



**PROPOSED RESIDENTIAL SUBDIVISION
GURNER AVENUE, AUSTRAL NSW
Aboriginal Cultural Heritage Assessment Report**

Prepared for Landcom

Liverpool Local Government Area

July 2022

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Executive Summary

Landcom propose residential subdivision and development of lands located at 75 Gurner Avenue, Austral NSW. The proposed development area is located in the Liverpool local government area. Kelleher Nightingale Consulting Pty Ltd (KNC) were engaged by Landcom to assist in the preparation of an Aboriginal Heritage Impact Permit (AHIP) application, including the preparation of an Aboriginal cultural heritage assessment report (CHAR) for Aboriginal objects that will be harmed by the proposed works.

This CHAR has been prepared in accordance with the Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011). Consultation with Aboriginal people has been undertaken in accordance with the Heritage NSW *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (OEH 2010a) and the requirements of Clause 60 of the *National Parks and Wildlife Regulation 2019*.

Background research and previous archaeological assessment including archaeological test excavation has been undertaken for the project. A total of seven Aboriginal archaeological sites (comprising nine AHIMS registrations) have been identified within the study area. The identified sites comprise isolated finds, surface artefact scatters and surface and subsurface artefact scatters. Archaeological significance assessment for the identified sites was undertaken based on representativeness, rarity, archaeological research potential and intactness/integrity. Three Aboriginal archaeological sites (comprising five AHIMS registrations) within the study area displayed moderate archaeological significance. Four Aboriginal archaeological sites within the study area displayed low archaeological significance.

The Aboriginal archaeological sites within the study area have been considered by Landcom in relation to the design and planning of the development. Impact assessment determined that two Aboriginal archaeological sites would be partially impacted by future development. Archaeological mitigation (salvage excavation) is generally recommended where sites of moderate significance or higher are to be impacted, as the scientific and archaeological value of the sites is linked to the information the sites contain. Salvage excavation is recommended for site Artefact Scatter PAD 2015-46. Salvage excavations must be completed prior to any activities which may harm Aboriginal objects at this site location. No archaeological mitigation is required for low significance site GLC2.

The proposed works overlap areas that have been previously assessed for Aboriginal cultural heritage values and are already covered under existing AHIPs (C0001054 and 4938). Consultation between Landcom and the AHIP holder has indicated that the proposed works may be completed under these AHIPs, provided that work is undertaken in accordance with existing AHIP conditions. Landcom will obtain approval from the AHIP holder to complete the proposed works under their respective permits.

A land based AHIP should be obtained under section 90 of the *National Parks and Wildlife Act 1974* for the parts of the impact area which are not already covered under existing AHIPs. The AHIP should include Aboriginal objects associated with sites:

Artefact Scatter PAD 2015-46	AHIMS 45-5-4014	Moderate significance	Will be impacted (partial)
GLC2	AHIMS 45-5-2560	Low significance	Will be impacted (partial)

This CHAR has been prepared to support the application for an AHIP. It builds on the results of previous assessments and consultation regarding the proposal. The CHAR complies with the Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. A consultation process has been undertaken in accordance with the Heritage NSW requirements for the preparation of the CHAR to support the AHIP application.

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1 Introduction

1.1 Proponent and consultants

Landcom proposes residential subdivision and development of lands located at 75 Gurner Avenue, Austral NSW. The proposed development area is located in the Liverpool local government area and is hereafter referred to as the 'study area' (Figures 1 and 2).

Kelleher Nightingale Consulting Pty Ltd (KNC) were engaged by Landcom to assist in the preparation of an Aboriginal Heritage Impact Permit (AHIP) application, including the preparation of an Aboriginal cultural heritage assessment report (CHAR) for Aboriginal objects that will be harmed by the proposed works.

This CHAR has been prepared in accordance with the Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011). Consultation with Aboriginal people has been undertaken in accordance with the Heritage NSW *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (OEH 2010a) and the requirements of Clause 60 of the *National Parks and Wildlife Regulation 2019*.

The proposed works overlap areas that have been previously assessed for Aboriginal cultural heritage values and are already covered under existing AHIPs (C0001054 and 4938). Consultation between Landcom and the AHIP holder has indicated that the proposed works may be completed under these AHIPs, provided that work is undertaken in accordance with existing AHIP conditions. Landcom will obtain approval from the AHIP holder to complete the proposed works under their respective permits.

1.2 Location and scope of activity

The study area is situated in Austral and is located approximately 50 kilometres south west of Sydney CBD (Figure 1). The study area encompasses 50.7 hectares of land on the northern side of Gurner Avenue (Figure 2). To the north of the study area is land zoned for urban development, separated by a band of rural transition land. The Western Sydney Parklands is located to the east, along with a major gas easement. The southern boundary of the study area is defined by residential properties bordering Gurner Avenue and the western boundary is characterised by residential zoned land and electricity transmission. The current proposal includes the subdivision and development of lands within the study area. The proposed activities associated with future proposed development would include:

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

1.3 Statutory controls

The proposed activities require development consent from Liverpool City Council under Part 4 of the *Environmental Planning and Assessment Act 1979*.

Aboriginal objects will be harmed by the proposed activities and an application for an AHIP is being made under section 90A of the *National Parks and Wildlife Act 1974*. This CHAR has been prepared to support the AHIP application. It has been prepared in accordance with the Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

1.4 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 Department of Planning, Industry and Environment of the location of an Aboriginal object (existing offence and penalty); and
- contravention of any condition of an AHIP.

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

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

Section 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.

1.5 Objectives of the CHAR

The proposed development 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 is applying 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 objects or 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; and
- Any practical measures that may be taken to avoid or mitigate any actual or likely harm to those Aboriginal objects or Aboriginal places.

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

This CHAR has been prepared to accompany an application for an AHIP made by the proponent for Aboriginal objects within the impact area, including those associated with sites Artefact Scatter PAD 2015-46 and GLC2.

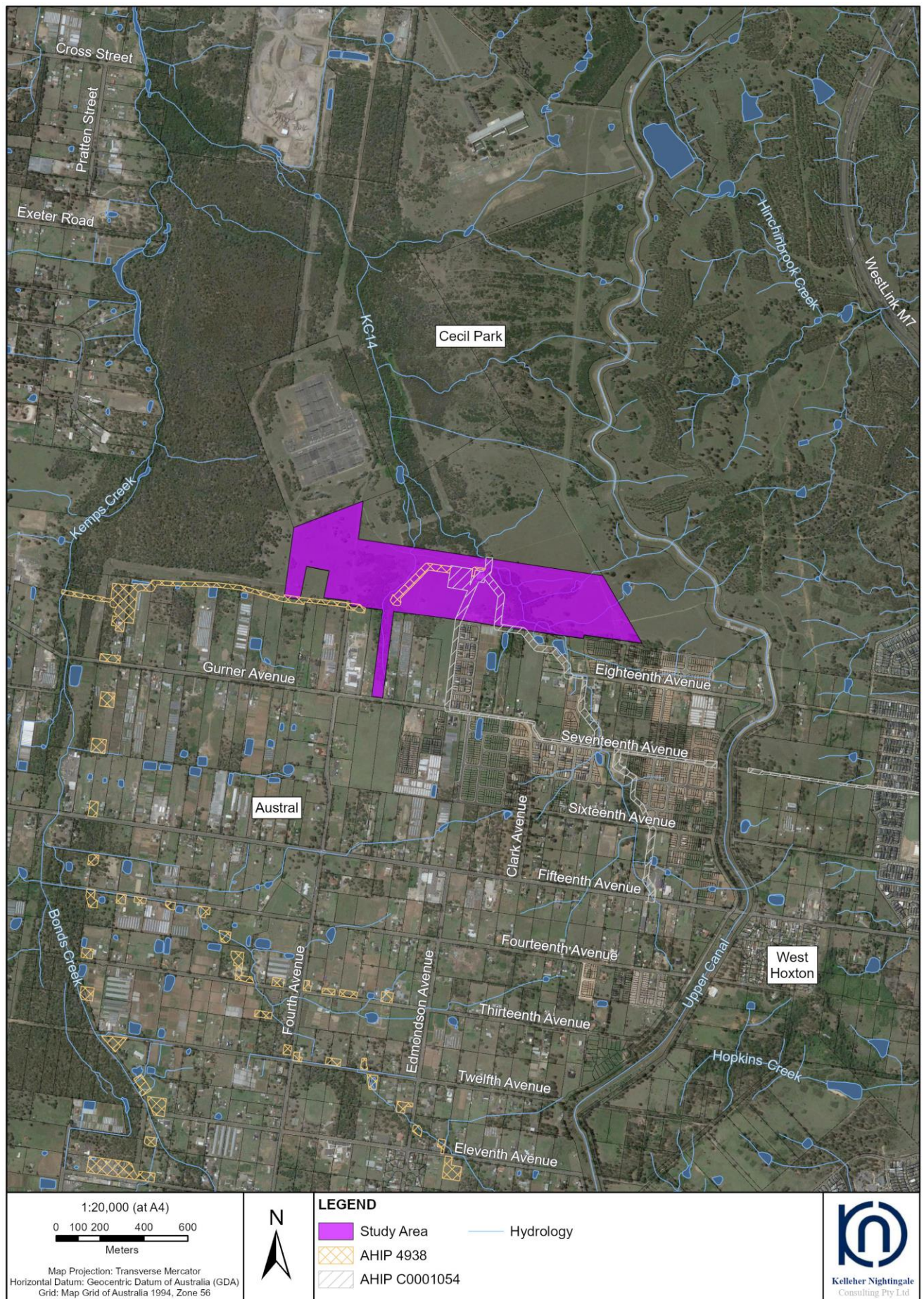


Figure 1. Overview of study area showing existing AHIP areas

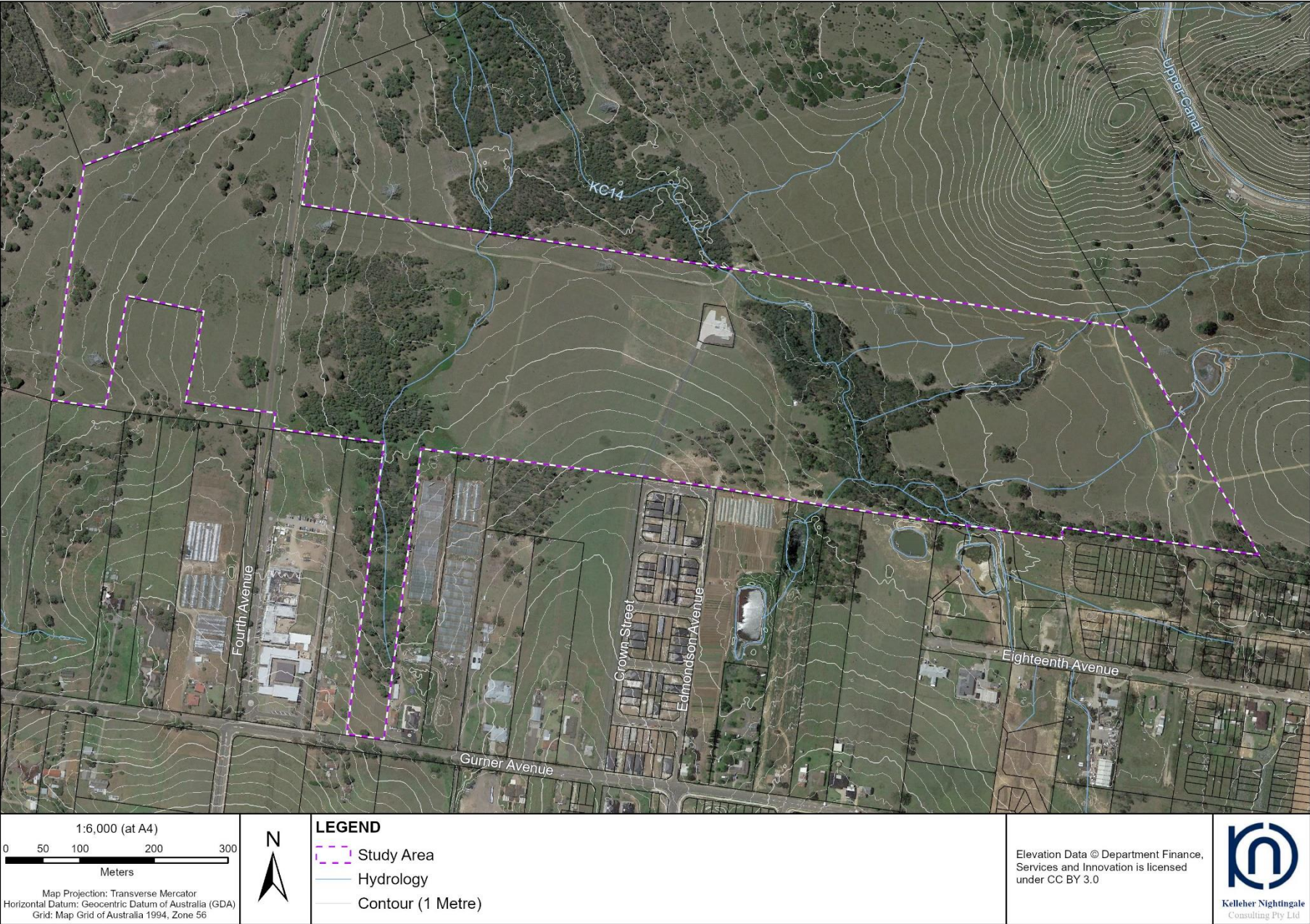


Figure 2. Detail of study area

2 Environmental Context

The study area is located on the Cumberland Plain, a gently undulating and generally low-lying physiographic region of the Sydney Basin. The Sydney Basin is a large geological feature that stretches from Batemans Bay to Newcastle and west to Lithgow. The formation of the basin began between 300 to 250 million years ago when river deltas gradually replaced the ocean that had extended as far west as Lithgow. The oldest, Permian layers of the Sydney Basin consist of marine, alluvial and deltaic deposits that include shales and mudstone overlain by coal measures. The near surface geology of the Cumberland Plain consists of sedimentary rocks of the Wianamatta Group and Hawkesbury Sandstone, both deposited during the Triassic.

Topography of the study area is characterised by gentle slope, wide flat and open depression landforms of the Kemps Creek floodplain. Tributaries of Kemps Creek, such as KC14, drain across the study area to the northwest where they join the Kemps Creek watercourse. Kemps Creek is a prominent hydrological feature in the local landscape, and is likely to have provided a reliable source of fresh water. Hydrology of the region had been highly altered by historic and modern land use. Online dams, various drainage works and channelisation of sections of the waterways within the vicinity of the study area has altered the natural flow and flood regime of the local area.

Geology underlying the study area consists of Bringelly Shale (Figure 3). Bringelly Shale forms part of the Triassic Wianamatta Group of shales common to the Cumberland Plain. This geological formation is interpreted as a coastal alluvial plain sequence preserved from the deposition of sediments on a broad, low lying coastal plain which consisted of extensive swamplands intersected by estuarine and alluvial channels. The resulting geological formation is comprised of shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff (Clark and Jones 1991).

The residual Blacktown soil landscape is present across the entirety of the study area (Figure 3). The Blacktown soil landscape is typical on the gently undulating rises on shales of the Wianamatta Group. Blacktown soils consist of shallow to moderately deep hardsetting texture contrast soils. Red and brown podzolic soils occur on crests and grade to yellow podzolic soils on lower slopes and along drainage lines. Erosional susceptibility of this soil landscape is relatively low, but is increased where surface vegetation is not maintained. Blacktown soils have the ability to conserve archaeological deposits in situ but vertical stratigraphy may be lost.

