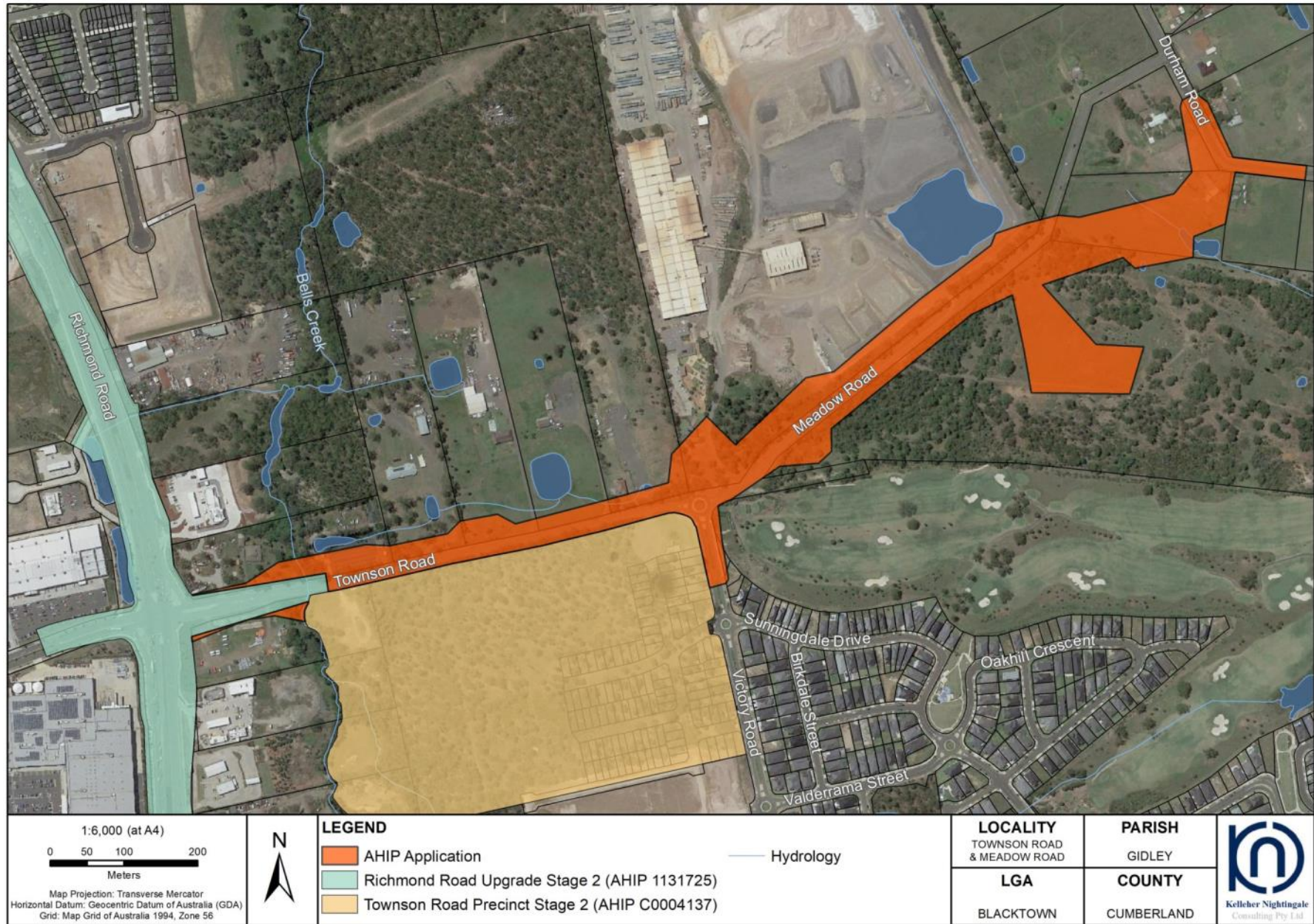


Figure 19. AHIP application area boundary

Glossary of Terms

Aboriginal Object (as defined in the NPW Act)	Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.
Aboriginal Place (as defined in the NPW Act)	A place declared under s.84 of the NPW Act that, in the opinion of the Minister, is or was of special significance to Aboriginal culture.
Anvil	An object used as a stable base for producing stone artefacts. This will have percussion pitting from the impact of reducing an anvil rested core.
Artefact	Any object that has been physically modified by humans or that is unmodified but is out of its natural context and considered to have been brought to the location by humans (a manuport).
Attribute	A physical characteristic of an artefact
Backed Artefact	A tool made from a flake or flake fragment, with steep blunting retouch along one or opposite margin after the flake was removed from the core. Includes geometric microliths of various shapes and asymmetric Bondi points.
Backed Broken	Fragments of backed or partly backed flakes. Breakage often occurred during manufacture.
Backing Debitage	Small retouching flakes produced from the backing process using an anvil rested technique along its thick margin. May have bidirectional scars or a small distal cone from rebounding off an anvil.
Bipolar Core	A core reduced using the bipolar technique, being placed on an anvil and struck with a hammerstone.
Bipolar Flake	A flake with proximal and distal crushing produced by bipolar flaking technique. These may have a flattened ventral surface/bulb of percussion. Some flakes may only have crushing/step fractures at proximal end, having been removed before reaching the base of the core.
Bondi Point	An asymmetrical backed artefact which is widest at the proximal end and pointed at the distal end. The length of a bondi point is generally over twice the artefact width.
Bulb of Percussion	An attribute on the ventral surface of a flake during the detachment of the flake from a core by the movement of force from a blow applied to a single point. The bulb of percussion is characteristically a bulge which occurs just below the point of force application.
Bulbar (Érailleure) Scar	A scar on the ventral surface of a flake which sometimes occurs during the removal of the flake from a core by the force of percussion.
Chert	A fine rock of sedimentary origin, made up mostly of microcrystalline quartz, but sometimes with a chalcedony or opal component. Chalcedony is a microporous mass of silica. Includes banded varieties.
Cobble	An edge rounded stone more than 6.4 centimetres in size. e.g. core blank, hatchet blank, or hammerstone.
Colour	Recorded with particular reference to silcrete to determine if artefacts were heat altered material versus unheated stone.
Conchoidal	Exhibiting the characteristics of direct percussion such as a bulb of percussion or ripple marks
Cone-Split Broken Flake	A flake broken longitudinally through its point of force application (pfa) /cone. Retains some of the striking platform and point of impact. These are recorded as left or right half of the flake when viewing its ventral surface CSBF/Left, or CSBF/Right.
Conjoin	Two or more stone artefacts which are part of a knapping event that can be refitted to each other.
Core	Any stone used as a nucleus or blank for removing flakes large enough for use as implements. These must have negative flakes scars, although large retouched flakes used as cores may still retain a remnant ventral surface. Subsequent use as a core must intercept the old ventral surface. A core may be made on a cobble, pebble, flake, broken flake, flake fragment, heat shatter or naturally fragmented rock.

