LAND AT OLD NORTHERN ROAD & DERRIWONG ROAD DURAL, NSW

Aboriginal Archaeological Assessment

Prepared for Legacy Property Pty Ltd

The Hills Shire Local Government Area

February 2024

Ref. 2205

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1 Introduction

1.1 Project background

This report was prepared to support a Planning Proposal request by Legacy Property to The Hills Shire Council (Council) to rezone land at Old Northern Road and Derriwong Road, Dural NSW. The site has an area of 12.879 hectares and comprises five existing lots.

The Planning Proposal request seeks to rezone the site from RU6 Rural Transition to R2 Low Density Residential and SP2 Infrastructure (Local Road), facilitating the delivery of 110 residential lots and a new local park. The proposal also seeks to amend the maximum height of buildings standard from 10 metres to 9 metres. The Planning Proposal request is accompanied by a site-specific development control plan and offer to enter into a Voluntary Planning Agreement to secure public benefits associated with the proposal.

The indicative subdivision layout submitted with the Planning Proposal request provides a mix of larger residential lots ranging from 600sqm to 3,400sqm. This will contribute additional housing supply, diversity and choice in the local area, and support the viability of the Dural village centre.

The proposal is located entirely within the Hills Local Government Area (LGA) in north western Sydney, NSW. The subject lands comprise Lot Y2 DP91653 (614 Old Northern Road), Lot 2 DP567995 (21 Derriwong Road), Lot 9 DP237578 (27 Derriwong Road), Lot X DP501233 (618 Old Northern Road) and Lot 2 DP541329 (626 Old Northern Road). Together these lots constitute the "study area" of this assessment (Figures 1-2).

Kelleher Nightingale Consulting Pty Ltd (KNC) was engaged by Legacy to prepare an Aboriginal archaeological assessment of the study area. This assessment has been undertaken in accordance with the Heritage NSW [formerly Office of Environment and Heritage (OEH)] *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH 2010a) and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010b).

1.2 Investigator / contributors

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

Table 1. Investigator / contributor

Investigator / Contributor	Affiliation	Role
Dr Matthew Kelleher	Kelleher Nightingale Consulting	Advisor and Review
Mark Rawson	Kelleher Nightingale Consulting	Survey, Reporting
Cristany Milicich	Kelleher Nightingale Consulting	Reporting
Ben Anderson	Kelleher Nightingale Consulting	GIS Mapping

1.3 Summary of findings

Assessment under the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* did not identify any Aboriginal sites, objects or areas of Aboriginal archaeological potential or sensitivity within the study area.

Background research including AHIMS and other database searches, and review of previous archaeological investigations, did not identify any archaeological sites within or near the study area. Archaeological field survey confirmed that the study area has been affected by land use practices and natural processes, with the sloping landforms not considered suitable for Aboriginal camp locations. The more level areas along the ridge crest have been heavily disturbed by land use including road and house construction and landscaping and do not display any archaeological potential. No outcropping sandstone suitable for rockshelters or grinding groove sites occurs within the study area.

It is therefore reasonable to assume that no Aboriginal objects or sites would be affected by the proposed rezoning and eventual development of the lots. Based on the results of this assessment there are no Aboriginal archaeological constraints to the proposal and according to the Heritage NSW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, works may proceed with caution.