Disturbance within the study area is varied, and results from historic land use practices and environmental processes. The study area and its surroundings have been mostly cleared of native vegetation. A study by the NSW National Parks and Wildlife Service (NPWS) in 2002 identified scattered Shale Gravel Transition Forest in the vicinity of Kemps Creek. The study area traverses areas of Shale Plains Woodland. Remnant native vegetation demonstrates that the area contained a diverse range of native flora which was likely to have provided past Aboriginal people with a range of raw materials and food sources.

Development within the study area is largely characterised by underground utilities and water related infrastructure. A sewer pumping station is located within the central portion of the study area. An overhead power easement crosses the northern portion of the study area. Several roads and vehicle access tracks cross the study area. Disturbance from natural processes is also a factor, with flooding events within the Kemps Creek catchment having an impact on the integrity of sediments bordering waterways.

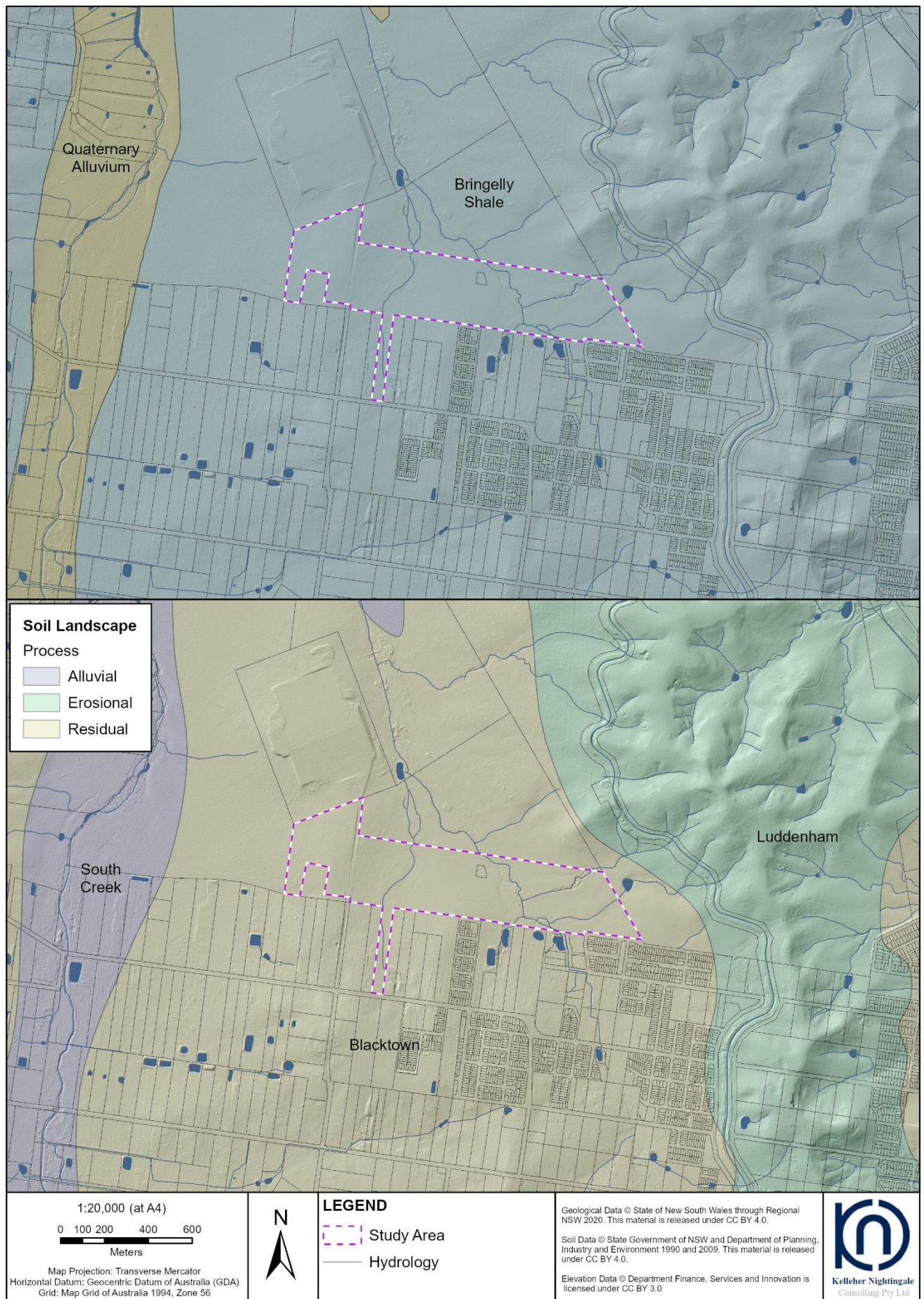


Figure 3. Geology and soil landscapes of the study area

3 Ethnohistoric context

Historical descriptions of the social organisation, culture and practices of Aboriginal people living in the Sydney region at the time of European invasion is fragmentary due to the generalised nature of early British accounts which provide vague and at times contradictory information. It should be noted that the early British accounts are observations of Aboriginal people living in the Sydney region during the late 18th and 19th centuries and should not be used to infer the cultural practices of Aboriginal people living in the preceding millennia which are highly unlikely to have been static.

Although the specific study area is not recorded directly in any ethnographical accounts, it lies in a landscape which was important to and intensively used by Aboriginal people in the past (cf. Attenbrow 2002). The arrival of the British caused major social and economic upheaval for the Aboriginal people living on the Cumberland Plain. Contact with Europeans introduced diseases, such as smallpox, that drastically altered the size and structure of the Aboriginal population, whilst the expansion of settlements and establishment of farmland subsumed the traditional areas used to meet subsistence needs (Attenbrow 2002).

After their arrival in Sydney Cove in 1788, the British set about exploring the surrounding area. In the first three years of settlement many areas of the region were explored including Broken Bay, Botany Bay, Rose Hill (Parramatta), Prospect Hill and overland to the Nepean, Hawkesbury and Georges Rivers. During these explorations some of the British Officers, including Governor Phillip and Captain Watkin Tench, made a number of written observations regarding the local Aboriginal people that they met and travelled with (Attenbrow 2002:13).

Early historical observations described the Cumberland Plain as a mosaic of Aboriginal groups associated with particular areas of land. These groups were described as 'tribes' in many historical observations, when in fact they were more likely small territorial clans or local clans consisting of extended family groups, forming larger land-using bands linked through marriage and communal participation in subsistence gathering activities (Attenbrow 2002:22, Brook and Kohen 1991:2). The British noted a difference between the dialects of the Aboriginal people along the coast compared with those further inland on the Cumberland Plain. Captain Tench observed when two Aboriginal men from the coast conversed with an Aboriginal man further inland "they conversed on a par and understood each other perfectly, yet they spoke different dialects of the same language; many of the most common and necessary words used in life bearing no similitude, and others being slightly different" (Tench 1793:122).

The Georges River/Appin/Camden area has been used as an arbitrary boundary between the Darug, Dharawal and Gundungurra language groups (Attenbrow 2002:34). The Darug language was divided between coastal and hinterland dialects and spread from Port Jackson west to the Cumberland Plain, the Gundungurra language was predominantly associated with the hinterland and spread from the southern Cumberland Plain across the southern Blue Mountains and the Dharawal language was largely associated with coastal groups and spread from Botany Bay south to the Shoalhaven River and west to the Georges River area (Attenbrow 2002:34). In the early 20th Century, anthropologist/linguist R H Matthews noted that 'The Dharuk speaking people adjoined the Thurawal 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), suggesting that Aboriginal people using the study area would primarily have been from Darug-speaking groups however it is likely that people from all three language groups were familiar with the area and travelled through it on their rounds of Country.

As well as differences in dialect, the British also observed differences in subsistence activities between different groups. Kohen (1986:77) explains that the Aboriginal people who lived in the hinterland of the Cumberland Plain were not as dependant on fish and shellfish as groups closer to the coast, instead relying on small animals and plant foods in addition to seasonally available freshwater mullet and eels. Berries, Banksia flowers and wild honey were also recorded as foods of the local inhabitants (Collins 1798). The major protein component of the diet on the Cumberland Plain was achieved through the hunting of small animals. Along the rivers and larger creeks, bandicoots and wallabies were caught in traps and snares, while birds were snared using decoys (Tench 1793). The open woodland of the Cumberland Plain would have played host to possums and gliders and these likely formed a major component of the diet. These were hunted in a number of ways, including smoking out the animal by lighting a fire in the base of a hollow tree, burning large tracts of land and gathering the stranded animals, as well as cutting toe-holds in trees and climbing up to reach them (Kohen 1993:10; Tench 1793:82).

European settlement in the region began with several land grants in the early nineteenth century. The increasing settlement of the area by the British colonists led to conflict during the drought of 1814 – 1816, by which time many traditional Aboriginal resource-gathering areas had been engulfed by farmland and pasture. A spate of retaliatory killings between Aboriginal groups and settlers across Sydney eventuated in the dispatch of a punitive expedition to capture or kill those Aboriginal people involved in the skirmishes (Brook and Kohen 1991:23). Many officials, including Governor Macquarie, often recognised that these conflicts were initiated by the settlers, but with the colony on a tentative footing, especially during periods of drought, he was more inclined to protect the interests of the farmers.

Not all interactions with settlers were hostile, however; friendly contact was maintained between the Dharawal and a number of land owners, most notably the Macarthurs, who documented corroborees taking place on their property and marked out a portion of land for Aboriginal people who wished to settle there under the family's protection (Liston 1988:24). Corroborees and other sizable gatherings were also documented at other large properties and holdings in the area.

No direct ethnographic recordings relate to the specific study area; however, it is clear that the variety of resources available in the Kemps Creek catchment areas would have made it attractive and it is known that past Aboriginal people and families occupied the area. The value of the study area and its surrounds to both the past and the present Aboriginal community is underscored by the ongoing cultural connection expressed by the contemporary Aboriginal community.

4 Archaeological context

4.1 Previous archaeological investigations

Several archaeological investigations have been conducted within and in the vicinity of the current study area. Previous archaeological investigations have been undertaken for a variety of precinct and infrastructure development projects within the South West Growth Area. A summary of relevant investigations is presented in this section.

Austral and Leppington North Precincts

A baseline Aboriginal archaeological assessment was undertaken during the precinct planning process for the Austral and Leppington North Precincts of the South West Priority Growth Area (SWPGA) and Western Sydney Priority Growth Area (WSPGA), formerly South West Growth Centre (AMBS 2012). The assessment included a desktop review of existing heritage assessments, a search of the AHIMS database and an archaeological survey. The desktop review determined that there were 34 previously identified sites within the assessment area comprising 13 artefact scatters, three artefact scatters with areas of potential archaeological deposit (PAD), 11 isolated artefacts and seven PADs. This assessment covered the entirety of the current study area.

The archaeological survey covered approximately 28% of the Austral and Leppington North Precincts assessment area and targeted areas deemed to have the highest archaeological sensitivity: major creeks, ridges and high points where disturbance levels were low and ground surface visibility was high. Survey coverage was limited by property access and surface visibility was generally low due to dense vegetation (AMBS 2012: 59). One previously recorded isolated artefact and six new isolated finds were identified during the survey. The assessment combined the results of the previous archaeological investigations, the archaeological survey results and an estimate of past land use disturbance to develop archaeological sensitivity mapping for the assessment area. Areas of archaeological sensitivity were determined by spatial proximity to creeks or ridges in conjunction with low level disturbance (AMBS 2012: 72-73).

The survey relocated one previously recorded artefact scatter with associated PAD: Artefact Scatter PAD 2014-46 (AHIMS 45-5-4013). The site is located within the current study area. The site was originally recorded by Archaeological and Heritage Management Solutions (AHMS) during investigations undertaken for water infrastructure within the (then) SWGC in 2010. The site comprised two surface silcrete flaked pieces recorded on an exposed track within a transmission line easement, with areas of PAD identified adjacent to the track and easement (AMBS 2012:65). Additional surface artefacts were recorded at site by AMBS in 2012 and included one silcrete proximal flake fragment, a silcrete flaked piece and a chert medial flake fragment. The artefacts were identified within proximity to the originally recorded artefacts and on the same creek flat landform. A duplicate recording of the site was recorded on the AHIMS database as '2014-46' (AHIMS 45-5-3969) which included further recording details for the additional artefacts.

Six newly recorded sites were identified as a result of survey conducted by AMBS, including two located within the extending into the current study area: ALN-IF-03 (AHIMS 45-5-3965) and ALN-IF-05 (AHIMS 45-5-3967). ALN-IF-03 consisted of an isolated silcrete proximal flake fragment identified on an unsealed vehicle access track approximately 130 metres upslope of a major tributary of Kemps Creek. The artefact was identified on a track following a transmission line. The site was assessed as having moderate research potential, despite some low levels of disturbance. [The current assessment considers ALN-IF-03 to form part of the wider extent of Artefact Scatter PAD 2014-46].

ALN-IF-05 (AHIMS 45-5-3967) comprised an isolated silcrete medial flake fragment identified within proximity to a recently constructed dam at the rear of the property located at 5 Gurner Avenue, Austral. The artefact findspot was found to be highly disturbed, however the location of the site and its landform was considered to have been likely utilised by Aboriginal people in the past due to the proximity of several creeks.

Austral Precinct Wastewater Infrastructure

Archaeological assessment was undertaken in relation to wastewater infrastructure to service the initial stages of development for the Austral Precinct and included a portion of the current study area in the vicinity of Kemps Creek tributary KC14 (KNC 2015). Initial assessment found the majority of the proposal area to be disturbed, being located along existing road corridors affected by construction, drainage works and installation of services. It was determined that the proposal would partially impact Aboriginal sites Artefact Scatter PAD 2015-46 (AHIMS 45-5-4014) and ALN-IF-05 (AHIMS 45-5-3967) located along the flood margins of KC14.

AHIP # C0001054 was subsequently issued to Sydney Water in May 2015 for the proposal and included a requirement to salvage the impacted portions of sites Artefact Scatter PAD 2015-46 and ALN-IF-05. A portion of the current study area falls within the AHIP C0001054 area. Any works undertaken for the current project will be required to comply with the existing AHIP conditions.

Mitigative archaeological salvage excavations were undertaken at the impacted portions of Artefact Scatter PAD 2015-46 and ALN-IF-05 in accordance with AHIP # C0001054 in 2015. The majority of squares excavated during the salvage program contained a low or moderate density of artefacts. Squares containing a high density of artefacts (greater than 100 artefacts per square) were rare, with only site ALN-IF-05 recording this density. ALN-IF-05 also yielded the highest overall artefact total. The artefacts included numerous cores, blade flakes and backed blades. Silcrete was the dominant raw material recovered at both sites. The differences in assemblage size and characteristics between the two sites was interpreted as representing two contrasting site 'uses': ALN-IF-05 represented a classic 'base camp' type site which was repeatedly occupied with a wide range of everyday domestic activities taking place, while Artefact Scatter PAD 2015-46 on the spur crest indicated more sporadic or transitory landscape use (KNC 2016).