Core Flaking Pattern	The pattern of negative flake scars on cores, used to determine stone reduction strategies. Sometimes a core may have evidence of more than one flaking pattern. These include: <ul style="list-style-type: none"> • Unifacial – scars show that useable flakes have been removed one edge at a time in one direction. Sometimes reduction continued in this way after the core was rotated. Flakes should have a flat unmodified platform. • Bifacial – scars show that larger potentially useable flakes were struck off both opposing faces of an edge. Core edges often appear ‘wavy’ when viewed in plan. • Asymmetric alternating – tiny preparation flakes are first removed off the core platform, then larger useable flakes struck off the opposing face. The preparation scars can be seen on flakes with faceted platforms, and are sometimes still present on abandoned cores or core fragments. • Bipolar – small negative step scars or crushing at opposing ends of a core, from it being rested on an anvil and struck with a hammerstone. There may also be a tiny distal cone on flakes, from the force rebounding off the anvil.
Core Fragment	Broken off a core, and still retaining technological attributes such as negative flake scars or core platform.
Core Tool	A core that also has evidence of tool use on its margins or ridges such as striations, edge rounding or polish.
Cortex	The natural outer weathering rind or surface of rock. This may be remnant on the dorsal surfaces of an artefact, and is recorded as a percentage of the dorsal surface area.
Crazing	The surface of a heat affected rock which resembles cracked ceramic.
Crenate Fracture (CF)	Debitage with crenate fracture. This could be from heat shatter but may be from chemical weathering, particularly in chert or tuff artefacts
Culturally Modified Tree (as defined in the NPW Regulation)	A tree that, before or concurrent with (or both) the occupation of the area in which the tree is located by persons of non-Aboriginal extraction, has been scarred, carved or modified by an Aboriginal person by: <ul style="list-style-type: none"> • The deliberate removal, by traditional methods, of bark or wood from the tree, or • The deliberate modification, by traditional methods, of the wood of the tree.
Debitage	Material from the stone knapping process with no signs of subsequent modification.
Distal End	The termination of a flake opposite the bulb of percussion or point of applied force.
Distal Flake Fragment	A fragment of a flake that has been broken but distal termination (also termed distal fragment or distal flake). It does not have a distal termination.
Dorsal	The outside or back of a flake when removed from a core. The dorsal surface may have negative flake scars from previous flake removals and/or cortex
Fine Grained Siliceous (FGS)	Fine grained siliceous rocks which could not be positively identified without detailed mineralogical investigation.
Flake	A stone artefact that has been removed from a core. A flake has a proximal striking platform, point of force application (pfa), bulb of percussion and distal termination. Also may have a bulbar (éraillure) scar, ripple marks and fracture lines
Flaked Piece	An artefact that has evidence of flaking but no characteristics of a flake, broken flake, flake fragment, retouched flake or core can be discerned. Also referred to as an angular fragment.
Geometric Microlith	A type of backed artefact which is symmetrical in shape. They are often made from flakes with backing along truncated proximal and or distal ends.
Grinding Grooves	Oval shaped indentations on rock surfaces, such as sandstone outcrops which occurred as the result of the shaping and sharpening of ground stone artefacts.
Grindstone	A portable stone with linear striations and/or polish which shows that it has ground. Often made from fine grained sandstone or quartzite. May retain evidence of multipurpose use such as grinding of seeds, ochre.
Ground Stone Artefact	A stone artefact with an edge or surface that had been modified by grinding on another piece of stone. See Grindstone and Hatchet
Hammerstone	A stone used to strike a core for removal of flakes. Often spherical pebbles or cobbles with evidence of percussion pitting or spall scars on ends or margins.

Hatchet	A ground edged hatchet head or fragment. Should have evidence of intentional grinding e.g. linear striations/polish from shaping or resharpening the cutting edge. Hatchets were multipurpose tools and may also have evidence of hammer percussion or anvil use.
Heat Shatter (HS) Debitage	Debitage caused by heat shatter. May have evidence of potlidding from excessive heat stress and/or irregular heat fractured surfaces.
Hornfels	A medium to fine grained metamorphic rock. Includes a variety known as spotted pelitic hornfels with tiny dark clasts or grains.
Igneous	A range of rocks of mixed mineral composition formed after cooling of molten subterranean materials. Occur as intrusions into older rocks such as dykes, diatremes, or spread onto the land surface from volcanic activity. Includes varieties such as basalt, dolerite.
Knapping Floor	An area where a core was flaked/knapped to produce flakes and tools.
Length	A measurement of the distance between the platform and the termination of a flake.
Lustre	A subjective record of lustre of stone artefact, also relating to heat treatment.
Manuport	An unmodified piece of stone out of natural context and considered to have been brought to the site by humans.
Medial Flake Fragment (Med Frag)	A fragment of the mid-section of a flake with no platform or termination.
Medium Grained	A medium grained Siliceous rock of unknown type.
Midden	Also called shell midden. An area with the remains of edible shellfish which were discarded as the result of human procurement/consumption. May included fish and animal bones, stone artefacts and/or charcoal.
Mortar	A large base stone for grinding/pounding.
Modification/Activity Type	Refers to the activity associated with the lithic item e.g. debitage or waste from stone flaking, used as a hammer, anvil, core, bipolar core, retouched artefact, backed artefact.
Pebble	An edge rounded stone less than 6.4 centimetres in size. May have been used as core or small hammerstone.
Petrified Wood	Also called silicified or fossilized wood. Formed when trees were fossilized and their structure replaced by silica. Wood structure and growth rings are still visible as 'bands' within this material.
Platform Type	Records the type of platform on whole flakes or proximal flake fragments for information on flaking patterns and reduction strategies. These include: <ul style="list-style-type: none"> • Cortical – platform covered in cortex. Unifacial flaking. • Plain – platform is smooth flat surface. Unifacial flaking or unifacial with core rotation. • Ridged – platform has ridge from previous flake removal across core. Unifacial rotated or symmetric alternating (bifacial) flaking. • Scarred – platform has one or more flake scars. Symmetric alternating (bifacial) flaking or asymmetric alternating flaking. May indicate platform preparation. • Faceted – platform has multiple tiny flake scars struck from the dorsal. Indicates careful platform preparation. Asymmetric alternating flaking. • Focal – small platform less than twice the area of ring crack. • Crushed - platform has been crushed from force of flake removal but the rest of the flake is otherwise intact. The platform may have multiple step fractures. Bipolar or unifacial. • Indeterminate – platform is flawed, irregular, or partly collapsed with the remainder of the flake intact.
Potential Archaeological Deposit (PAD)	An area where no surface archaeological remains are present that has been assessed as having the potential to contain subsurface archaeological deposits on the basis of indicators which may include landform, distance to water and visible surface disturbance.
Proximal End	The striking end of a flake opposite the distal end or termination.
Proximal Flake Fragment (Prox Frag)	A fragment of a flake that has been broken but retains its proximal striking platform (also termed proximal fragment or proximal flake). It does not have a distal termination.