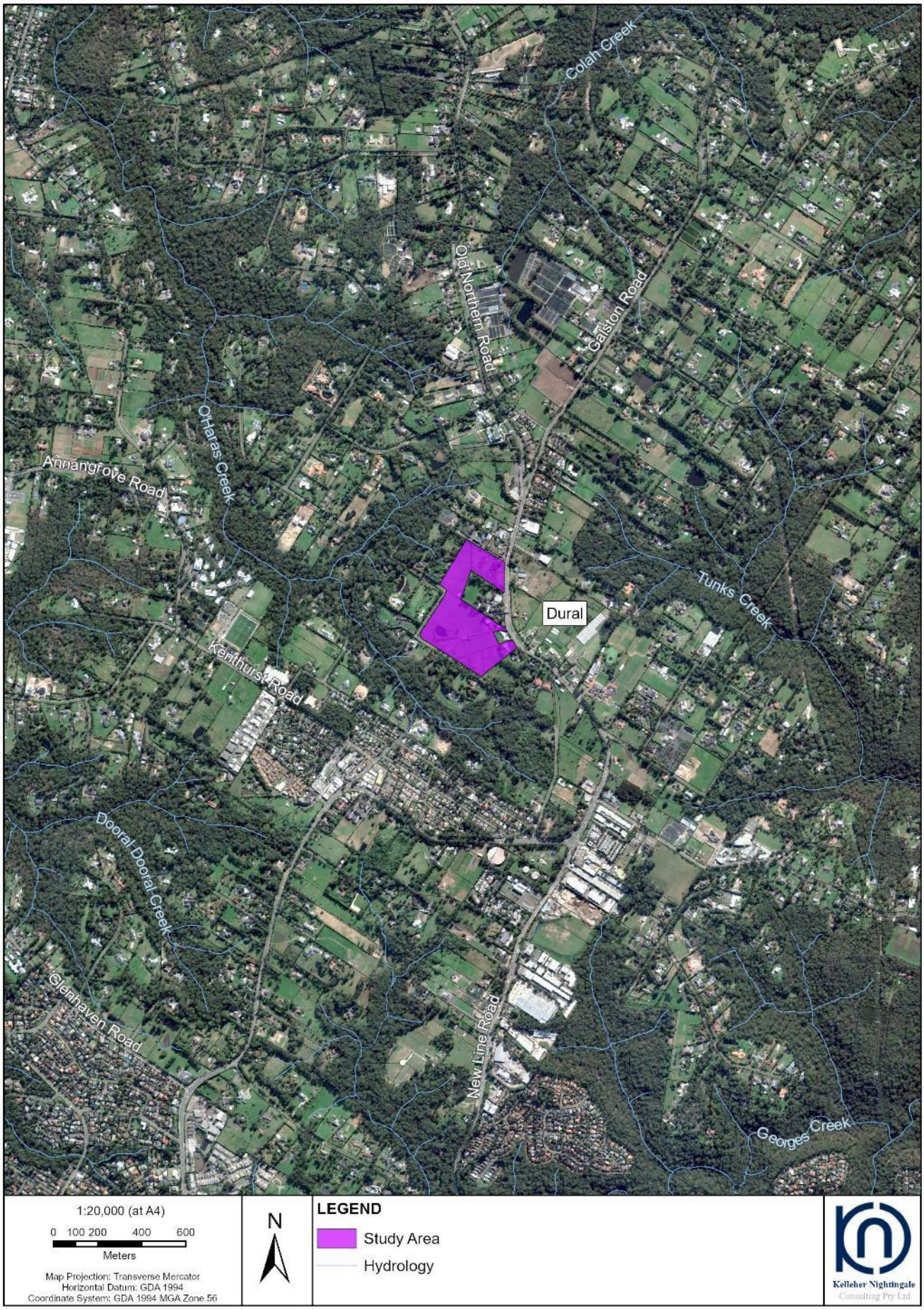

Figure 1. Study area location

Figure 2. Detail of study area and individual lots

2 Archaeological background

2.1 Database search (AHIMS) and known information sources

2.1.1. AHIMS web services

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

A search of AHIMS was conducted to identify registered (known) Aboriginal sites or declared Aboriginal places within or adjacent to the study area (Client service ID 864394). The search results are attached as Appendix A.

The AHIMS database search was conducted within the following area:

Eastings: 315260.0 -318670.0
Northings: 6269130.0 - 6272675.0
Buffer: 0 metres (the search coordinates included an extensive buffer around the study area).

The AHIMS search results showed:

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

The AHIMS search area is shown in Figure 3. No previously recorded Aboriginal archaeological sites were located within the AHIIMS search area.

2.1.2. Other heritage registers and databases

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

- The Hills LEP 2019
- The Hills Development Control Plan 2012
- Hornsby LEP 2013
- State Heritage Register and State Heritage Inventory
- Section 170 Heritage and Conservation Registers
- Commonwealth Heritage List
- National Heritage List
- Australian Heritage Database
- Australian Heritage Places Inventory
- Register of the National Estate (non-statutory archive).