Results from the salvage program illustrated the relationship between artefact density and flood extent. Archaeological flood modelling data indicated a relationship exists between the flood extent area and artefact density associated with creek systems. Within the flood extent area, frequent isolated finds and low artefact densities were common due to erosion and deposition caused by flooding events which had redeposited artefacts in the area. Concentrations of archaeological information occurred on the flood margins, areas that spanned the interface between the flood extent area and surrounding landform. It was determined that higher artefact densities would be expected in these areas however the best preservation of archaeological information – in contrast to the mere presence of artefacts – tended to be on the topographic flood margins where water energy would not impact preservation.

Second Release Precincts Wastewater Infrastructure

A series of studies have been undertaken within the vicinity of the current study area for ongoing wastewater infrastructure in the Second Release Precincts of the SWGC. An Aboriginal archaeological assessment was undertaken by KNC (2013; 2014) for the South West Growth Centre Second Release Precincts Wastewater Infrastructure – Package 1. The assessment included a desktop review and visual inspection of a 100 metre corridor spanning the suburbs of Austral, Denham Court, Edmondson Park, Horningsea Park and Leppington.

A total of 33 Aboriginal archaeological sites/Aboriginal Heritage Management Areas were identified within the assessment area, consisting of 11 management areas (comprising artefact scatters and isolated artefacts), six artefact scatters, seven isolated artefacts, six areas of PAD, one artefact scatter with an associated area of PAD, one isolated artefact with an associated area of PAD and one culturally modified tree with an associated isolated artefact. Aboriginal archaeological sites within the assessment area were predominantly situated on relatively elevated positions in the vicinity of the creek systems. The majority of sites were located within the residual Blacktown soil landscapes that were subject to minimal erosion and low energy fluvial events.

An AHIP was sought for five impacted Aboriginal sites with recommendations for salvage at four sites (ELWW1, ELWW2, ELWW3 and SWRL Site 12) and surface collection at one site (EL MA K1/GML12-EL-AS5). The remainder of the 11 sites identified within the assessment were covered under an existing AHIP (AHIP 1132181) for the East Leppington Precinct. AHIP C0000533 was granted to Sydney Water in August 2014 for impact to the five identified sites and for other Aboriginal objects within the construction corridor.

An Aboriginal archaeological assessment (KNC 2017) was undertaken for the South West Priority Growth Area - Leppington and Leppington North Wastewater Servicing Project in the suburbs of Austral and Leppington. The assessment included a desktop review of existing heritage assessments, a search of the AHIMS database and an archaeological survey of the assessment area. The assessment identified four artefact scatters that were located on elevated locations in the vicinity of Scalabrini Creek. Artefacts identified consisted of silcrete flakes, retouched flakes and broken flakes. The sites represented a mix of low and moderate archaeological significance. AHIP C0003469 was granted in March 2018 for the proposal and included salvage excavation at Ingleburn Road AFT 1 (AHIMS 45-5-4918), PAD 2056-6 (AHIMS 45-5-4051) and Rickard Road AFT 1 (AHIMS 45-5-4919) and for impact to other Aboriginal objects within the construction corridor.

SWGA Eastern Front and Liverpool Area – Phase 1, Package 2

Recent Aboriginal archaeological assessment was undertaken for wastewater infrastructure in Austral, NSW (KNC 2021). The project included background research and archaeological survey of several lots located adjacent to Kemps Creek and its tributaries. The northern portion of the assessment area overlaps the current study area.

Three Aboriginal archaeological sites were identified within the assessment area including previously recorded site ALN-IF-01 (AHIMS 45-5-3963) and two newly recorded sites, Fourth Avenue North PAD 1 (AHIMS 45-5-5547) and Edmondson Avenue West AFT 1 (AHIMS 45-5-5546). The sites identified comprised two surface artefact scatter sites (ALN-IF-01 and Edmondson Avenue West AFT 1) and one PAD area (Fourth Avenue North PAD 1). Artefacts identified at the sites consisted of silcrete flakes and an indurated tuff/mudstone core. All three sites were identified within close proximity to Kemps Creek or its tributaries. Sites displaying low levels of disturbance from flood effects or manmade disturbance were identified as having further archaeological potential.

The assessment determined that all three sites would be impacted and an AHIP required prior to any proposed works. Archaeological salvage mitigation was recommended for sites of moderate archaeological significance: Fourth Avenue North PAD 1 and Edmondson Avenue West AFT 1. No archaeological mitigation was recommended for low significance site ALN-IF-01. Site Fourth Avenue North PAD 1 (AHIMS 45-5-5547) is located within the current study area.

AHIP # 4938 was subsequently issued to Sydney Water in June 2022 for the proposal and included a requirement to salvage the impacted portions of sites Fourth Avenue North PAD 1 and Edmondson Avenue West AFT 1. A portion of the current study area falls within the AHIP 4938 area. Any works undertaken for the current project will be required to comply with the existing AHIP conditions.

Gurner Avenue, Austral Residential Subdivision and Development

An Aboriginal heritage due diligence and preliminary historical heritage report was prepared by Urbis in 2019 for the current project and included the majority of the current study area. The Aboriginal heritage portion of the assessment included background research, an AHIMS search and a site visit (Urbis Pty Ltd 2019).

The assessment identified five Aboriginal archaeological sites within the assessment area, with one previously registered site located within close proximity to the assessment area. Sites located within the assessment area included three previously registered AHIMS sites: Artefact Scatter PAD 2014-46 (AHIMS 45-5-4013), ALN-IF-03 (AHIMS 45-5-3965) and GLC2 (AHIMS 45-5-2560). These sites comprised an artefact scatter with associated PAD, an isolated find and a low density artefact scatter. Artefacts identified across the sites consisted of silcrete flaked pieces, complete flakes, one retouched artefact and one backed blade artefact. All artefacts were of silcrete raw material.

The site visit included a pedestrian walkover of the assessment area. The site visit found that the majority of the assessment area displayed some archaeological sensitivity based on landform assessment, the presence of existing Aboriginal heritage and low levels of visible disturbance. Ground surface visibility was generally low across the inspected area. However, two newly recorded isolated surface finds, Gurner Av IF-01 (AHIMS 45-5-5272) and Gurner Av IF-02 (AHIMS 45-5-5271) were identified along an access track located along the central northern boundary of the assessment area. The artefacts identified consisted of a silcrete distal flake fragment and a silcrete split flake. It was determined that further Aboriginal archaeological assessment would be required prior to any residential subdivision and development works.

5 Residential Subdivision Gurner Avenue, Austral NSW– Aboriginal Archaeological Assessment

Aboriginal archaeological assessment of the study area was undertaken during the preliminary design stage for the proposed development at Gurner Avenue, Austral NSW. This assessment comprised an archaeological test excavation program in addition to a desktop review of previous archaeological investigations and environmental context of the study area.

The archaeological test program was undertaken in May 2022. The test excavation program was undertaken at two locations (Test Area 1 and Test Area 2). Test areas were chosen to collect information about the nature and extent of subsurface archaeological deposit, based on a sample derived from subsurface investigations and to build on information already obtained from previous archaeological assessment. The test excavation methodology was designed to comply with the *Code of Practice* and was undertaken in consultation with Aboriginal stakeholder representatives.

Results from the testing program confirmed the presence of additional artefacts and subsurface archaeological deposit at the two tested areas. A total of 35 50cm x 50cm test squares totalling 8.75m² was excavated during the test program, recovering a total of nine artefacts. The excavation resulted in the identification of subsurface archaeological deposit associated with two previously registered sites:

- Test Area 1 comprising: Fourth Avenue North PAD 1 (AHIMS 45-5-5547)
- Test Area 2 comprising: GLC2 (AHIMS 45-5-2560)

The nature and extent of the identified archaeological deposits did not vary significant between the two tested areas. The test excavation program confirmed low artefact densities on both elevated landforms and low lying flats adjacent to KC14 and its tributaries. Soil profiles across the tested areas were fairly consistent and generally conformed to the typical Blacktown soil landscape. Soils had been impacted by fluvial activity. Homogenous silty loams contained moderate to high percentages of rounded ironstone gravels indicating poorly drained soils. In particular, extensively waterlogged and saturated conditions illustrating flood events were encountered on low lying creek flats adjacent to KC14 at Test Area 2. One area containing imported fill material was encountered at Test Area 2 (TS 17), indicating moderate land use disturbance in this area.

Test excavation at Test Area 1 confirmed the presence of low density subsurface archaeological deposit on the elevated flat adjacent to KC14, at its junction with a small tributary flowing from the south (Figure 4). A total of three artefacts were recovered from one of 12 excavated test squares. The artefacts were recovered from TS 2 and included quartz and silcrete medial flake fragments and one indurated mudstone/tuff split flake. The subsurface artefacts were considered to form part of previously registered site, Fourth Avenue North PAD 1. Testing at the southwestern extent did not identify any archaeological deposit. The site boundary for Fourth Avenue North PAD 1 was subsequently refined to more accurately reflect the extent of the confirmed archaeological deposit.

Test Area 2 comprised the alluvial flats located adjacent to KC14 and two associated tributaries (Figure 5). A total of 23 test squares were excavated across low lying flat and elevated flat landforms. A total of six artefacts were recovered from three test squares (TS 15, n=3, TS 16, n=1 and TS 18, n=2). The artefacts retrieved from the tested area included one indurated mudstone/tuff core, one silcrete distal flake fragment, one indurated mudstone/tuff complete flake, one silcrete complete flake, one indurated mudstone/tuff split flake and one petrified wood angular fragment. The subsurface archaeological deposit from Test Area 2 was considered to form part of previously registered site, GLC2.

The test excavation program identified two subsurface archaeological deposits with low densities across the tested area. The presence of subsurface Aboriginal objects across the test locations provided physical evidence that the study area was utilised by Aboriginal people in the past. At Fourth Avenue North PAD 1 and GLC2, artefact densities were very low and artefacts identified were considered to represent dispersed cultural material and to form part of a general 'background scatter' of artefacts across the landscape. Sites were found to have been heavily impacted by repeated flood events which have affected the integrity of the deposit. No areas of higher density deposit or more focused activity were identified during testing.

Archaeological significance assessment for the identified sites was undertaken based on representativeness, rarity, archaeological research potential and intactness/integrity. Sites Artefact Scatter PAD 2015-46, ALN-IF-05 and Artefact Scatter PAD 2014-46 (includes 2014-46 and ALN-IF-03) displayed moderate archaeological significance based on their scientific value and potential to inform on Aboriginal landscape use of the Kemps Creek catchment. Four Aboriginal archaeological sites were assessed as displaying low archaeological value and significance: Fourth Avenue North PAD 1, Gurner Av IF-01, Gurner Av IF-02 and GLC2. Impact assessment concluded that all identified sites would be at least partially impacted by the proposed development. It was recommended that the proponent seek an AHIP for impacts to Aboriginal objects. It was determined that no further archaeological mitigation would be required for low significance sites. Archaeological salvage excavation was recommended for sites of moderate archaeological significance.

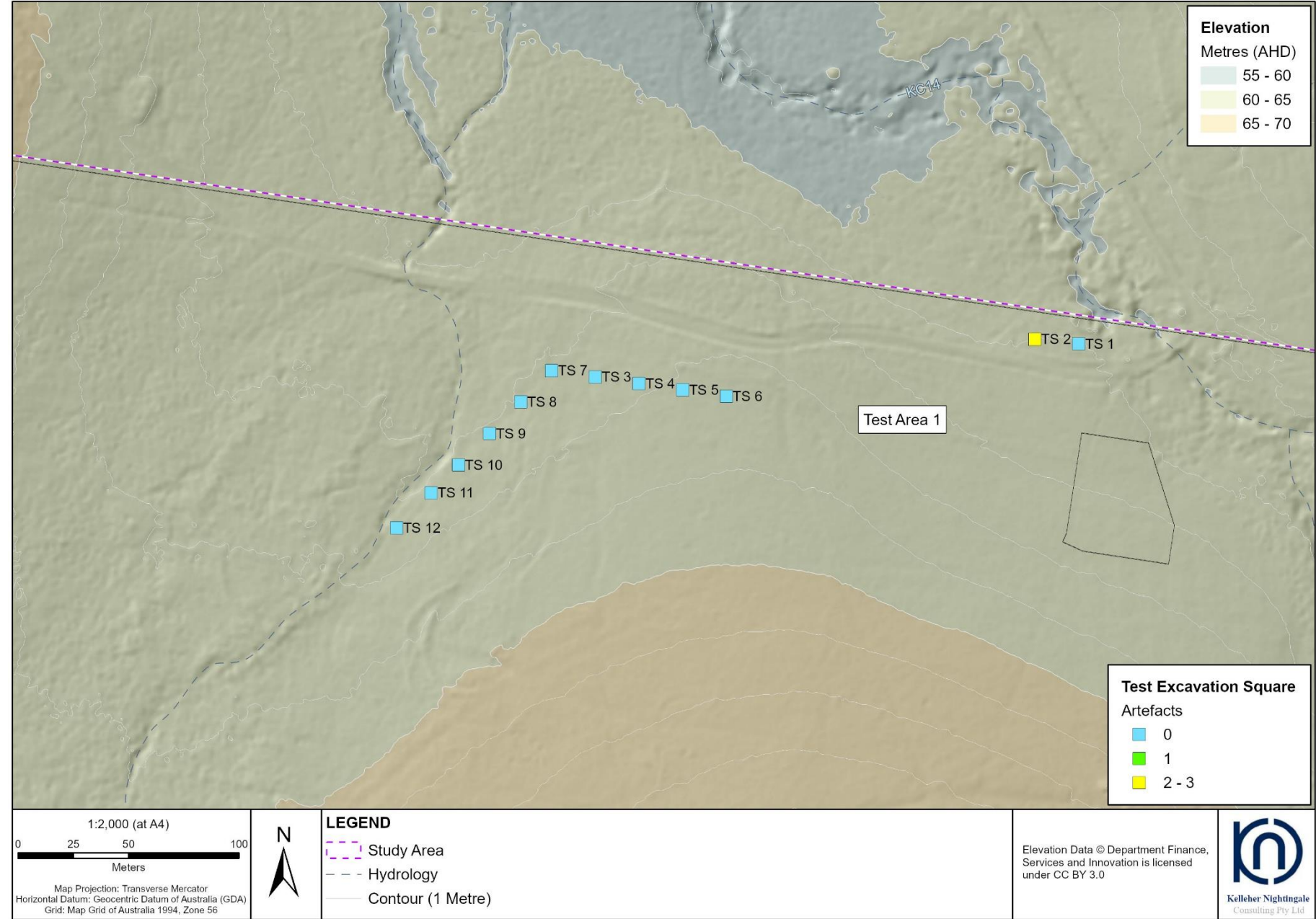


Figure 4. Aboriginal archaeological test excavation results at Test Area 1 (KNC 2022)