Quality	A record of the flaking quality of the stone. This is a subjective measurement based on how well the material flakes and the presence of flaws. Poor quality material may have large grains or internal flaws which may inhibit controlled reduction of the material. Certain fine grained material lacking in flaws or inclusions may have been preferred for its good flaking properties and selected for particular tasks or implement types e.g. precision cutting/slicing.
Quartz	A hexagonal crystalline form of silicon dioxide (SiO ₂). May occur as clear, white or coloured from mineral impurities. Can occur as single crystals, veins or geodes. Often has internal fractures or flaws.
Quartzite	Sandstone that had been metamorphosed by volcanic activity or recemented with silica in solution.
Raw Material	The type of stone out of which the artefacts have been made. See Chert, Silcrete and Quartz
Reduction Type	Refers to the technological aspects of reducing stone. For definitions on fracture mechanics and flake characteristics refer to work by Cotterell and Kamminga (1987) and Holdaway and Stern (2004). For non-debitage items it is used to describe the form of that item before it was modified or fractured e.g. a large flake may have been reflaked and used as a core to produce further useable flakes.
Retouched Artefact	A stone artefact with negative flake scars along its margins from intentional retouch after it was removed from the core. More recent scars show that the flakes removed were too small to have been used as tools. It could not always be determined whether these were intended for use as tools or were for core preparation.
Shape	Recorded for whole flakes and includes the following: <ul style="list-style-type: none"> • Wider than long (W>L) • Longer than wide (L>W) • Length equals width (L=W) • Elongate - length more than twice the width.
Silcrete	An indurated rock comprised of quartz grains cemented in a siliceous matrix.
Silicified Tuff	Also variously termed indurated mudstone, tuff or rhyolitic tuff. A fine grained rock of volcanic ash or other fine sediments metamorphosed and consolidated with silica. Sometimes distinguished from chert by having a lack of lustre (Corkill 1999:45), although heat treatment may result in lustrous flaked surfaces (Flenniken & White 1983:43).
Site	An area where Aboriginal objects have been identified.
Size	The maximum or longest dimension of each item as recorded, and entered as individual size classes of 5 millimeters (0-4mm, 5-9mm, 10-14mm, 15-19mm etc.).
Termination	Records the type of termination on whole flakes or distal flake fragments. Termination variation depends on the amount of force used, nature of the raw material and core morphology. These include: <ul style="list-style-type: none"> • Feather – A distal end which has a gradual thinning towards the termination • Hinge – A rounded termination • Plunging – A distal end containing the bottom surface of the core it was removed from • Step – A squared off termination
Thickness	A measurement of the distance between the dorsal and ventral faces of a flake at point where length and width measurements meet.
Tool	A stone artefact which has been modified into a formal type or used (expedient tool).
Usewear	An artefact with evidence of use such as striations, rounding or tiny edge fracture scars
Ventral Surface	The face of a flake which can be joined back to the core the flake was removed from. The ventral surface of a flake may exhibit the bulb of percussion, the ringcrack, ripple marks or fissures
Weight	Weight for each artefact was recorded using an electronic balance to the nearest 0.1g.
Width	A measurement at right angles to the length measurement of a flake, at the midpoint of the length

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Appendix A Advertisement for registration of interest



Roads and Maritime Services

**Aboriginal Heritage
Proposed Burdekin/Townson Road upgrade**

Roads and Maritime Services invites Aboriginal people and Aboriginal groups who hold cultural knowledge relevant to determining the significance of Aboriginal objects and places for the proposed Burdekin/Townson Road to register to be consulted.

To register your interest, please contact:

Mark Lester
Roads and Maritime Services, Aboriginal Cultural Heritage Officer
P: PO Box 973
Parramatta CBD NSW 2124
E: nwgc@rms.nsw.gov.au
T: (02) 8849 2583


Registrations must be received by phone or in writing by **Friday 12 July 2019**.

Roads and Maritime Services is proposing to carry out a Stage 3 Aboriginal Heritage Investigation for proposed work to the Burdekin/Townson Road upgrade.

The proposal may result in the Roads and Maritime Services:

- Applying for an Aboriginal Heritage Impact Permit (AHIP) under Part 6 of the *National Parks and Wildlife Act 1974*, and/or
- Undertaking investigations in accordance with the *Code of practice for archaeological investigations in NSW 2010*, and/or
- Undertaking an environmental impact assessment under the *Environmental Planning & Assessment Act 1979*.

For more information: Please contact Mark Lester on (02) 8849 2583 or nwgc@rms.nsw.gov.au



Appeared 29/06/2019 in: *Blacktown Advocate*
Koori Mail

Appendix B Aboriginal Stakeholder Comments

Zac Thomas

From: desmond dyer <desmond4552@hotmail.com>
Sent: Monday, 21 October 2019 9:01 PM
To: Zac Thomas
Subject: Re: Townson Road and Burdekin Road - Project Info & Methodology Letter - DALC

Hi Zac,

The Darug Aboriginal Land care has read your recommendations and Methodology for this project and we agree with it.

Kind regards
Des

From: Zac Thomas <zac.thomas@knconsult.com.au>
Sent: Tuesday, 24 September 2019 4:02 PM
To: desmond dyer <desmond4552@hotmail.com>
Subject: Townson Road and Burdekin Road - Project Info & Methodology Letter - DALC

Dear Registered Aboriginal Stakeholder,

Thank you for registering your interest to be involved in the Aboriginal cultural heritage consultation process for the proposed construction of the Townson Road and Burdekin Road corridor in the suburbs of Marsden Park, Colebee and Schofields, NSW. Kelleher Nightingale Consulting has been contracted to assist with Aboriginal cultural heritage assessment for the project.

This email is to inform registered stakeholders about project information and the proposed assessment methodology in accordance with the Department of Planning, Industry and Environment (DPIE) [formerly Office of Environment and Heritage (OEH)] Aboriginal cultural heritage consultation requirements for proponents 2010.

Please see the attached project information and proposed assessment methodology.

Comments on the proposed assessment methodology, including relevant cultural information that might affect, refine or inform the proposed methodology, should be provided by **22 October 2019**, using the contact details on the attached letter.

Kind regards,

Zac Thomas
Heritage Administration Assistant
Kelleher Nightingale Consulting Pty Ltd
Level 10, 25 Bligh St
Sydney NSW 2000
p 02 9232 5373

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**Kelleher
Nightingale Consulting Pty Ltd**

ABN 28 120 127 871 ACN 123 157 671

Level 10
25 Blich Street
Sydney NSW 2000
p 02 9232 5373
f 02 9223 0680

RECORD OF DISCUSSION

Date:	24/9/19	Ref: Townson Rd and Burdekin Rd
Time:	4:35 PM	Project No.: 1814
Contact:	Paul Boyd	KNC Personnel: Zac
Organisation:	Didge Ngunawal Clan	
Number:	0426 823 944	
Re:	Methodology for 1814 Townson Road and Burdekin Road	

Discussion:

Paul called to advise that in regards to the methodology for 1814 Townson Road and Burdekin Road that he just received, he is fine with all of that.

Zac Thomas

From: philip khan <philipkhan.acn@live.com.au>
Sent: Wednesday, 25 September 2019 12:49 PM
To: Zac Thomas
Subject: Re: Townson Road and Burdekin Road - Project Info & Methodology Letter - KYWG

Hi Zac,

Thank you for your report for Townson Road and Burdekin Road corridor in Marsden Park, Colebee and Schofields, NSW. I have reviewed the report, I agree and support your report. We look forward to your net report.