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

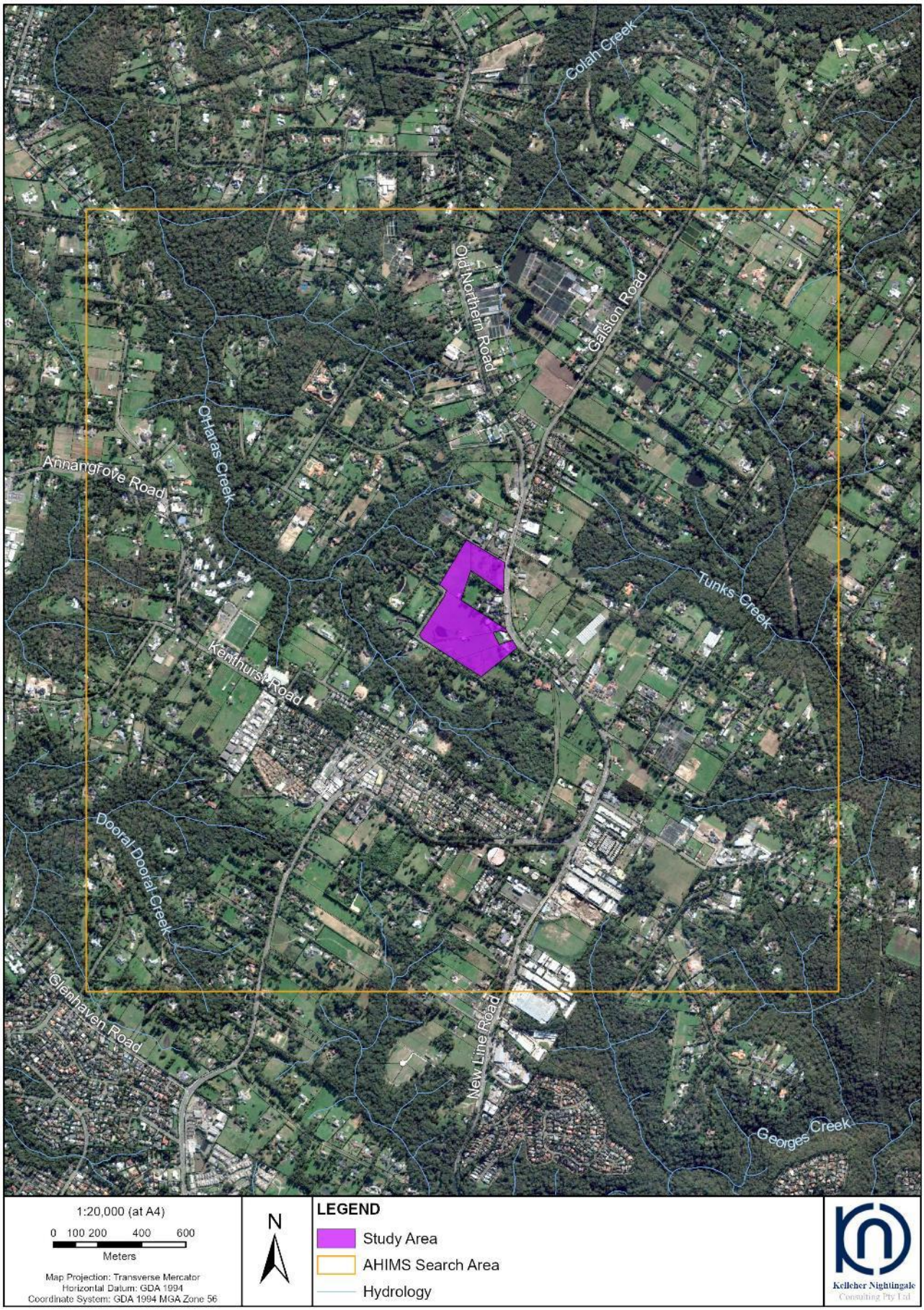

Figure 3. AHIMS search area

2.2 Previous archaeological investigations

Few previous archaeological investigations have been undertaken within the immediate vicinity of the study area. Archaeological surveys and excavations in the region are more prevalent to the south, associated with development and infrastructure projects related to the ongoing urbanisation of Sydney's northern and north-western fringes. Larger LGA-level studies have also been undertaken. Together, these provide an indication of regional archaeological character and assist in formulating an understanding of what may be expected to occur within the study area.

In 1996 Margrit Koettig undertook a comprehensive, shire-wide Aboriginal heritage study on behalf of the Hornsby Shire Council. It covered the Hornsby LGA, immediately east of the current study area on the opposite side of Old Northern Road and incorporated similar landforms and environment as the current study area. The broad objectives of the study were to identify and assess the Aboriginal heritage of the Shire, make practical recommendations for conservation and management and to promote Aboriginal heritage. A three-stage methodology was developed. Stage One included a research and survey design phase including a brief history on Aboriginal occupation in both the Sydney Basin and Hornsby Shire. This stage also included the consolidation of existing information on Aboriginal sites throughout the Shire, such as the AHIMS database and site specific studies. Stage Two comprised a survey/inventory phase, whereby four specific survey areas were investigated including Tunks Ridge (Dural), Byles Creek (Beecroft), Elouera Bushland Reserve (Cherrybrook) and Middle-Dural Road (Galston) as well as sections of both the Benowie Walking Track and the Great North Walk. Stage Three of the study provided an analysis of the information and sites visited, and planning and implementation recommendations for the short/medium and long term management of sites. The study was undertaken in consultation with the Metropolitan Local Aboriginal Land Council.