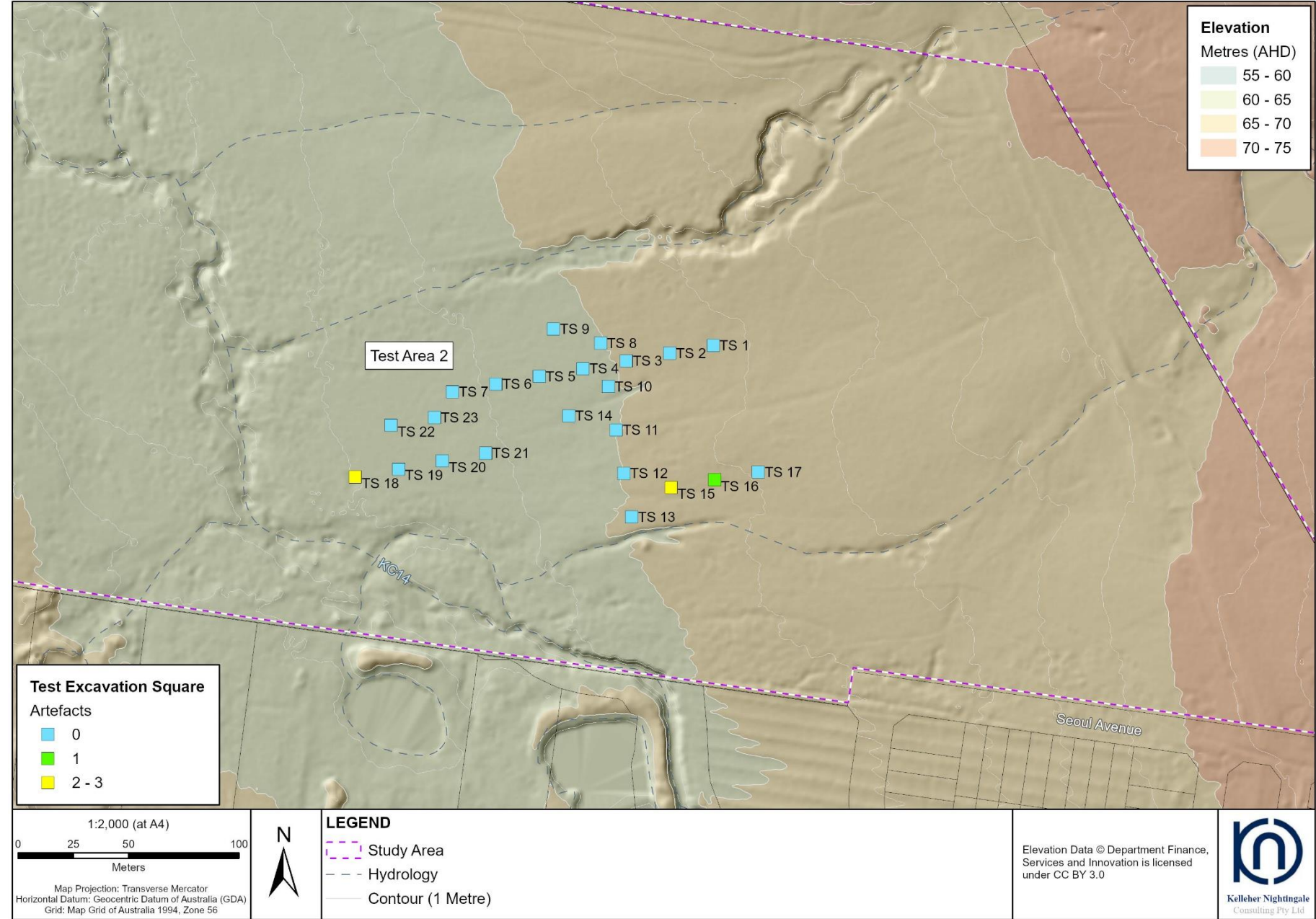


Figure 5. Aboriginal archaeological test excavation results at Test Area 2 (KNC 2022)

6 Consultation Process

6.1 Stakeholder identification and consultation

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

- Notification of Aboriginal persons, including register of native title determinations search and government agency notification letters;
- advertising for registered stakeholders in local print media (Appendix A);
- notification of closing date for registration (1/12/2021);
- record of registration of interest (Heritage NSW and GLALC notified 16/12/2021);
- provision of project information and proposed cultural heritage assessment and test excavation methodologies (28 day review period ending on 10/01/2022);
- invitation to advise on Aboriginal cultural value of the study area;
- provision of draft CHAR for review (a 28 day review was provided); and
- ongoing consultation with the local Aboriginal community.

6.2 Registration of interest

Aboriginal people who hold knowledge relevant to determining the cultural heritage significance of Aboriginal objects and Aboriginal places in the study area were invited to register an interest in a process of community consultation. Investigations for the current project have included consultation with Aboriginal community individuals and groups as listed in Table 1.

Table 1. Registered Aboriginal Stakeholders

Group / Individual	Representative / Contact
Gandangara Local Aboriginal Land Council	CEO
A1 Indigenous Services	Carolyn Hickey
Aragung Aboriginal Cultural Heritage Site Assessments	Jamie Eastwood
B.H. Heritage Consultants	Ralph Hampton
Butucarbin Aboriginal Corporation	Jennifer Beale
Cubbitch Barta	Glenda Chalker
Darug Custodian Aboriginal Corporation	Justine Coplin
Didge Ngunawal Clan	Lilly Carroll
Gilay Consultants	Carolyn Slater
Ginninderra Aboriginal Corporation	Krystle Carroll-Elliott
Goobah Developments	Basil Smith
Gunjeewong Cultural Heritage Aboriginal Corporation	Shayne Dickson
Guntawang Aboriginal Resources Inc	Wendy Morgan
Kamilaroi Yankuntjatjara Working Group	Phil Khan
Merrigarn	Shaun Carroll
Murra Bidgee Mullangari Aboriginal Corporation	Ryan Johnson
Ngunawal Heritage Aboriginal Corporation	Dean Delponte
Registered Aboriginal Stakeholder	Details withheld
Registered Aboriginal Stakeholder	Details withheld
Waawaar Awaa Aboriginal Corporation	Rodney Gunther
Warragil Cultural Services	Aaron Slater
Yurrandaali	Bo Field

*Two Aboriginal stakeholders have registered for the project but have chosen to withhold their details in accordance with item 4.1.5 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

6.3 Consultation regarding the land and proposed activity

Following on from Stage 1 of the consultation process (stakeholder identification and registration), project-specific consultation was undertaken. Information regarding the proposed development was provided to registered Aboriginal stakeholder groups in a letter dated 17 November 2021. Information included an outline of the proposal, location of the study area and an invitation to consult during the assessment.

Stakeholders were also provided with the proposed assessment methodologies for the Cultural Heritage Assessment Report and proposed archaeological test excavation, and invited to review and provide feedback in a letter dated 3 December 2021. Stakeholders were provided with an overview of the proposed assessment process for the CHAR and the rationale, sampling strategy and field methodology for the test excavation. An invitation was extended for Aboriginal cultural knowledge holders and stakeholders to provide comments on the proposed cultural heritage assessment methodology, including any protocols regarding the gathering of information and any matters such as issues/areas of cultural significance that might affect, inform or refine the assessment methodology.

6.4 Stakeholder responses to the proposed assessment methodology for the Cultural Heritage Assessment Report and test excavation methodology

Formal responses to the proposed assessment methodologies were received from six stakeholder groups, including A1 Indigenous Services, Darug Custodian Aboriginal Corporation (DCAC), Gunjeewong Cultural Heritage Aboriginal Corporation (GCHAC), Kamilaroi Yunkuntjatjara Working Group (KYWG), Murra Bidgee Mullangari Aboriginal Corporation (MBMAC) and Ngunawal Heritage Aboriginal Corporation (NHAC).

A1 Indigenous Services stated that they had reviewed and supported the project information and proposed assessment methodologies (email dated 13/12/2021).

DCAC supported the recommendations set out in the proposed assessment methodologies (email/letter dated 21/12/2021).

GCHAC expressed support of the proposed assessment methodologies (email dated 5/12/2021).

KYWG agreed with the proposed assessment methodologies. They added that they believed the whole study area was highly significant to their people and should be tested and salvaged. KYWG also expressed interest in the preparation of a cultural interpretation management plan which could potentially include interpretation through art, digital displays, signage, native landscaping and edible gardens (email dated 21/12/2021).

KYWG also recommended that a keeping place should be sort for any artefacts found, to ensure they are kept on country rather than in and office on a shelf (email dated 21/12/2021). It is KNC's position that the long term management of recovered Aboriginal objects will comply with Requirement 26 "Stone artefact deposition and storage" in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*. Any recovered objects would be lodged with the Australian Museum in the first instance. If required, a variation may be sought for the AHIP to allow for reburial or for objects to be reburied on country or held by the Aboriginal community.

MBMAC stated that they had read the project information and methodologies for the project. They stated that they endorsed the recommendations made by KNC (email dated 20/12/2021).

NHAC agreed with the proposed assessment methodologies, in particular to measures to be taken to avoid harm to Aboriginal heritage items (email dated 23/12/2021). NHAC requested further information on the extent of existing disturbance to this proposed project site and if there were any previous recordings of Aboriginal sites within and around the site. [This information was provided to the stakeholder during the draft CHAR review period].

6.5 Stakeholder responses to draft CHAR

The draft CHAR was provided to stakeholders for a 28 day review and comment period (letters dated 9/06/2022). Stakeholders were invited to comment on the Aboriginal cultural significance of the study area and the identified sites along with the management recommendations presented in the report. Formal responses were received from B.H. Heritage Consultants (BHHC), DCAC, Guntawang Aboriginal Resources Inc (GARI), Gilay Consultants, KYWG and MBMAC. The draft CHAR responses are attached as Appendix B.

BHHC expressed support of the draft CHAR(email dated 10/06/2022).

DCAC stated that they had read and reviewed the draft CHAR and supported the recommendations set out in the report (email/letter dated 7/07/2022).

GARI supported the recommendations set out in the draft CHAR and the proposed AHIP application based on the low levels of artefacts recovered from the test excavation program (email/letter dated 21/12/2021).

Gilay Consultants stated that they had received and reviewed the draft CHAR. They indicated that they supported the report (email dated 16/06/2022).

KYWG reiterated the significance of the study area. They stated that they strongly agreed with the recommendations of the report. They reiterated their preference for a cultural heritage interpretation plan to emphasise the importance of connection to Country after physical Aboriginal sites are 'lost, destroyed or unearthed' (email dated 4/07/2022).

MBMAC stated that they had read the draft CHAR report for the project. They stated that they endorsed the recommendations made (email dated 14/06/2022).

6.6 Aboriginal cultural values

It has been identified during the consultation process that the 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
- family and ancestral connection with the area
- 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
- creeklines and other watercourses; such as Kemps Creek and its tributaries
- indigenous plants and animals

Additional cultural values for the Austral area have been provided by stakeholders throughout the registration of interest period and consultation process.

A1 Indigenous Services expressed that they had a cultural knowledge and connection the area (email dated 13/12/2021).

DCAC stated that the study area was significant to the Darug people due to the connection of sites in the landscape and continued Aboriginal occupation of the area. DCAC placed strong importance on the care of Darug sites, places, wildlife and the promotion of cultural education on Darug history. They added that they were familiar with the area, having worked there for the past 40+ years (email/letters dated 21/12/2021 and 7/07/2022)).

Gilay Consultants expressed that they had a cultural knowledge and connection the area (email dated 18/11/2021).

GARI indicated that they held cultural knowledge of the project area (email dated 19/11/2021).

KYWG stated that the whole of the project area is of significance (email dated 6/09/2021). KYWG elaborated that Aboriginal people would have and still do utilise water ways, with many daily activities taking place. They added that flora and fauna would have once thrived in the project area, providing rich resources for Aboriginal people.

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 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 general Austral area has demonstrated importance and value to the contemporary Aboriginal community. Many registered stakeholders expressed that they held cultural knowledge of the area. Stakeholders expressed that they had a responsibility to look after the land, including the heritage sites, plants and animals, creeks and the land itself. The importance of the interconnectivity of sites through the landscape and across varying landforms has also been highlighted.

The study area and the surrounding region 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 utilised 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. Raw materials suitable for stone tool-making would also have been readily available along the creek systems, having been transported in gravel and cobble form across the branching drainage network of the Cumberland Plain.

The archaeological evidence of Aboriginal landscape use in the region generally comprises stone artefacts. Multiple Aboriginal archaeological assessments undertaken in the locality have demonstrated that archaeological sites in the region occur in a variety of landscape contexts, including disturbed areas, indicating that archaeological materials remain distributed across the landscape. The primary factors affecting the preservation of archaeological deposit in the study area consist of erosion, fluvial activity and modern land use disturbance. Previous archaeological investigations within the study area have indicated that more archaeologically valuable information exists at the margins of the flood zone where elevated and stable micro-topographic landforms have suffered minimal disturbance. Excavations along a tributary (KC-14) of Kemps Creek at Austral have demonstrated that patterned activity areas can be discerned where deposits are intact bordering the flood zone (KNC 2016). Test excavation undertaken for the current project demonstrated that artefact densities were very low across the excavated low lying and elevated flat landforms. The preservation of the archaeological deposit in the study area was found to have been impacted by primarily impacted by fluvial activity. No areas of higher density deposit or more focused activity were identified.

Development for infrastructure projects has resulted in the issuance of a number of AHIPs for lands surrounding the study area. The proposed works overlaps areas that have been previously assessed for Aboriginal cultural heritage values and are covered under existing AHIPs (C0001054 and 4938). As Sydney Water are the AHIP holder for existing AHIPs C0001054 and 4938, any works related to the current proposal undertaken within the existing AHIP area will be required to comply with the AHIP conditions.

7.1 Aboriginal sites within the study area

Review of background information and archaeological assessment has resulted in the identification of seven Aboriginal archaeological sites (comprising nine AHIMS registrations) within the study area (Table 2 and Figure 6).

Table 2. Identified Aboriginal archaeological sites within the study area

Site Name	AHIMS ID	Site Features
Fourth Avenue North PAD 1	45-5-5547	Artefact
Gurner Av IF-01	45-5-5272	Artefact
Gurner Av IF-02	45-5-5271	Artefact
Artefact Scatter PAD 2015-46	45-5-4014	Artefact
ALN-IF-05	45-5-3967	Artefact
Artefact Scatter PAD 2014-46 (includes 2014-46 and ALN-IF-03)	45-5-4013 (includes 45-5-3989 and 45-5-3965)	Artefact
GLC2	45-5-2560	Artefact

Site name: Fourth Avenue North PAD 1
AHIMS ID: 45-5-5547

Fourth Avenue North PAD 1 was an area of potential archaeological deposit situated on an elevated flat landform overlooking the junction of KC 14 and an unnamed tributary. The PAD area was identified during assessment undertaken by KNC in 2021 for a Sydney Water wastewater related infrastructure project. The PAD was recorded within Lot 184 DP1237400 and Lot 10 DP771080 approximately 200 metres east of Fourth Avenue and 700 metres north east of the intersection of Fourth Avenue and Gurner Avenue. The PAD was clearly defined by low lying ground to the north, south and west and modern disturbance and steeper landform to the east. The PAD area was assessed as having moderate archaeological potential.

Test excavation undertaken for the current project by KNC in May 2022 confirmed the presence of a low density subsurface archaeological deposit on the elevated flat of KC14 and its junction with a small tributary flowing from the south. A total of three artefacts were recovered from one of 12 excavated test squares. The artefacts were recovered from TS 2 and included quartz, silcrete medial flake fragments and one indurated mudstone/tuff split flake. Artefacts were considered to represent dispersed cultural material and to form part of a general 'background scatter' of artefacts across the landscape.