Kind regards
 Phil

Kamilaroi Yankuntjatjara Working Group

Aboriginal Cultural Heritage Surveys, Lawn Mowing & Fencing

ABN 33 979 702 507

Not registered for GST

78 Forbes Street, Emu Plains NSW 2750

Mobile: 0434545982

Email: philipkhan.acn@live.com.au



From: Zac Thomas <zac.thomas@knconsult.com.au>
Sent: Tuesday, 24 September 2019 4:05 PM
To: philipkhan.acn@live.com.au <philipkhan.acn@live.com.au>
Subject: Townson Road and Burdekin Road - Project Info & Methodology Letter - KYWG

Dear Registered Aboriginal Stakeholder,

Thank you for registering your interest to be involved in the Aboriginal cultural heritage consultation process for the proposed construction of the Townson Road and Burdekin Road corridor in the suburbs of Marsden Park, Colebee and Schofields, NSW. Kelleher Nightingale Consulting has been contracted to assist with Aboriginal cultural heritage assessment for the project.

This email is to inform registered stakeholders about project information and the proposed assessment methodology in accordance with the Department of Planning, Industry and Environment (DPIE) [formerly Office of Environment and Heritage (OEH)] Aboriginal cultural heritage consultation requirements for proponents 2010.

Please see the attached project information and proposed assessment methodology.

Comments on the proposed assessment methodology, including relevant cultural information that might affect, refine or inform the proposed methodology, should be provided by **22 October 2019**, using the contact details on the attached letter.

Kind regards,

Zac Thomas

Zac Thomas

From: Ryan Johnson <murrabidgeemullangari@yahoo.com.au >
Sent: Tuesday, 8 October 2019 1:39 PM
To: Zac Thomas
Subject: RE: Townson Road and Burdekin Road - Project Info & Methodology Letter - MBMAC

Hi Zac,

I have read the project information and methodology for the above project, I endorse the recommendations made by Kelleher Nightingale.

Kind regards

Ryan Johnson | **Murra Bidgee Mullangari**

0475565517



Aboriginal Corporation Cultural Heritage

A: PO Box 246, Seven Hills, NSW, 2147
E: murrabidgeemullangari@yahoo.com.au
ICN: 8112

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From: Zac Thomas [<mailto:zac.thomas@knconsult.com.au>]
Sent: Tuesday, 24 September 2019 4:06 PM
To: Ryan Johnson <murrabidgeemullangari@yahoo.com.au>
Subject: Townson Road and Burdekin Road - Project Info & Methodology Letter - MBMAC

Dear Registered Aboriginal Stakeholder,

Thank you for registering your interest to be involved in the Aboriginal cultural heritage consultation process for the proposed construction of the Townson Road and Burdekin Road corridor in the suburbs of Marsden Park, Colebee and Schofields, NSW. Kelleher Nightingale Consulting has been contracted to assist with Aboriginal cultural heritage assessment for the project.

1

Zac Thomas

From: Muragadi <muragadi@yahoo.com.au>
Sent: Wednesday, 25 September 2019 9:58 AM
To: Zac Thomas
Subject: RE: Townson Road and Burdekin Road - Project Info & Methodology Letter - Muragadi

Hi Zac,
I have read the project information and methodology for the above project, I agree with the recommendations made.
Kind regards
Jesse Carroll Johnson
0418970389

From: Zac Thomas [<mailto:zac.thomas@knconsult.com.au>]
Sent: Tuesday, 24 September 2019 4:08 PM
To: Muragadi <muragadi@yahoo.com.au>
Subject: Townson Road and Burdekin Road - Project Info & Methodology Letter - Muragadi

Dear Registered Aboriginal Stakeholder,

Thank you for registering your interest to be involved in the Aboriginal cultural heritage consultation process for the proposed construction of the Townson Road and Burdekin Road corridor in the suburbs of Marsden Park, Colebee and Schofields, NSW. Kelleher Nightingale Consulting has been contracted to assist with Aboriginal cultural heritage assessment for the project.

This email is to inform registered stakeholders about project information and the proposed assessment methodology in accordance with the Department of Planning, Industry and Environment (DPIE) [formerly Office of Environment and Heritage (OEH)] Aboriginal cultural heritage consultation requirements for proponents 2010.

Please see the attached project information and proposed assessment methodology.

Comments on the proposed assessment methodology, including relevant cultural information that might affect, refine or inform the proposed methodology, should be provided by **22 October 2019**, using the contact details on the attached letter.

Kind regards,

Zac Thomas
Heritage Administration Assistant
Kelleher Nightingale Consulting Pty Ltd
Level 10, 25 Bligh St
Sydney NSW 2000
p 02 9232 5373

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Zac Thomas

From: Arika Jalomaki <yulayculturalservices@gmail.com>
Sent: Wednesday, 2 October 2019 8:48 AM
To: Zac Thomas
Subject: Re: Townson Road and Burdekin Road - Project Info & Methodology Letter - Yulay CS

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Zac,

On behalf of Yulay cultural services I have reviewed and agree with the methodology.

Kind regards
Arika Jalomaki

On Tue, 24 Sep 2019 at 4:08 pm, Zac Thomas <zac.thomas@knconsult.com.au> wrote:

Dear Registered Aboriginal Stakeholder,

Thank you for registering your interest to be involved in the Aboriginal cultural heritage consultation process for the proposed construction of the Townson Road and Burdekin Road corridor in the suburbs of Marsden Park, Colebee and Schofields, NSW. Kelleher Nightingale Consulting has been contracted to assist with Aboriginal cultural heritage assessment for the project.

This email is to inform registered stakeholders about project information and the proposed assessment methodology in accordance with the Department of Planning, Industry and Environment (DPIE) [formerly Office of Environment and Heritage (OEH)] Aboriginal cultural heritage consultation requirements for proponents 2010.

Please see the attached project information and proposed assessment methodology.

Comments on the proposed assessment methodology, including relevant cultural information that might affect, refine or inform the proposed methodology, should be provided by **22 October 2019**, using the contact details on the attached letter.