Site name: Gurner Av IF-01
AHIMS site ID: 45-5-5272

Gurner Av IF-01 comprised an isolated artefact identified on an unsealed access track located in the northern portion of Lot 184 DP1237400. The access track was located below an east-west powerline easement. The artefact identified consisted of a yellow silcrete distal flake fragment. The site was recorded during a visual inspection undertaken by Urbis in September 2019 for proposed residential subdivision and development works at Gurner Avenue, Austral NSW.

Site name: Gurner Av IF-02
AHIMS site ID: 45-5-5271

Gurner Av IF-02 consisted of an isolated artefact identified on an unsealed access track located in the northern portion of Lot 184 DP1237400. The access track was located below an east-west powerline easement. The artefact identified consisted of a yellow/pink silcrete split flake. The site was recorded during a visual inspection undertaken by Urbis in September 2019 for proposed residential subdivision and development works at Gurner Avenue, Austral NSW.

Site name: Artefact Scatter PAD 2015-46
AHIMS site ID: 45-5-4014

Site Artefact Scatter PAD 2015-46 was an artefact scatter situated on an elevated flat landform overlooking the junction of KC 14 and an unnamed tributary. The site was primarily located within Lots 1 and 2 DP519215 and Lot 184 DP1237400. The site was approximately 240 metres north of Gurner Avenue and 350 metres northwest of the intersection of Gurner Avenue and Edmondson Avenue. The surface artefacts consisted of four silcrete flakes.

A mitigative salvage excavation of the two portions of the site within the impact footprint of a then proposed wastewater pipeline easements was undertaken in accordance with AHIP C0001054 in June and July 2015. A total of 50, 1 x 1 metre squares were excavated within the impacted portion of the site and included an open area of 29m² which was excavated around a Phase 1 square where the highest number of artefacts had been recovered. The salvage excavation found that historical land use had impacted the remnant archaeological material at this site with the repeated ploughing of the crest and slopes having caused the horizontal dispersal of artefacts that would originally have taken the form of several low to moderate intensity knapping events.

A total of 397 artefacts were recovered from the salvage excavations of the impacted portion of Artefact Scatter PAD 2015-46. The majority of lithics were of silcrete (92%) followed by chert/silicified tuff (6%) and quartz (2%). A single artefact of quartzite was also recovered. Silcrete artefacts were less dominant across the dispersed Phase 1 squares, outside the boundaries of the open excavation area, where they made up just 55-67% of the assemblage. The predominant reduction type at Artefact Scatter PAD 2015-46 was whole flakes (46%), followed by angular fragments (31%) and flake fragments (16%). Artefact Scatter PAD 2015-46 yielded 17 cores and six core fragments, mostly from the higher density zone within the open area. Cores showing a unidirectional flaking pattern (n=11) dominated the core assemblage, followed by bipolar flaking (n=4).

The archaeological record of Artefact Scatter PAD 2015-46 described a satellite site where people spent time while utilising the resources available on the spur. The number and predominance of silcrete artefacts recovered from the excavation of the open area indicated that the assemblage represented several low intensity knapping events, with many artefacts showing evidence of having been heated. Two nodules of grass tree resin were also recovered from the open area, indicating that tools were being hafted on-site.

Assessment undertaken for the current project confirmed that the remaining portions of the site (outside of AHIP C0001054) displayed moderate archaeological potential due to low visible disturbance and the results of past archaeological investigations.

Site name: ALN-IF-05
AHIMS site ID: 45-5-3967

ALN-IF-05 was an artefact scatter situated on an elevated flat landform overlooking the junction of KC 14 and an unnamed tributary. The site was located within Lot 184 DP1237400, Lot B DP416820 and Lot 1 DP3403 approximately 130 metres northwest of Eighteenth Avenue and 360 metres northeast of the intersection of Edmondson Avenue and Gurner Avenue. The site was initially recorded as an isolated silcrete medial flake which was identified adjacent to a dam.

A mitigative salvage excavation of a portion of the site within the impact footprint of a then proposed wastewater pipeline easement was undertaken in accordance with AHIP C0001054 in June and July 2015. A total of 34, 1 x 1 metre squares were excavated within the impacted portion of the site and included an open area of 29m² which was excavated around a Phase 1 square where the highest number of artefacts had been recovered.

A total of 939 artefacts were recovered from the salvage excavation of the impacted portion of ALN-IF-05. The majority of lithics were of silcrete (80%) followed by much lower quantities of quartz (10%) and silicified tuff/chert (8%). Nearly all of the excavation squares (94%) contained a mix of different raw materials and some squares yielded artefacts of 'rarer' materials, including; basalt, chalcedony, fine grain siliceous, fine grain volcanic, hornfels, quartzite, sandstone and volcanic sandstone. The predominant reduction type at ALN-IF-05 was whole flakes (63%), followed by angular fragments (21%) and flake fragments (11%). ALN-IF-05 yielded 43 cores and 3 core fragments, mostly from the high density zone near the middle of the open area. The majority (83%) of cores were made of silcrete with a small number showing evidence of having been heat affected. The non-silcrete cores consisted of two silicified tuff unidirectional cores and six quartz bipolar cores.

Overall, the assemblage suggested a focused occupation site where a full range of activities (as exemplified by the range of lithics) were undertaken. The result was indicative of camps on the periphery of resource-rich environments. The site appeared to be relatively intact, with a fair percentage of small (<9 millimetre) flakes (or debitage) which suggested that low intensity flooding had not caused an impact to the site. The number of artefacts in the excavation squares diminished with distance from the creek, indicating the perceived value of the riparian zone to the inhabitants of the site.

Assessment undertaken for the current project confirmed that the remaining portions of the site (outside of the AHIP area) displayed moderate archaeological potential due to low visible disturbance and past archaeological excavation.

Site name: Artefact Scatter PAD 2014-46 (includes 2014-46 and ALN-IF-03)
AHIMS site ID: 45-5-4013 (includes 45-5-3989 and 45-5-3965)

Site Artefact Scatter PAD 2014-46 consisted of a surface artefact scatter and associated area of PAD situated on a flat landform overlooking the junction of KC 14 and an unnamed tributary. The site was located within Lot 10 DP771080 and Lot 184 DP1237400 approximately 280 metres north east of the intersection of Lapwing Street and Crown Street. Artefact Scatter PAD 2014-46 was originally recorded by AHMS during investigations undertaken for water infrastructure within the (then) SWGC in 2010. The site consisted of two silcrete flaked pieces on an exposed track within a transmission line easement, with areas of PAD identified adjacent to the track and easement.

Additional surface artefacts were recorded at the site by AMBS and included one silcrete proximal flake fragment, a silcrete flaked piece and a chert medial flake fragment. The artefacts were identified within proximity to the previously recorded artefacts and were present on the same creek flat landform. A duplicate recording of the site was recorded on the AHIMS database as '2014-46' (AHIMS 45-5-3969) which included further recording details for the additional artefacts.

ALN-IF-03 (AHIMS 45-5-3965) consisted of an isolated silcrete proximal flake fragment identified by AMBS on the same unsealed vehicle access track and landform. The site was assessed as having moderate research potential, despite some low levels of disturbance. The separate AHIMS registrations for 2014-46 and ALN-IF-03 have been included in the wider site extent for Artefact Scatter PAD 2014-46 as part of the current assessment, as these are considered to form part of the same overall deposit.

Site name: GLC2
AHIMS site ID: 45-5-2560

GLC2 comprised a low density surface artefact scatter recorded along a shallow drainage line located in cleared grazing lands approximately 500 metres to the north of Eighteenth Avenue, Austral NSW. The site was recorded by Annie Nicholson in 1999 during survey for the proposed Eastern Gas Pipeline Route. The artefact scatter consisted of one red silcrete backed blade, two red silcrete complete flakes and one red silcrete retouched flake. The site card states that the site appeared to have been impacted by the existing gas pipeline easement, however it was determined the site was not expected to be impacted by the proposed new gas pipeline route.

Archaeological test excavation was undertaken for the current project by KNC in May 2022. Testing was undertaken on flat landforms located adjacent to KC14 and two tributaries associated with site GLC2. A total of 23 test squares were excavated across the low lying flat and elevated flat. A total of six artefacts were recovered from three test squares (TS 15, n=3, TS 16, n=1 and TS 18, n=2). The artefacts retrieved from testing included one indurated mudstone/tuff core, one silcrete distal flake fragment, one indurated mudstone/tuff complete flake, one silcrete complete flake, one indurated mudstone/tuff split flake and one petrified wood angular fragment. Artefacts were considered to represent dispersed cultural material and to form part of a general 'background scatter' of artefacts across the landscape. The subsurface archaeological deposit from the tested area was considered to form part of the wider site extent of GLC2.

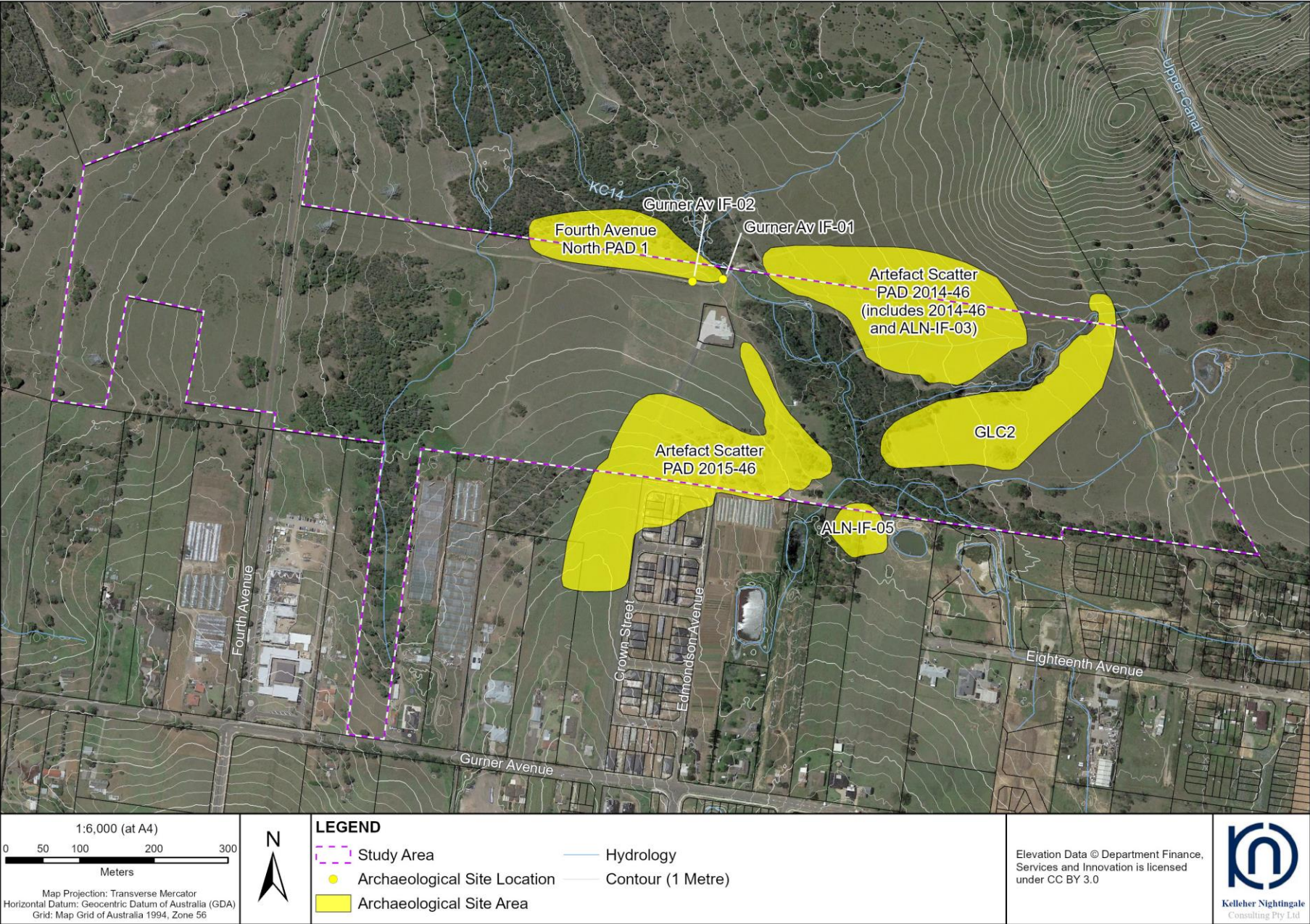


Figure 6. Identified Aboriginal Archaeological Sites in study area

8 Cultural Heritage Values and Statement 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; and
- 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 *Heritage NSW Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, the social or cultural value of a place (object, site or item) may be related to spiritual, traditional, historical or contemporary associations. "Social or cultural value can only be identified through consultation with Aboriginal people" (OEH 2011:8).
- Spiritual value - refers to the intangible values and meanings embodied in or evoked by a place which make it important to the spiritual identity, traditional knowledge, art or practices of a cultural group. Spiritual value is strongly connected to social value.

Significance assessment for identified archaeological sites focusses on the social/spiritual, historic, scientific and aesthetic significance of Aboriginal heritage values as identified in *The Burra Charter* (Australia ICOMOS 2013). The identification of significance is developed in consultation with the registered Aboriginal stakeholders. Assessed values for the sites within the study area are detailed below.

Cultural / social significance

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 and is determined by the Aboriginal community.

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

Historic significance

Community consultation and historical research has not identified any information regarding specific historical significance of identified Aboriginal archaeological sites in or near the study area. No specific historical values for the sites within the study area were provided by the registered Aboriginal stakeholders following the review of the draft CHAR. Archaeologically, the study area does not contain these values in relation to Aboriginal heritage.

Scientific / archaeological significance

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. Heritage NSW's 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 growing holistic understanding of the Aboriginal cultural landscape of the project 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 study area, no specific aesthetic values have been identified by registered Aboriginal parties to date. No specific aesthetic values for the sites within the study area were provided by the registered Aboriginal stakeholders following the review of the draft CHAR. Archaeologically; the study area does not contain these values..

8.2 Statement of significance/potential

The study area contains seven Aboriginal archaeological sites (comprising nine AHIMS registrations. Significance assessment is based on a consideration of the research value, representativeness, intactness and rarity of the sites in a local and regional context. The significance/potential of the sites within the study area is outlined below.

Fourth Avenue North PAD 1

AHIMS 45-5-5547

Fourth Avenue North PAD 1 represents a commonly occurring site type in the region, consisting of a low density surface and subsurface artefact scatter site identified on elevated and low lying flat landforms overlooking the junction of KC 14 and an unnamed tributary. Aboriginal objects recovered from the site were considered to form part of general 'background scatter' in the landscape. The artefacts identified consisted of quartz and silcrete medial flake fragments and one indurated mudstone/tuff split flake. The artefacts identified are typical of the region in terms of type and raw material. The site has been subject to significant disturbance related to ongoing and repeated flooding events and land use practices. The site demonstrated low scientific value and any further archaeological investigation would be unlikely to contribute to our understanding of Aboriginal land use in the region. Based on the intactness, representativeness and research potential of the site, Fourth Avenue North PAD 1 has been assessed as having *low archaeological significance*.

Gurner Av IF-01

AHIMS 45-5-5272

Gurner Av IF-01 represents a commonly occurring site type in the region, consisting of an isolated surface artefact identified on an eroded vehicle access track. The artefact identified comprised a silcrete distal flake fragment and is typical of the region in terms of type and raw material. The site has been subject to disturbance related to natural erosional processes and land use practices. The site demonstrated low scientific value and any further archaeological investigation would be unlikely to contribute to our understanding of Aboriginal land use in the region. Based on the intactness, representativeness and research potential of the site, Gurner Av IF-01 has been assessed as having *low archaeological significance*.

Gurner Av IF-02

AHIMS 45-5-5271

Gurner Av IF-02 represents a commonly occurring site type in the region, consisting of an isolated surface artefact identified on an eroded vehicle access track. The artefact identified comprised a silcrete split flake and is typical of the region in terms of type and raw material. The site has been subject to disturbance related to natural erosional processes and land use practices. The site demonstrated low scientific value and any further archaeological investigation would be unlikely to contribute to our understanding of Aboriginal land use in the region. Based on the intactness, representativeness and research potential of the site, Gurner Av IF-02 has been assessed as having *low archaeological significance*.

Artefact Scatter PAD 2015-46

AHIMS 45-5-4014

Artefact Scatter PAD 2015-46 consists of a surface and subsurface artefact scatter identified on the slopes and crest of a spur between drainage channels north of Gurner Avenue, overlooking the Kemps Creek tributary, KC14. Previous archaeological salvage of a portion of the site was undertaken under AHIP C0001054. Salvage data indicated that Artefact Scatter PAD 2015-46 was a satellite site where people spent time while utilising the resources available on the spur. Archaeological information relating to site contents and function had been preserved on the benched upper slopes outside of the primary flood zone. The findings of the salvage excavation confirmed the moderate archaeological value and significance of the site. The site illustrated differential landscape use surrounding smaller creeks within the Kemps Creek catchment, particularly when viewed in tandem with neighbouring site ALN-IF-05. Based on the salvage excavation results, the remaining (intact) portion of Artefact Scatter PAD 2015-46 was assessed as retaining moderate archaeological significance.

Assessment undertaken for the current project confirmed that Artefact Scatter PAD 2015-46 displayed low levels of visible disturbance within the remaining site extent. Based on the intactness, representativeness and research potential of the site, Artefact Scatter PAD 2015-46 has been assessed as displaying *moderate archaeological significance*.

ALN-IF-05

45-5-3967

ALN-IF-05 was a surface and subsurface artefact scatter situated on an elevated flat landform overlooking the junction of KC14 and an unnamed tributary. Previous archaeological salvage of a portion of the site was undertaken under AHIP C0001054. Salvage data revealed that ALN-IF-05 represented a classic 'base camp' type site which was repeatedly occupied with a wide range of everyday domestic activities taking place. The findings of the salvage excavations at ALN-IF-05 demonstrated that relatively undisturbed archaeological deposit may be retained along the margins of the primary flood channels. Despite low level disturbances from modern land use or flooding, clear activity patterns and site functions can be discerned from the archaeological record.

The archaeological value of the site is increased when viewed in conjunction with neighbouring site Artefact Scatter PAD 2015-46, as together they offer an opportunity to compare and contrast activities on different landforms less than 200 metres apart. Based on the salvage excavation results, the remaining (intact) portion of ALN-IF-05 was assessed as retaining moderate archaeological significance.

Assessment undertaken for the current project confirmed that ALN-IF-05 displayed low levels of visible disturbance within the remaining site extent. Based on the intactness, representativeness and research potential of the site, ALN-IF-05 has been assessed as displaying *moderate archaeological significance*.

Artefact Scatter PAD 2014-46 (includes 2014-46 and ALN-IF-03)

AHIMS 45-5-4013 (includes 45-5-3969 and 45-5-3965)

Artefact Scatter PAD 2014-46 comprised a surface artefact scatter situated on an elevated flat landform overlooking the junction of KC14 and an unnamed tributary. The location is significant because it exhibits soils relatively unaffected by modern land use and environmental factors, which typically negatively impact the preservation of archaeological subsurface deposits. Dry, well drained locations in close proximity to waterways were attractive to fauna and offered good camp sites for past Aboriginal people. Artefact Scatter PAD 2014-46 has the potential to offer information about past Aboriginal activities within the Kemps Creek catchment. Based on the intactness, representativeness and research potential of the site, Artefact Scatter PAD 2014-46 displays *moderate archaeological significance*.

GLC2

AHIMS 45-5-2560

GLC2 represents a commonly occurring site type in the region, consisting of a low density surface and subsurface artefact scatter site identified on low lying elevated flat landforms bordering KC14 and its tributary. The artefacts identified consisted of an indurated tuff/mudstone core, a silcrete flake, an indurated mudstone/tuff flake, a silcrete distal flake fragment, a petrified wood angular fragment and an indurated mudstone/tuff split flake. These artefacts are typical of the region in terms of type and raw material. The site has been subject to significant disturbance related to ongoing and repeated flooding events and land use practices. The site demonstrated low scientific value and any further archaeological investigation would be unlikely to contribute to our understanding of Aboriginal land use in the region. Based on the intactness, representativeness and research potential of the site, GLC2 has been assessed as having *low archaeological significance*.

9 The proposed activity and impact assessment

Landcom propose residential subdivision and development of lands located at 75 Gurner Avenue, Austral NSW. The proposed development area is located in the Liverpool local government area. This report presents background assessment for the whole study area. The impact assessment for the CHAR is specific to works proposed under the current Development Application (DA).

The current DA seeks approval for the subdivision and development of lands within the impact area. The proposed activities associated with the development would include:

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

The proposed works overlaps areas that have been previously assessed for Aboriginal cultural heritage values and are already covered under existing AHIPs (C0001054 and 4938) shown on Figure 7. AHIP C0001054 and AHIP 4938 are excluded from the current impact assessment area. Consultation between Landcom and the AHIP holder has indicated that the proposed works may be completed under these AHIPs, provided that work is undertaken in accordance with existing AHIP conditions. Landcom will obtain approval from the AHIP holder to complete the proposed works under their permits.

Overall, it is considered likely that all lands within the DA boundary would be impacted by the proposed development and associated works. Assessed impact to the archaeological sites identified in this impact area is shown in Figure 7 and detailed in Table 3 below.

Table 3. Impact assessment

Site name	AHIMS number	Type of harm	Degree of harm	Consequence of harm	Significance of harm
Artefact Scatter PAD 2015-46	45-5-4014	Direct	Partial	Partial loss of value	Moderate
GLC2	45-5-2560	Direct	Partial	Partial loss of value	Low

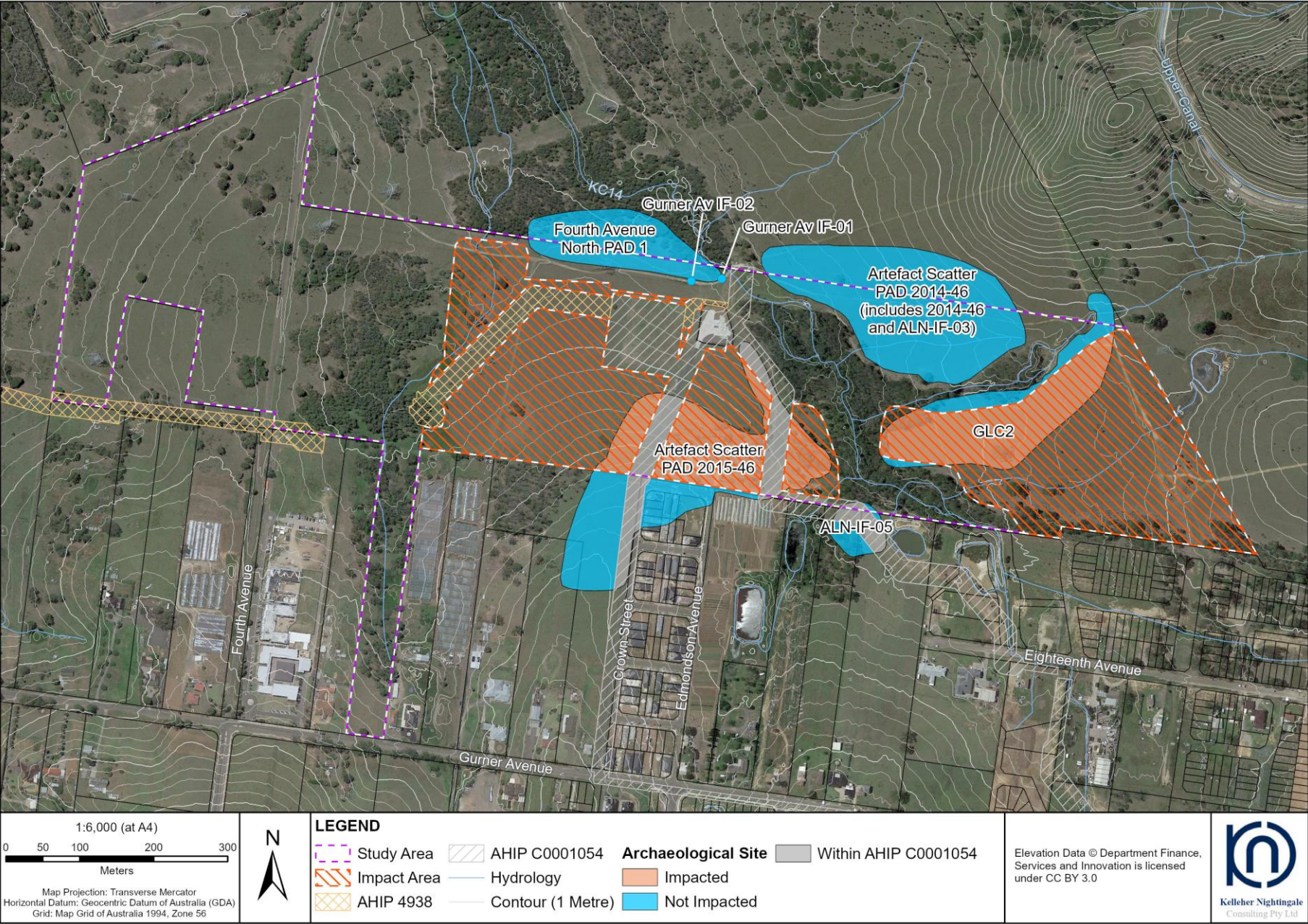


Figure 7. Proposed impact area and Aboriginal heritage

10 Mitigating harm

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 impact area are: the Precautionary Principle and the Principle of Inter-Generational Equity. The application of these principles in relation to the proposal is discussed below.

10.1 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 Landcom in relation to the proposed development works. While conservation is the best approach when considering Aboriginal heritage, the avoidance of Aboriginal archaeological sites within the impact area was not possible due to the requirements of the project.

The Aboriginal sites located within the impact area have been impacted by past land use activities and would be further impacted by current land use practices. Scientific confidence has been achieved through archaeological investigations including test excavation and previous salvage excavations (Sections 4 and 5). Regarding Aboriginal cultural heritage value confidence, no specific cultural or social values expressed by these sites have been identified to date (Section 6). As detailed in Sections 8 and 9, the assessment has determined that the impact area contains Aboriginal archaeological sites displaying low and moderate significance.

10.2 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 impact 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 Sections 4 and 5, previous archaeological investigations have identified a large number of Aboriginal archaeological sites comprising artefact scatters, PAD areas and isolated finds in the region. These occur in landscape contexts similar to those investigated during the current study, including along Kemps Creek and its tributaries. While some sites have subsequently been impacted by development, the majority of identified sites remain valid.

The proposed works for the project will partially impact one Aboriginal site of low significance and one site of moderate significance. No sites of high archaeological significance are present within the current impact area. Impact to the sites within the impact area 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.

10.3 Mitigation Measures

Suitable recommendations for the identified impact to the sites have been developed based on ESD, environmental context and condition, background research and consultation with stakeholders. The impact area contains two Aboriginal archaeological sites.

Site Artefact Scatter PAD 2014-46 displays moderate archaeological potential/significance based on its scientific value and potential to inform on the Aboriginal landscape use of the Kemps Creek catchment. The significance of harm to the site is moderate, given the site’s overall moderate archaeological significance. Its archaeological value is linked to the information that it contains. Recovery of this information through archaeological salvage excavation would mitigate the impact of the proposal and offer an opportunity to better understand the distribution of Aboriginal archaeological materials in this location. Previous archaeological excavations at the site have demonstrated that the site retains archaeological information of moderate value suitable for further investigation (KNC 2016).

GLC2 is considered to display low archaeological value and significance. Archaeological investigation of the site has revealed very low artefact densities, with no areas of higher density deposit or more focused activity. Aboriginal objects recovered from the site are considered to form part of general ‘background scatter’ in the landscape. Archaeological mitigation is not warranted for GLC2.

The non-impacted portions of the sites should be demarcated and listed in the Construction Environmental Management Plan (CEMP). These areas should be identified as a “no-go zone” on the CEMP maps and workers inducted as to appropriate protection measures. Temporary protective fencing along the AHIP boundary is recommended to avoid any inadvertent access or impacts to these portions of the sites.

Suitable recommendations for the identified impacts to the sites have been developed based on environmental context and condition, background research and consultation with stakeholders. 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, outside of existing AHIP areas. Measures for archaeologically mitigating harm to the sites are outlined in Table 4 below.

Table 4. Proposed mitigation and management measures

Site Name	AHIMS Number	Impact Assessment	Assessed Significance	Management measures
Artefact Scatter PAD 2015-46	45-5-4014	Direct / Partial	Moderate	<p>Aboriginal heritage impact permit (AHIP) required prior to commencement of works affecting the site.</p> <p>Given the moderate significance of the site and degree of proposed impact, salvage excavation of a representative sample of the site is required prior to impact.</p> <p>Management measures to be implemented to ensure non-impacted portion of site is avoided by proposed activities (protective fencing, identification in the CEMP, toolbox talks).</p>
GLC2	45-5-2560	Direct / Partial	Low	<p>Aboriginal heritage impact permit (AHIP) required prior to commencement of works affecting the site.</p> <p>No archaeological mitigation required.</p> <p>Management measures to be implemented to ensure non-impacted portion of site is avoided by proposed activities (protective fencing, identification in the CEMP, toolbox talks).</p>

11 Summary and Recommendations

A total of two Aboriginal archaeological sites are situated within the boundary of the impact area. An AHIP is being sought for Aboriginal objects within the boundaries of the impact area, incorporating the archaeological sites listed in Table 5.

The proposed works overlap areas that have been previously assessed for Aboriginal cultural heritage values and are already covered under existing AHIPs (C0001054 and 4938). Consultation between Landcom and the AHIP holder has indicated that the proposed works may be completed under these AHIPs, provided that work is undertaken in accordance with existing AHIP conditions. Landcom will obtain approval from the AHIP holder to complete the proposed works under their permits.

AHIP

An application for an AHIP should be made under section 90A of the *National Parks and Wildlife Act 1974* for the land and associated objects within the boundaries of the impact area, outside of the existing AHIP areas (Figure 8). The AHIP should also be sought for the specified Aboriginal sites and objects contained within the sites listed in Table 5.