Kind regards,

Appendix C AHIMS Extensive Search Results



AHIMS Web Services (AWS) Extensive search - Site list report

Your Ref/PO Number : 1909 finalisation

Client Service ID : 497581

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2036	MP8 Marsden Park Contact	AGD	56	299850	6266700	Open site	Valid	Artefact :-	Open Camp Site	4152
	Recorders					Helen Brayshaw,Ms.Laila Haglund			Permits	3531
45-5-5241	TRU AFT 1 Contact	GDA	56	300638	6267153	Open site	Valid	Artefact :-		
	Recorders					Kelleher Nightingale Consulting Pty Ltd, Miss.Kristen Taylor			Permits	
45-5-3998	TR3 (Riverstone) Contact	GDA	56	300700	6267165	Open site	Destroye d	Artefact : 3		102254
	Recorders					Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay			Permits	3446
45-5-4061	TR1 (Riverstone) Contact	GDA	56	300614	6267516	Open site	Valid	Artefact :-		
	Recorders					Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay			Permits	
45-5-4062	TR2 (Riverstone) Contact	GDA	56	300598	6267397	Open site	Valid	Artefact :-		
	Recorders					Doctor.Sandra Wallace,Artefact - Cultural Heritage Management - Rose Bay			Permits	
45-5-4700	Marsden Park AHIP #C0000282 Reburial Contact	GDA	56	300435	6267790	Open site	Valid	Artefact :-		
	Recorders					AECOM Australia Pty Ltd- Sydney,Mr.Luke Kirkwood			Permits	
45-5-4635	TRS11 Contact	GDA	56	300665	6267016	Open site	Destroye d	Artefact :-		
	Recorders					Matthew Kelleher,Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (G			Permits	4339
45-5-4636	TRS12 Contact	GDA	56	300658	6267100	Open site	Destroye d	Artefact :-		
	Recorders					Matthew Kelleher,Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (G			Permits	4339
45-5-5310	TRU AFT 2 Contact	GDA	56	301400	6267500	Open site	Valid	Artefact :-		
	Recorders					Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generic users)			Permits	
45-5-0543	SA 6 Riverstone Contact	GDA	56	301366	6266524	Open site	Destroye d	Stone Quarry :-, Artefact :-	Quarry	1018
	Recorders					Doctor.Jo McDonald,Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson			Permits	2084,2596
45-5-0544	SA 8 Riverstone Contact	GDA	56	302021	6266922	Open site	Destroye d	Artefact :-	Open Camp Site	1018,100450
	Recorders					Doctor.Jo McDonald,Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson			Permits	2084,2596
45-5-0245	Plumpton Ridge Contact	GDA	56	301608	6266657	Open site	Destroye d	Artefact :-, Stone Quarry :-	Open Camp Site, Quarry	109,157,158,20 5,265,704,1018 .1030
	Recorders					Jim Kohen,Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson			Permits	825,2084,2596
45-5-0826	Schofields 1: Contact	AGD	56	301800	6267100	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
	Recorders					Annie Nicholson			Permits	
45-5-0827	Schofields 2: Contact	GDA	56	301237	6267407	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
	Recorders					Annie Nicholson,Kelleher Nightingale Consulting Pty Ltd, Miss.Kristen Taylor,Mr.M			Permits	
45-5-0828	Schofields 3: Contact	AGD	56	301600	6267200	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
	Recorders					Annie Nicholson			Permits	
45-5-0829	Schofields 4: Contact	AGD	56	301700	6267100	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
	Recorders					Annie Nicholson			Permits	

Report generated by AHIMS Web Service on 16/04/2020 for Matthew Kelleher for the following area at Datum :GDA, Zone : 56, Eastings : 299746 - 302210, Northings : 6266438 - 6268232 with a Buffer of 0 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 83

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 1909 finalisation

Client Service ID : 497581

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-0830	Schofields 5; Contact	GDA	56	301565	6267368	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
45-5-0831	Schofields 6; Contact	GDA	56	301496	6267315	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
45-5-0832	Schofields 7; Contact	GDA	56	301407	6267355	Open site	Valid	Artefact :-	Open Camp Site	2080,2081
45-5-0545	SA 9 Riverstone Contact	GDA	56	301875	6267120	Open site	Destroye d	Artefact :-	Open Camp Site	1018
45-5-0546	SA 10 Riverstone Contact	GDA	56	301955	6267150	Open site	Destroye d	Artefact :-	Open Camp Site	1018
45-5-0547	SA 11 Riverstone Contact	GDA	56	301945	6267210	Open site	Destroye d	Artefact :-	Open Camp Site	1018,98187
45-5-0548	SA 12 Riverstone Contact	GDA	56	301755	6267220	Open site	Destroye d	Artefact :-	Open Camp Site	1018
45-5-0549	SA 2 Riverstone Contact	GDA	56	301304	6266939	Open site	Destroye d	Stone Quarry :-, Artefact :-	Quarry	1018
45-5-0550	SA 3 Riverstone Contact	GDA	56	301340	6266778	Open site	Destroye d	Stone Quarry :-, Artefact :-	Quarry	1018,100450
45-5-0551	SA 4 Riverstone Contact	GDA	56	301409	6266787	Open site	Destroye d	Stone Quarry :-, Artefact :-	Quarry	1018
45-5-0552	SA 5 Riverstone Contact	GDA	56	301735	6266768	Open site	Destroye d	Artefact :-	Open Camp Site	1018,100450
45-5-0554	SA 1 Riverstone Contact	GDA	56	301321	6267029	Open site	Destroye d	Stone Quarry :-, Artefact :-	Quarry	1018,100450
45-5-2996	PAD10 Contact	GDA	56	302128	6266518	Open site	Destroye d	Potential Archaeological Deposit (PAD) :-, Artefact :-		
45-5-2997	PAD5 & 6 Contact	GDA	56	302006	6266650	Open site	Destroye d	Potential Archaeological Deposit (PAD) :-		

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AHIMS Web Services (AWS) Extensive search - Site list report