Table 5. Aboriginal archaeological sites and scope for which an AHIP is being sought

Site Name	AHIMS Number	Scope of AHIP	Consequence of Harm	Mitigation
Artefact Scatter PAD 2015-46	45-5-4014	Partial	Partial loss of value	Salvage excavation of impacted portion
GLC2	45-5-2560	Partial	Partial loss of value	No mitigation required

Salvage Excavation

The AHIP should include mitigation through salvage excavation. Archaeological salvage excavation would be required for the impacted portion of site Artefact Scatter PAD 2015-46. Salvage excavation must be completed prior to any activities which may harm Aboriginal objects at the site location, including all construction and pre-construction works. Salvage excavation activities would be undertaken in accordance with the methodology attached as Appendix C.

Site Protection

- The remaining portions of Artefact Scatter PAD 2015-46 and GLC2 located outside of the proposed AHIP area should be marked on the Construction Environmental Management Plan (CEMP) prior to pre-construction and construction activities to ensure these areas are avoided and not impacted by the works. The remaining site areas should be marked as an environmentally sensitive “no-go zone”.
- Temporary fencing is recommended around the edge of the AHIP area to provide a physical barrier against accidental access or impact.
- Workers should be inducted as to appropriate Aboriginal heritage protection measures.

Collected-Salvaged Aboriginal objects

The short term management of collected Aboriginal objects is as follows:

- Any Aboriginal objects that are removed from the land by actions authorised by an AHIP, must be moved as soon as practicable to the temporary storage location (see below) pending any agreement reached about the long term management of the Aboriginal objects.
- The temporary storage location would be: Kelleher Nightingale Consulting Pty Ltd, Level 10, 25 Bligh Street, Sydney NSW 2000.
- Any Aboriginal objects stored at the temporary storage location must not be further harmed, except in accordance with the conditions of the AHIP.

The long term management of collected Aboriginal objects is as follows:

- Recovered objects will be lodged with the Australian Museum in the first instance in accordance with the *Australian Museum Archaeological Collection Deposition Policy* (January 2012, available online at: <http://australianmuseum.net.au/document/Protocols-for-the-deposition-of-archaeological-materials>).
- If required, a variation will be sought for recovered objects to be held by the Aboriginal community or reburied. If reburial is to take place, registered Aboriginal stakeholders would be notified and given the opportunity to attend.

Requirement 26 “Stone artefact deposition and storage” in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (24 September 2010, available online at: <http://www.environment.nsw.gov.au/resources/cultureheritage/10783FinalArchCoP.pdf>) must be complied with.

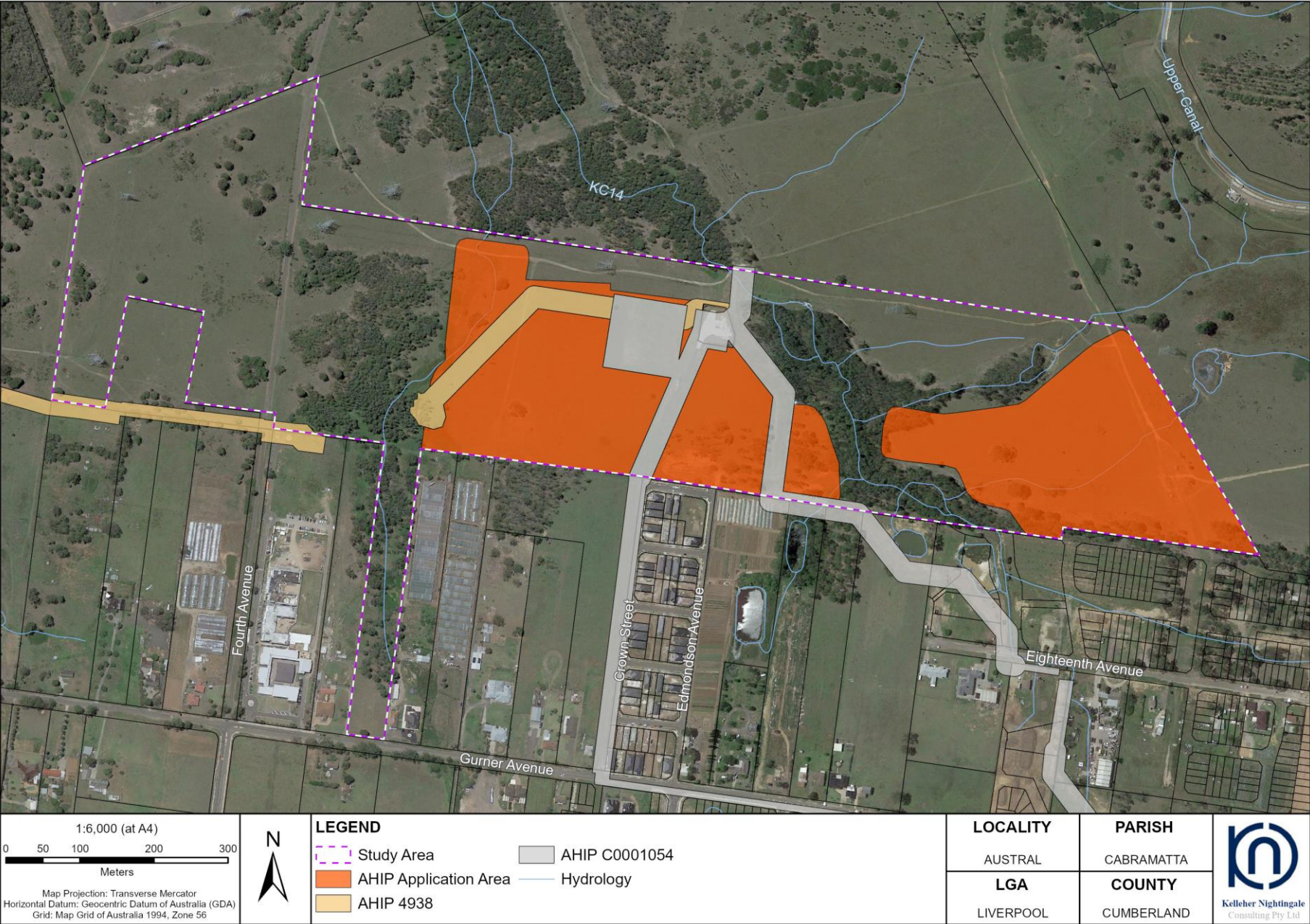


Figure 8. AHIP application area

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Appendix A Advertisement for Registration for Interest

Notice for Registration of Interest

Landcom is proposing the subdivision and development of low-rise medium density housing at Lot 99-100 DP1243071 and Lot 22 DP 1223507, Gurner Avenue, Austral, NSW. The project is located in the Liverpool local government area. The proponent is Landcom (Steven Boukatos, Development Manager: Level 14, 60 Station Street, Parramatta NSW 2150).

The proposal may be the subject of Aboriginal Heritage Impact Permit (AHIP) applications made under section 90A of the National Parks and Wildlife Act 1974. Landcom proposes to carry out consultation with Aboriginal communities in accordance with the Heritage NSW Aboriginal cultural heritage consultation requirements for proponents 2010. Information obtained from the consultation process may be used in the preparation of AHIP applications and will assist Heritage NSW in the consideration and determination of the AHIP applications. Kelleher Nightingale Consulting Pty Ltd has been engaged to facilitate the consultation process.

Landcom invites Aboriginal groups and/or Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places at Austral to register interest in a process of community consultation with the contact shown below (on behalf of Landcom):

Kelleher Nightingale Consulting
Level 10, 25 Bligh Street
Sydney NSW 2000
phone 02 9232 5373

The closing date for registration is 1 December 2021.

Please be advised that in accordance with Heritage NSW requirements, we are required to record the names and contact details of each Aboriginal person who has registered an interest in this project and provide a copy of that record to the relevant Heritage NSW office and Local Aboriginal Land Council. If you are registering your interest, please let us know if you do not want your details forwarded to these organisations.

Appeared in: *Liverpool City Champion*, Wednesday, November 17, 2021.

Appendix B Aboriginal Stakeholder Comments

Zac Thomas

From: Ralph Hampton <hamptonralph46@gmail.com>
Sent: Friday, 10 June 2022 2:18 PM
To: Zac Thomas
Subject: Re: Draft CHAR review - 2111 Gurner Avenue Austral - BHHC

Follow Up Flag: Follow up
Flag Status: Flagged

Looks good to me.

On Thu, 9 Jun 2022, 4:26 pm Zac Thomas, <zac.thomas@knconsult.com.au> wrote:

Dear registered Aboriginal stakeholder,

Please find attached a cover letter and a copy of the draft Aboriginal Cultural Heritage Assessment Report for the proposed subdivision and development at Gurner Avenue, Austral, NSW.

As a registered Aboriginal stakeholder for this project, we would like to invite you to review the report and provide us with any comments or feedback regarding the assessment and the Aboriginal cultural heritage significance of the study area/Aboriginal archaeological sites.

Please forward any comments to myself or the office by **Friday 8 July 2022**. Thank you and we look forward to receiving your comments.

Kind regards,

Zac Thomas

Heritage Administration Assistant

Kelleher Nightingale Consulting Pty Ltd

Level 10, 25 Bligh St Sydney NSW 2000

p 02 9232 5373



DARUG CUSTODIAN
ABORIGINAL
CORPORATION

PO BOX 81 WINDSOR 2756
PHONE: 0245775181 FAX: 0245775098
MOBILE: 0415770163 Leanne Watson
0414962766 Justine Coplin
EMAIL: mulgokiwi@bigpond.com / justinecoplin@optusnet.com.au

Attention: KNC

Date:07/07/22

Subject: Gurner Avenue Austral

Dear Zac

Our group is a non-profit organisation that has been active for over forty years in Western Sydney, we are a Darug community group with over three hundred members. The main aim in our constitution is the care of Darug sites, places, wildlife and to promote our culture and provide education on the Darug history.

Our group promotes Darug Culture and works on numerous projects that are culturally based as a proud and diverse group. It has been discussed by our group and with many consultants and researches that our history is generic and is usually from an early colonists perspective or solely based on archaeology and sites. These histories are adequate but they lack the people's stories and parts of important events and connections of the Darug people and also other Aboriginal people that now call this area home and have done so for numerous generations.

This area is significant to the Darug people due to the evidence of continued occupation, within close proximity to this project site there is a complex of significant sites.

Landscapes and landforms are significant to us for the information that they hold and the connection to Darug people. Aboriginal people (Darug) had a complex lifestyle that was based on respect and belonging to the land, all aspects of life and survival did not impact on

the land but helped to care for and conserve land and the sustenance that the land provided. As Darug people moved through the land there were no impacts left, although there was evidence of movement and lifestyle, the people moved through areas with knowledge of their areas

and followed signs that were left in the landscape. Darug people knew which areas were not to be entered and respected the areas that were sacred.

Knowledge of culture, lifestyle and lore have been part of Darug people's lives for thousands of years, this was passed down to the next generations and this started with birth and continued for a lifetime. Darug people spent a lifetime learning and as people grew older they passed through stages of knowledge, elders became elders with the learning of stages of knowledge not by their age, being an elder is part of the kinship system this was a very complicated system based on respect.

Darug sites are all connected, our country has a complex of sites that hold our heritage and past history, evidence of the Darug lifestyle and occupation are all across our country, due to the rapid development of Sydney many of our sites have been destroyed, our sites are thousands of years old and within the short period of time that Australia has been developed pre contact our sites have disappeared.

The *Aboriginal cultural heritage consultation requirements for proponents* Section 4.1.8 refers to "Aboriginal organisations representing Aboriginal people who hold cultural knowledge". Recent consultation meetings have revealed that many of these Aboriginal organisations and individuals do not hold cultural knowledge of the Western Sydney area. The increasing involvement of such parties in cultural heritage management means that genuine local Aboriginal organisations are unable to properly care for our cultural heritage.

Many Aboriginal organisations listed in the OEH response letter do not contribute to the Aboriginal community of Western Sydney. Individuals listed in the OEH response letter do not represent the community and while they may be consulted with, should not be employed for their own personal financial benefit.

Our organisation is committed to providing benefits back to our local Aboriginal community through such measures as funding the local Aboriginal juniors' touch football team, painting classes for the local children and donating money to various charities. Employment in cultural heritage activities is source of income that organisations such as ours can use to contribute to beneficial activities and support within the community.

Darug custodian Aboriginal Corporation's site officers have knowledge of Darug land, Darug Culture, Oral histories, landforms, sites, Darug history, wildlife, flora and legislative requirements. We have worked with consultants and developers for many years in Western

Sydney (Darug Land) for conservation, site works, developments and interpretation/education strategie.

Darug Custodian Aboriginal Corporation have received and reviewed the report for Gurner Avenue Austral.

We support the recommendations set out in this report.

Please contact us with all further enquiries on the above contacts.

Regards



Justine Coplin

Zac Thomas

From: Wendy Morgan <wenlissa01@hotmail.com>
Sent: Thursday, 16 June 2022 11:07 AM
To: Zac Thomas
Subject: RE: Draft CHAR review - 2111 Gurner Avenue Austral - GARI

Hi Zac,

Thank you for including GARI in this project.

From my reading of the DRAFT CHAR Guntawang is willing to support a AHIP and agrees with the Statutory Controls as there was low levels findings of artefacts found in this location, where the Guntawang sites officer was involved in the digs.

Regards

Wendy Morgan
CEO GARI
0414 964 657
Sent from [Mail](#) for Windows

From: [Zac Thomas](#)
Sent: Thursday, 9 June 2022 4:30 PM
To: [Wendy Morgan](#)
Subject: Draft CHAR review - 2111 Gurner Avenue Austral - GARI

Dear registered Aboriginal stakeholder,

Please find attached a cover letter and a copy of the draft Aboriginal Cultural Heritage Assessment Report for the proposed subdivision and development at Gurner Avenue, Austral, NSW.

As a registered Aboriginal stakeholder for this project, we would like to invite you to review the report and provide us with any comments or feedback regarding the assessment and the Aboriginal cultural heritage significance of the study area/Aboriginal archaeological sites.

Please forward any comments to myself or the office by **Friday 8 July 2022**. Thank you and we look forward to receiving your comments.

Kind regards,

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

Zac Thomas

From: carolyn slater <cal.slater61@gmail.com>
Sent: Thursday, 16 June 2022 9:20 AM
To: Zac Thomas
Subject: Re: Draft CHAR review - 2111 Gurner Avenue Austral - Gilay Consultants

Received and reviewed the draft and it looks good to me.

Thank you.

Carolyn Slater

On Thu, 9 Jun 2022, 4:30 pm Zac Thomas, <zac.thomas@knconsult.com.au> wrote:

Dear registered Aboriginal stakeholder,

Please find attached a cover letter and a copy of the draft Aboriginal Cultural Heritage Assessment Report for the proposed subdivision and development at Gurner Avenue, Austral, NSW.

As a registered Aboriginal stakeholder for this project, we would like to invite you to review the report and provide us with any comments or feedback regarding the assessment and the Aboriginal cultural heritage significance of the study area/Aboriginal archaeological sites.

Please forward any comments to myself or the office by **Friday 8 July 2022**. Thank you and we look forward to receiving your comments.

Kind regards,

Zac Thomas

Heritage Administration Assistant

Kelleher Nightingale Consulting Pty Ltd

Level 10, 25 Bligh St Sydney NSW 2000

p 02 9232 5373

Zac Thomas

From: Phil Khan <philipkhan.acn@live.com.au>
Sent: Monday, 4 July 2022 12:11 PM
To: Zac Thomas
Subject: Re: Draft CHAR review - 2111 Gurner Avenue Austral - KYWG

Dear Zac,

Thank you for your ACHA for 2111 Gurner Avenue Austral.

The study area is of significance to us as, our people occupied the land and utilised its resources. Here at KYWG we aim to protect, conserve and pass on the rich Aboriginal culture. We care for the land and all that she holds. She is sacred and cannot be brought back once gone, this is the understanding of our people, hence why we only take what is need and always give back. There is lore long before the law we know today.

This lore goes back to the beginning the dreaming to the creation story. Where our ancestral beings were given a set of lore's to follow, care for Mother Earth, protect her sacred places, only take what's needed and always give back.

This brings me to the intangible and astatic aspects that connect us to country, I as an Aboriginal woman feel a connection to the land, when she is sick, I'm sick this is why I care for her as my Mother Earth. So, when there is nothing there physically does not mean that it is less important of a place to our people. Which is why it is important to have interpretation of some sort as a way the reconnect with what is lost, destroyed and unearthed.

This area is known to have high potential for Aboriginal occupation, across the area there has been many Aboriginal sites previously unearthed. Which is why we strongly agree with your recommendations and we support your report, we recommend an interpretation plan. We would like to be involved in any further consultation in regards to this project and we look forward to working with you on this project.

Kind Regards

Kadibulla Khan



From: Zac Thomas <zac.thomas@knconsult.com.au>
Sent: Thursday, 9 June 2022 4:31 PM
To: philipkhan.acn@live.com.au <philipkhan.acn@live.com.au>
Subject: Draft CHAR review - 2111 Gurner Avenue Austral - KYWG

Dear registered Aboriginal stakeholder,

Please find attached a cover letter and a copy of the draft Aboriginal Cultural Heritage Assessment Report for the proposed subdivision and development at Gurner Avenue, Austral, NSW.

Zac Thomas

From: Darleen Johnson <murrabidgeemullangari@yahoo.com.au>
Sent: Tuesday, 14 June 2022 8:16 AM
To: Zac Thomas
Subject: Re: Draft CHAR review - 2111 Gurner Avenue Austral - MBMAC

Hi Zac,
I have read the project information and draft CHAR for the above project, I endorse the recommendations made.
Kind regards
Darleen Johnson
0490051102

On Thursday, 9 June 2022, 04:32:16 pm AEST, Zac Thomas <zac.thomas@knconsult.com.au> wrote:

Dear registered Aboriginal stakeholder,

Please find attached a cover letter and a copy of the draft Aboriginal Cultural Heritage Assessment Report for the proposed subdivision and development at Gurner Avenue, Austral, NSW.

As a registered Aboriginal stakeholder for this project, we would like to invite you to review the report and provide us with any comments or feedback regarding the assessment and the Aboriginal cultural heritage significance of the study area/Aboriginal archaeological sites.

Please forward any comments to myself or the office by **Friday 8 July 2022**. Thank you and we look forward to receiving your comments.

Kind regards,

Zac Thomas

Heritage Administration Assistant

Kelleher Nightingale Consulting Pty Ltd

Level 10, 25 Bligh St Sydney NSW 2000

p 02 9232 5373

Appendix C Salvage Excavation Methodology

Methodology

Research Aims

The main aims of the proposed salvage excavation program are:

- ♦ To salvage a representative sample of identified archaeological sites prior to development impact.
- ♦ To analyse the salvaged archaeological material to gain and conserve knowledge and understanding of the scientific and cultural information exhibited by the activities associated with landforms along tributaries of Kemps Creek.
- ♦ To use the excavation results to gain insight into the subsurface archaeology of the adjacent areas not being impacted by the proposal. This would increase future educational opportunities and allow more informed management of Aboriginal heritage.

The further scientific aim of the salvage excavation program would be to determine the subsurface integrity, extent, spatial distribution and nature of the cultural deposit and the specific types of associated archaeological/cultural activities.

- ♦ Determining the integrity of the deposit involves assessing the degree of disturbance which is present.
- ♦ Determining the statistical extent of the sites and/or activity areas involves identifying the boundaries associated with the identified archaeological deposit.
- ♦ Assessing the spatial distribution involves identifying the presence/absence of archaeological material across the identified archaeological sites.
- ♦ The nature of the sites refers to the type of activities indicated by the artefactual material (e.g. primary production, domestic knapping, hunting camps). The goal would be to retrieve entire assemblages from specific activities if such activities were present.
- ♦ Retrieved assemblages would be compared with the results from other relevant archaeological projects in order to assess significance.

Research Questions

The results of the proposed salvage excavation would increase our understanding of subsurface archaeology of the study area. In particular, research would focus on the creek margins addressing questions about the survivability of archaeological deposit. Understanding how environmental processes have impacted archaeological deposits will assist the planning process and potentially increase conservation outcomes. Understanding the relationship between archaeology and site soils will inform the interpretation of archaeological significance, as opposed to an assessment of the presence or absence of artefacts.

Question 1: What are the taphonomic features of archaeological site Artefact Scatter PAD 2015-46 and what does this indicate about site integrity and artefact survivability for similar landforms within the Kemps Creek catchment? What is the effect of flooding on the preservation of this Aboriginal archaeological site and does this have implications for our understanding of geomorphology and site taphonomy for Kemps Creek and its tributaries?

Question 2: Where intact archaeological deposit exists, what cultural activities are archaeologically identifiable on the Kemps Creek flood margins? How does the identified archaeology compare to neighbouring locations in proximity to the watercourse?

What can we expect?

It is anticipated that differences in stone tool assemblages may be related to different cultural activities (e.g. primary reduction vs maintenance flaking). The science of archaeology is paramount to any research question and it is important to stress that the goal for the salvage program for all excavated sites is straight forward: to retrieve a viable sample for comparative analysis using established techniques (see Field Methods below). In this regard interpretation would not precede data collection. The proposed archaeological program would systematically sample the relevant area using standard techniques with the outcome being a viable, robust and comparable sample. Analysis of the sample would follow and interpretations would be made distinctly separate from the results.

Archaeological Salvage Areas

Salvage excavation would be undertaken at identified archaeological site Artefact Scatter PAD 2015-46. Salvage excavation of the site would focus on the extraction of collections of artefacts related to activity areas and geomorphic information.

FIELD METHODS

The goal of the field excavation program is to recover significant assemblages of artefacts.

Salvage Program

In order to achieve the most robust and comparable result, KNC advocates an open area salvage excavation. The first phase in open area salvage is to establish the statistical boundaries of the archaeological deposit identified during Phase 1. In other words, recording the spread of activities across the site/landscape. This approach is designed to salvage the spatial properties of the site as shown in the lithic continuum.

Phase 1

A series of 1 m² squares are excavated on a transect grid at 15 metre intervals overlain on each site to mark the spread of lithics and related geomorphic activity.

GDA 94 coordinates would be recorded for each square to enable three dimensional modelling. Statistical salvage following this method is highly beneficial because it creates a robust inter-site sample, sufficiently random, critical for regional comparative analysis. No other method is as efficient or effective. It is anticipated that a minimum of 5m² would be excavated within each site during Phase 1.

Individual excavation squares measuring 1m² would be hand excavated in stratigraphic units (Unit A, Unit B, etc.). Squares would be excavated until the basal layer or culturally sterile deposit is reached (usually 25-35 cm). Previous excavation of the podzolic soils associated with the area indicates no archaeological stratigraphy within units. As such the A1 and A2 soil layers are culturally one layer (suffering from cyclical soil transfer resulting in a mixed cultural profile within the soil) and can be salvaged as one unit where possible. All excavated deposit would be wet sieved using nested 5.0 mm and 2.5 mm sieves. Where potential micro-debitage is recovered 1.0mm sieves will be utilised.

The location of each excavated square would be identified on a surveyed plan of the site. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit would be drawn and all squares would be photographed. Soil samples as well as thin section profiles (where feasible) would also be collected. The stratigraphy of all excavated areas would be fully documented and appropriate records archived.

Phase 2

Open area salvage of significant deposit follows the Phase 1 assessment. Additional 1m² squares, constituting an open area, will be excavated around information bearing deposits along the excavation grid. Information bearing deposits are identified by triggers such as: significant quantities of artefacts, variations in raw material, unusual artefacts, chronological material and/or taphonomic indicators. In this context chronologic material is anything that can be used to date artefacts or deposit: charcoal or charcoal bearing deposit (e.g. hearth ash), sandy deposit, gravels (e.g. aluminium feldspar). Phase 2 open area investigation would expand to encompass entire activity areas. The location of Phase 2 open area investigation would be based on Phase 1 results.

It is anticipated that a minimum of 20m² of Phase 2 open area salvage would be excavated within each site if Phase 1 results warrant this approach. Total salvage area would be a minimum of 30m² for each site location (combining both Phase 1 and Phase 2).

Where possible, carbon samples will be collected and analysed for material relating to both the archaeology and geomorphology. Where appropriate cosmogenic and radiometric dating of soils and rock surfaces will be applied (Nishiizumi et al. 1986, 1993).

Analysis

Artefacts would be analysed on a comparable level with previous analyses of excavated assemblages. Information derived from this analysis; in particular the identification of specific artefact types and their distributions and associations; would be used to put together interpretations about how sites were used, where sites were located across the landscape, the age of sites and to assess cultural heritage values. By comparing different areas, it would be possible to determine whether there were differences in the kinds of activities carried out and if different activities were related to different landforms.

A range of stone artefacts may be present across the salvage areas and the analysis would expand accordingly to account for artefact variability. All information would be recorded in database form (MS Excel). Various types of evidence would be used to determine the kinds of activities that were carried out. A short description of the proposed analysis is outlined below.

- ♦ Field analysis would record basic data, such as material type, number and any significant technological characteristics, such as backing or bipolar techniques; added to this would be any provenance data such as pit ID and spit number. The purpose of the field recording is twofold: 1) establish a basic recording of artefacts retrieved and 2) to allow on-going assessment of the excavation regime (e.g. whether higher stratigraphic resolution is required while digging).
- ♦ Detailed (laboratory) analysis would entail recording a larger number of characteristics for each individual artefact. These details would be recorded in matrices suitable for comparative analysis (e.g. multivariate and univariate) of the excavated assemblage on a local and regional basis.
- ♦ Lithic characteristics to be recorded cover a range of basic information but are not limited to these categories (see example below). For transparency, terms and category types would in large part be derived from Holdaway and Stern (2004).

Sample Categories		
Record Number	% Cortex	Flake Type
Pit ID	Length	Termination Type
Spit Number	Width	Core Type
Count	Thickness	Number of Scars (Core)
Raw Material	Weight	Scar Type (Core)
Colour	Modification	Shape of Flake
Quality	Reduction Type	Platform Type

- ♦ A detailed explanation and glossary would be provided with the final excavation report.
- ♦ Minimum Number of Flake (MNF) calculations formulated by Hiscock (2000, 2002) would be undertaken where applicable (although past experience indicates MNF calculations would not be required for this excavation program).

The analysis of artefacts recovered during the excavation program would be undertaken in a transparent and replicable fashion so as to permit the comparison of the entire excavated assemblage with data from other areas. This would also allow for an interpretation of the study area's archaeological significance.

Field Team

KNC directors, Dr Matthew Kelleher and Alison Nightingale, would be responsible for the salvage excavation program. Dr Matthew Kelleher would direct the excavation component of the Aboriginal archaeological assessment. Matthew has extensive experience in managing archaeological excavations and research projects. Matthew would also be the principal contact for the overall Aboriginal archaeological assessment for the project. The salvage excavation will be undertaken in association with registered Aboriginal stakeholders.

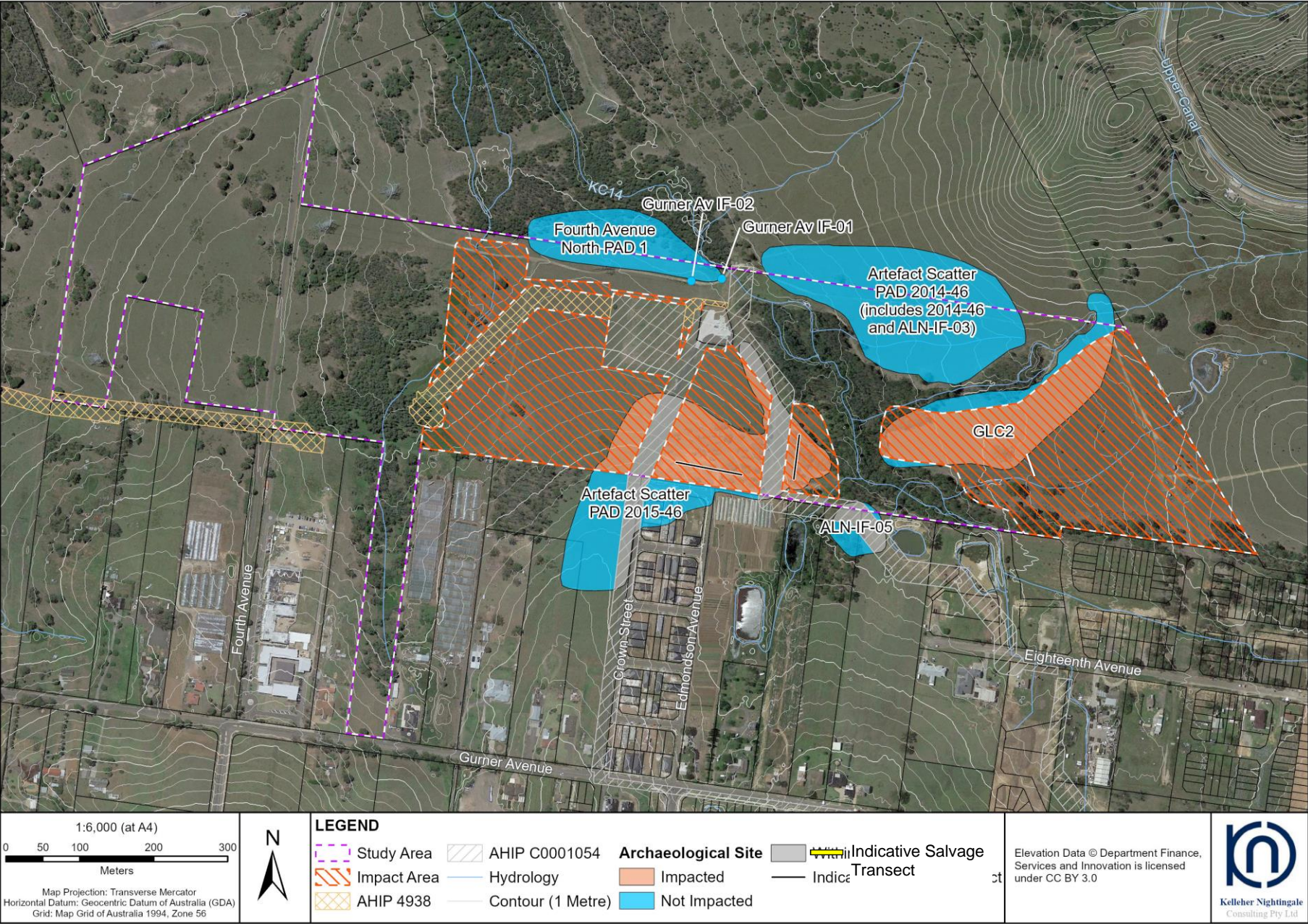


Figure 9. Indicative Salvage Transect locations at Artefact Scatter PAD 2015-46