Your Ref/PO Number : 1909 finalisation

Client Service ID : 497581

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2998	SA16	GDA	56	301065	6266740	Open site	Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-		
	Contact									
45-5-2999	SA17	GDA	56	301075	6266890	Open site	Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-	2084,2596	
	Contact									
45-5-3001	SA14	AGD	56	301200	6266450	Open site	Destroye d	Potential Archaeological Deposit (PAD):-		
	Contact									
45-5-3002	SA15	AGD	56	301210	6266340	Open site	Destroye d	Potential Archaeological Deposit (PAD):-	2084,2596,3434	
	Contact									
45-5-3003	PAD1 Schofields	GDA	56	301220	6266999	Open site	Destroye d	Potential Archaeological Deposit (PAD):-		
	Contact									
45-5-3004	PAD5	GDA	56	301915	6266810	Open site	Destroye d	Potential Archaeological Deposit (PAD):-	2084,2596	
	Contact									
45-5-3005	PAD8	GDA	56	302074	6266687	Open site	Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-		
	Contact									
45-5-3006	PAD9	GDA	56	302020	6266504	Open site	Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-	2084,2596	
	Contact									
45-5-3007	PAD11	GDA	56	302183	6266491	Open site	Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-	2084,2596	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-3008	PAD12	GDA	56	302055	6267110	Open site	Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-	2084,2596	
	Contact	Recorders	Doctor,Jo McDonald,Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson							
45-5-3516	FD1	AGD	56	301050	6266500	Open site	Valid	Artefact : 2		
	Contact	Recorders	Ms.Mary Dallas							
45-5-3725	MPIP 4	GDA	56	299845	6267994	Open site	Destroye d	Artefact : 1		
	Contact	Recorders	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd							
45-5-3726	MPIP 5	GDA	56	300187	6267996	Open site	Partially Destroye d	Artefact : 3		103420
	Contact	Recorders	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd							
45-5-3727	MPIP 5A	GDA	56	300036	6267912	Open site	Valid	Artefact : 5		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd							
45-5-3729	MPIP 5C	GDA	56	300231	6267975	Open site	Valid	Artefact : 30		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd							
45-5-3730	MPIP 6	GDA	56	300150	6267770	Open site	Destroye d	Artefact : 1		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,AECOM Australia Pty Ltd - Sydney,Doctor,A							
45-5-3731	MPIP 6A	GDA	56	300162	6267731	Open site	Valid	Artefact : 5		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd							
45-5-3732	MPIP 7	GDA	56	299950	6267660	Open site	Partially Destroye d	Artefact : 1		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,AECOM Australia Pty Ltd - Sydney,Doctor,A							
45-5-3733	MPIP 7A	GDA	56	300010	6267662	Open site	Destroye d	Artefact : 6		
	Contact	Recorders	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd							
45-5-3734	MPIP 8	GDA	56	300050	6267530	Open site	Partially Destroye d	Artefact : 1		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,AE							
45-5-3735	MPIP 8A	GDA	56	300083	6267503	Open site	Destroye d	Artefact : 6		
	Contact	Recorders	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd							
45-5-3736	MPIP 9	GDA	56	300115	6267437	Open site	Destroye d	Artefact : 5		
	Contact	Recorders	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd							
45-5-3737	MPIP 10	GDA	56	300244	6267246	Open site	Destroye d	Artefact : 3		
	Contact	Recorders	Mr. Paul Irish,Kelleher Nightingale Consulting Pty Ltd,Coast History & Heritage							
45-5-3738	MPIP 11	GDA	56	300280	6267140	Open site	Valid	Artefact : 2		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders								
45-5-3739	MPIP 11A	GDA	56	300277	6267168	Open site	Destroye d	Artefact : 10		
	Contact	Recorders								
45-5-3740	MPIP 11B	GDA	56	300281	6267117	Open site	Valid	Artefact : 1		
	Contact	Recorders								
45-5-4289	TRS1	GDA	56	300849	6266888	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4290	TRS2	GDA	56	300850	6267035	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4291	TRS3	GDA	56	300845	6266775	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4292	TRS4	GDA	56	300731	6266793	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4293	TRS5	GDA	56	300993	6266794	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4294	TRS6	GDA	56	300806	6266500	Open site	Valid	Artefact : 1		
	Contact	Recorders								
45-5-4295	TRS7	GDA	56	300847	6266621	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4296	TRS8	GDA	56	301067	6266574	Open site	Destroye d	Artefact : 1		
	Contact	Recorders								
45-5-4304	Marsden Park Artefact Scatter 1	GDA	56	300578	6267830	Open site	Valid	Artefact : 1		
	Contact	Recorders								
45-5-4305	Marsden Park Isolated Find 1	GDA	56	299999	6268070	Open site	Valid	Artefact : 1		
	Contact	Recorders								
45-5-4306	Marsden Park Artefact Scatter 2	GDA	56	300588	6267880	Open site	Valid	Artefact : 1		
	Contact	Recorders								
45-5-4631	MPBC 1	GDA	56	300320	6267541	Open site	Partially Destroye d	Potential Archaeological Deposit (PAD):-, Artefact :-		
	Contact	Recorders								
45-5-4632	MPBC1	GDA	56	300320	6267541	Open site	Partially Destroye d	Artefact :-, Potential Archaeological Deposit (PAD):-		
	Contact	Recorders								

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Extensive search - Site list report

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports	
45-5-5170	MPIP111A & MPIP10 Reburial	GDA	56	300358	6267278	Open site	Valid	Artefact :-			
	Contact	Recorders	Mr.Paul Irish,Coast History & Heritage							Permits	
45-5-5139	WSPP Artefact 2	GDA	56	301325	6267818	Open site	Valid	Artefact :-			
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Ngaire Richards							Permits	
45-5-5140	WSPP Artefact 3	GDA	56	301420	6268227	Open site	Valid	Artefact :-			
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Ngaire Richards							Permits	
45-5-5141	WSPP Artefact 4	GDA	56	301579	6267434	Open site	Valid	Artefact :-			
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Ngaire Richards							Permits	
45-5-5142	WSPP Artefact 5	GDA	56	302002	6267427	Open site	Valid	Artefact :-			
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Ngaire Richards							Permits	
45-5-5143	WSPP Artefact 6	GDA	56	301806	6267776	Open site	Valid	Artefact :-			
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Ngaire Richards							Permits	
45-5-5144	WSPP Artefact 7	GDA	56	300564	6267872	Open site	Valid	Artefact :-			
	Contact	Recorders	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Ngaire Richards							Permits	
45-5-3778	SA19 Plumpton ridge	AGD	56	301110	6266640	Open site	Valid	Stone Quarry :-			
	Contact	Recorders	Jo McDonald Cultural Heritage Management see GML							Permits	
45-5-4362	Townson Road 4 (TR 4)	GDA	56	300705	6267424	Open site	Valid	Artefact : 1			
	Contact	Recorders	Mr.Josh Symons							Permits	
45-5-4441	TRS10	GDA	56	300667	6266485	Open site	Destroye d	Artefact :-			
	Contact	Recorders	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor							Permits	4148
45-5-4442	TRS9	GDA	56	300633	6266648	Open site	Destroye d	Artefact :-			
	Contact	Recorders	Matthew Kelleher,Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd,Miss.F							Permits	3756,4148,4339
45-5-4443	Heartbreak Ridge 1	GDA	56	300434	6266670	Open site	Destroye d	Artefact :-			
	Contact	Recorders	Matthew Kelleher,Matthew Kelleher							Permits	3756
45-5-4358	PRAS1	GDA	56	300966	6266530	Open site	Valid	Artefact :-			
	Contact	Recorders	Mr.Josh Symons							Permits	
45-5-4870	South Street APT 1	GDA	56	300314	6268227	Open site	Valid	Artefact :-			
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mi							Permits	4075,4272

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Appendix D Lithics Database

Area	ID	TS	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Cortex %	Weight (g)	Size Range (mm)	Termination Type	Platform Type	L (mm)	W (mm)	Th (mm)	Flake Shape	Cores # scars	Cores - longest scar (mm)	Comments	
TRU AFT 1	1	TS1	1	0-5	Silcrete	n	Core	Multidirectional	31-69%	124	75-79mm							5	30	in two pieces. Dark red	
TRU AFT 1	2	TS1	3	10-15	Silcrete	y	Flake		31-69%	10.7	25-29mm	Plunging	Cortical	22.23	22.3	14.32	L=W			Patina on dorsal surface	
TRU AFT 1	3	TS1	4	15-20	Chert	y	Flake		0%	13.8	25-29mm	Step	Plain	34.06	31.59	13.01	L>W			Fresh break along left lateral margin. Pot lidding on dorsal	
TRU AFT 1	4	TS1	4	15-20	Silcrete	n	Flake		31-69%	10.2	25-29mm	Plunging	Cortical	17.02	16.14	21.65	L>W				
TRU AFT 1	5	TS2	3	20-23	Silcrete	n	Distal flake		1-30%	2.9	20-24mm	Feather									
TRU AFT 1	6	TS3	1	0-10	Silcrete	y	Proximal flake		1-30%	13.9	25-29mm		Cortical								Crazing. Dark red
TRU AFT 1	7	TS5	3	20-25	Silcrete	n	Medial flake		1-30%	0.5	15-19mm										
TRU AFT 1	8	TS6	1	0-10	Silcrete	y	Core	Multidirectional	31-69%	52.5	60-64mm							6	17.72	Several small flakes taken from angular core of variable quality	
TRU AFT 1	9	TS6	1	0-10	Silcrete	y	Core	Multidirectional	1-30%	8.9	25-29mm							4	10.78	small core with red interior and pale brown patina on older scars	
TRU AFT 1	10	TS6	1	0-10	Silcrete	y	Distal flake		1-30%	1.8	20-24mm										Appears to be part of flake with ID 10
TRU AFT 1	11	TS6	1	0-10	Silcrete	y	Angular fragment		1-30%	1.5	20-24mm										Appears to be part of flake with ID 9. Two small possible backing scars (appear to be more recent)
TRU AFT 1	12	TS6	2	10-20	Silcrete	y	Proximal flake		0%	5.5	25-29mm		Plain								Dark red. Majority of a plain platform that has been slightly removed. Ventral surface has waxy patina with recent edge damage showing a dark red gloss material
TRU AFT 1	13	TS6	2	10-20	Silcrete	y	Angular fragment		0%	3.4	30-34mm										Possibly a medial fragment with conchoidal ripples on remaining portion of ventral surface that is covered with a waxy patina. Breakage due to heat damage is a glossy dark red
TRU AFT 1	14	TS7	2	10-20	Silcrete	y	Core	Multidirectional	31-69%	38.4	40-44mm							2	13.11	Two small scars on an angular core with light brown cortex. Different material to other artefacts in spit	
TRU AFT 1	15	TS7	2	10-20	Silcrete	n	Flake		31-69%	0.1	10-14mm	Feather	Ridge	8.73	11.58	2.09	L<W				Dark red.
TRU AFT 1	16	TS7	2	10-20	Silcrete	n	Flake		31-69%	0.8	15-19mm	Plunging	Focal	10.96	14.49	5.14	L<W				Dark red.
Lot 3	17	TS11	1	0-10	Silcrete	y	Flake		0%	0.2	10-14mm	Plunging	Plain	6.64	12.54	3.44	L<W				Retouching flake?
Lot 3	18	TS13	2	10-20	Silcrete	n	Proximal flake		31-69%	24.4	40-44mm		Cortical								Cortex on platform smooth waterworn dark brown
Lot 3	19	TS16	1	0-10	Silcrete	y	Angular fragment		0%	1.7	20-24mm										Red, crenate fracture and a potlid. 3 clear flaked surfaces.
Lot 3	20	TS16	4	30-40	Silcrete	y	Angular fragment		0%	10.3	30-34mm										Same material as ID19. One smooth (former ventral?) surface but cannot be oriented. Other surfaces potlids, heat crazing
Lot 3	21	TS17	4	30-40	Silcrete	y	Core fragment		1-30%	9.5	20-24mm							2 partials			Distal portion of single platform core with 2 parallel scars, broken through middle of flake scars and missing platform.
Schofields 2	22	TS18	1	0-10	Silcrete	n	Distal flake		0%	0.3	10-14mm	Feather									Platform snapped off, retains lower portion of an errillure scar. Dorsal ridge, edge damage both margins.

Appendix E TfNSW Consultation Log



Log of Aboriginal Community consultation for Townson/Burdekin Road project

Date	To	From	Medium	Description
11/07/2019	General Manager Manager Planning & Aboriginal Heritage Section – Metropolitan Office Environment & Heritage PO Box 668 Parramatta NSW 2124	RMS	Letter	Letters sent to statutory authorities
11/07/2019	The Registrar General Manager Aboriginal Lands Right Act 1983 PO Box 112 Glebe NSW 2037	RMS	Letter	Letters sent to statutory authorities
11/07/2019	General Manager Native Title Tribunal – New South Wales Registry GPO Box 9973 Sydney NSW 2001	RMS	Letter	Letters sent to statutory authorities
11/07/2019	General Manager Native Title Services Corporation PO Box 2105 Strawberry Hills NSW 2012	RMS	Letter	Letters sent to statutory authorities
11/07/2019	Deerubbin Local Aboriginal Lands Council Po Box 40 Penrith NSW 2751 strandall@deerubbin.org .au & Staff@Deerubbin.org.au	RMS	Letter	Letters sent to statutory authorities
11/07/2019	Greater Sydney Local Land Services PO Box 4515 Westfield Penrith 2790	RMS	Letter	Letters sent to statutory authorities
11/07/2019	Blacktown City Council	RMS	Letter	Letters sent to statutory authorities
29/06/2019	Koori Mail	RMS	Newspaper Advert	Advertisement in the Koori Mail
29/06/2019	Blacktown Advocate	RMS	Newspaper Advert	Advertisement in the Blacktown Advocate
18/06/2019	Greater Sydney Local Land Service	Margaret Botrell – Senior Strategic Land Services Officer	Incoming email	We strongly recommend that you make contact with the Office of Environment and Heritage (OEH), Cultural Heritage Division, for all-inclusive contact lists of persons and organisations that may assist with your investigation. Note: Hawkesbury Nepean Catchment Management Authority (HNCMA) no longer exists. All work previously carried out by HNCMA is now delivered by Greater Sydney Local Land Services (GS LLS).

Date	To	From	Medium	Description
17/06/2019	Office of The Registrar ALRA 1983	Elizabeth Loane	Incoming email	Requested a map of the project area – sent link to the website
20/06/2019	Philip Khan	Kamilaroi Yankuntjatjara Working Group	Incoming email	Would like to participate in any discussions
21/06/2019	Lilly Carroll & Paul Boyd	DNC	Incoming email	didgengunawalclan@yahoo.com.au
22/06/2019	Ryan Johnson		Incoming email	murragideggmullangari@yahoo.com.au
22/06/2019	Anthony	Muragadi	Incoming email	muragadi@yahoo.com.au
22/06/2019	Shaun Carroll	Merrigarn	Incoming email	Merrigarn@hotmail.com
08/08/2019	Kamilaroi-Yankuntjatjara Working Group	RMS	Post	Request for registration of interest
08/08/2019	Didge Ngunawal Clan	RMS	Post	Request for registration of interest
08/08/2019	Murri Bidgee Mullangari Corporation	RMS	Post	Request for registration of interest
08/08/2019	Muragadi	RMS	Post	Request for registration of interest
08/08/2019	Merrigarn	RMS	Post	Request for registration of interest
08/08/2019	Yurraandaali Cultural Services	RMS	Post	Request for registration of interest
08/08/2019	Yulay Cultural Services	RMS	Post	Request for registration of interest
08/08/2019	Barraby Cultural Services	RMS	Post	Request for registration of interest
08/08/2019	Kawul Cultural Services	RMS	Post	Request for registration of interest
08/08/2019	Wurrumay Consultancy	RMS	Post	Request for registration of interest
08/08/2019	Gunjeewong Cultural Heritage Aboriginal Corporation	RMS	Post	Request for registration of interest
08/08/2019	Darug Land Observations	RMS	Post	Request for registration of interest
08/08/2019	Darug Aboriginal Landcare	RMS	Post	Request for registration of interest
Automatically registered as Lands Council in area	Deerubbin Local Aboriginal Lands Council	RMS		Request for registration of interest
09/08/2019	Dhinawan Dhigarra Culture Services	RMS	Post	Request for registration of interest
08/08/2019	DJMC Consultancy	RMS	Email	Request for registration of interest
08/08/2019	Dhinawan- Dhigarra Culture Services	RMS	Email	Request for registration of interest
08/08/2019	Wailwan Aboriginal Group	RMS	Email	Request for registration of interest
08/08/2019	Cullendulla	RMS	Email	Request for registration of interest
08/08/2019	Bilinga	RMS	Email	Request for registration of interest
09/08/2019	Dharug	RMS	Post	Request for registration of interest
08/08/2019	Gulaga	RMS	Email	Request for registration of interest
08/08/2019	Gunyuu	RMS	Email	Request for registration of interest
08/08/2019	Jerringong	RMS	Email	Request for registration of interest
08/08/2019	Munyunga	RMS	Email	Request for registration of interest
08/08/2019	Thauaira	RMS	Email	Request for registration of interest
08/08/2019	Murramarang	RMS	Email	Request for registration of interest
08/08/2019	Walbunga	RMS	Email	Request for registration of interest

Date	To	From	Medium	Description
08/08/2019	Murrumbul	RMS	Email	Request for registration of interest
08/08/2019	Butucarbin Aboriginal Corporation	RMS	Email	Request for registration of interest
08/08/2019	Yarramurra	RMS	Email	Request for registration of interest
08/08/2019	Warragil Culture Services	RMS	Email	Request for registration of interest
08/08/2019	Biamanga	RMS	Email	Request for registration of interest
08/08/2019	Nundagurri	RMS	Email	Request for registration of interest
08/08/2019	Wingikara	RMS	Email	Request for registration of interest
08/08/2019	Walgalu	RMS	Email	Request for registration of interest
20/06/2019	RMS	Deerubbin Local Aboriginal Lands Council	Email	Register of Interest
16/07/2019	RMS	Kawul Cultural Services	Email	Register of Interest
06/07/2019	RMS	Didge Ngunawal Clan	Email	Register of Interest
20/06/2019	RMS	Kamilaroi-Yankuntjatjara Working Group	Email	Register of Interest
16/07/2019	RMS	Wurrumay Consultancy	Email	Register of Interest
06/07/2019	RMS	Murra Bidgee Mullangari	Email	Register of Interest
15/07/2019	RMS	Gunjeewong Cultural Heritage Aboriginal Corporation	Email	Register of Interest
08/07/2019	RMS	Muragadi Heritage Indigenous Corporation	Email	Register of Interest
16/07/2019	RMS	Gulaga CHTS	Email	Register of Interest
10/07/2019	RMS	Yulay Cultural Services	Email	Register of Interest
09/07/2019	RMS	Barraby Cultural Services	Email	Registration of interest
20/08/2019	RMS	Darug Land Observations Pty Ltd	Email	Registration of interest
08/07/2019	RMS	Merrigarn	Email	Registration of interest
10/07/2019	RMS	Yurrandaali Cultural Services	Email	Registration of interest
23/08/2017	RMS	Darug Aboriginal Landcare	Email	Registration of interest
16/08/2019	RMS	Butucarbin Aboriginal Corporation	Email	Registration of interest
24/09/2019	Deerubbin Local Aboriginal Lands Council	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology

Date	To	From	Medium	Description
24/09/2019	Kawul Cultural Services	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Didge Ngunawal Clan	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Kamilaroi-Yankuntjatjara Working Group	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Wurrumay Consultancy	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Murra Bidgee Mullangari	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Gunjeewong Cultural Heritage Aboriginal Corporation	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Muragadi Heritage Indigenous Corporation	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Gulaga CHTS	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Yulay Cultural Services	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Barraby Cultural Services	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Darug Land Observations Pty Ltd	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Merrigarn	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Yurraandaali Cultural Services	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Darug Aboriginal Landcare	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
24/09/2019	Butucarbin Aboriginal Corporation	Kelleher Nightingale Consulting Pty Ltd	Email	Project Info and Archaeological Methodology
10/10/2019	Deerubbin Local Aboriginal Lands Council	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Kawul Cultural Services	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application

Date	To	From	Medium	Description
10/10/2019	Didge Ngunawal Clan	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Kamilaroi-Yankuntjatjara Working Group	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Wurrumay Consultancy	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Murra Bidgee Mullangari	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Gunjeewong Cultural Heritage Aboriginal Corporation	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Muragadi Heritage Indigenous Corporation	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Gulaga CHTS	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Yulay Cultural Services	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Barraby Cultural Services	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Darug Land Observations Pty Ltd	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Merrigarn	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Yurrandaali Cultural Services	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Darug Aboriginal Landcare	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
10/10/2019	Butucarbin Aboriginal Corporation	RMS	Email	Aboriginal Focus Group 1 Invitation/ Aboriginal site officer description and application
15/10/2019	RMS	Vicky Slater-Kawul Culture Services	Email	Registration of interest for AFG 1
10/10/2019	RMS	Lily Carroll-DNC	Email	Correction of email address - DNC mailing address 33 Carlyle Crescent Cambridge Gardens 2747
16/10/2019	RMS	Yulay Cultural Services	Email	Unable to attend AFG 1 –send any new information.”
17/10/2019	RMS	Lee Field-Barraby Cultural Services	Email	Unable to attend AFG 1- express of interest in the upcoming field investigations
05/11/2019	RMS	Philip Khan-Kamilaroi Yankuntjatjara Working Group	Email	Registration of interest for Site officer application from: Philip Khan and Marbuck Khan
9/12/2019	Shaun -Merrigarn Indigenous Corporation	RMS	Email	Letter of engagement
9/12/2019	Ryan Johnson- Murra Bidgee Mullangari	RMS	Email	Letter of engagement

Date	To	From	Medium	Description
9/12/2019	Vicky Slater - Wurrumay	RMS	Email	Letter of engagement
17/02/2020	Deerubbin Local Aboriginal Lands Council	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Kamilaroi-Yankuntjatjara Working Group	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Didge Ngunawal Clan	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Murra Bidgee Mullangari Aboriginal Corporation	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Muragadi	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Merrigarn	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Yurrandaali Cultural Services	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Yulay Cultural Services	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Barraby Cultural Services	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Kawul Cultural Services	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Wurrumay Consultancy	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Gunjee Wong Cultural Heritage Aboriginal Corporation	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Darug Land Observations	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Gulaga	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Darug Aboriginal Land Care	RMS	Email	Draft CHAR and invite to provide comment
17/02/2020	Butucarbin Aboriginal Corporation	RMS	Email	Draft CHAR and invite to provide comment

AFG attendance

Name	Organization	Contact
Lilly Carroll	DNC	0426 823 944
Vicky Slater	Kawul Culture Services	0421 077 521
Anthony Johnson	Muragadi	0467 180 149 – Anthony represented two organizations
Anthony Johnson	Barraby Cultural Services	
Philip Khan	Kamilaroi Yankuntjatjara Working Group	0445 45 982
Marbuck Khan	Kamilaroi Yankuntjatjara Working Group	0403 296 377