The study found that the Shire of Hornsby is rich in archaeological evidence of Aboriginal occupation. The predominant site types found in the study area were engravings, shelters with art and axe grinding grooves. Other site types found in the area included middens and shelters with potential archaeological deposit (PAD). A total of 235 sites were included in the final listings of the study. This figure comprised 206 sites previously recorded on AHIMS and 29 new sites recorded during the site specific surveys. Newly recorded sites included three engraving sites, three shelters with art, three shelters with occupation deposit, two locations with grinding grooves, one open midden site and a water hole. The study concluded that these sites represent a very small proportion of the total number of sites which were likely to exist across the Shire.

The study concluded that sites are found in all topographic units in Hawkesbury sandstone, namely, ridgetops, open sandstone surfaces, rock shelters, overhangs and boulders, creek beds and foreshores. A generalised predictive model for which site types are more likely to occur within a given environmental context was developed, and considered that the estuarine foreshores around Berowra Waters were likely to be the area of greatest site frequency. The occurrence of other site types such as shelters with art, deposit or PAD, grinding grooves and engravings was linked to suitable outcroppings of sandstone, while open context artefact sites were more likely to occur on flat areas of the plateau and gentle gradient landforms in proximity to water sources with good soil development. Five environmental zones were identified as displaying particularly high archaeological sensitivity (Koettig 1996:75):

- The estuarine foreshore
- Creeklines/drainage lines with sandstone beds
- Ground level sandstone platforms or outcrops larger than five metres square
- Sandstone clifflines or isolated boulders which are more than two metres high
- Creek/river flats on sandstone, alluvium and shale

It was also acknowledged that many sites have been destroyed by urban development, land clearing, road and track construction, landscaping, and the use of rock shelters for storage or camping and graffiti, particularly in the more heavily developed southern portion of the Shire. It was also acknowledged however, that there are many sites (or parts of sites) that have survived in reasonably good condition, highlighting that sites can coexist with residential and recreational areas. A range of management strategies were presented to guide future development planning for the LGA where Aboriginal heritage sites would be affected.

Approximately 900 metres south of the current study area, KNC undertook an Aboriginal heritage assessment for proposed rezoning of 240 hectares of land bound by the Old Northern Road to the north, south and west, New Line Road to the north east and Hastings Road to the south east (KNC 2016). The assessment was undertaken with reference to the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH 2010a) and *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010b).

Background research included analysis of previously recorded sites on the AHIMS register in the nearby landscape. These sites were located between 2.4 – 3.6 kilometres from the current study area, within the Georges Creek and Pyes Creek creek valleys to the southeast, and in the Castle Hill Heritage Park to the south. The most common site types were open sites with artefacts (i.e. open camp sites or artefact scatters) around the assessment area, one of which was associated with an area considered to have high potential for subsurface archaeological deposit (PAD). Open context grinding groove sites have also been recorded in association with the drainage lines which descend the elevated Hornsby Plateau.

Grinding groove sites are related to Aboriginal people's manufacture and shaping of ground stone tools such as axes and hatchets and commonly occur on suitable abrasive rock exposures such as Hawkesbury sandstone. One of these sites was also associated with a waterhole/well deliberately shaped to hold water to assist with the shaping process. Closed context sites included two rockshelters with art and one rockshelter containing artefacts. All three closed context sites were located to the south east of the assessment area associated with the incised Hawkesbury sandstone ridges and the rockshelters formed therein.

All nine of the previously recorded sites within the AHIMS search area were located to the south and south east of the assessment area, in closer proximity to more urbanised areas. The scarcity of recorded sites within the AHIMS search coordinates was considered more reflective of survey effort than the actual distribution of Aboriginal archaeological features across the landscape. Heritage assessments are more likely to have been undertaken (and hence more sites identified) in areas where development and infrastructure projects have taken place. Despite the low number of recorded sites, the diversity of site types and features indicated in the AHIMS search results illustrated the rich archaeological resource around the assessment area, with many varied manifestations of past Aboriginal people's presence and use of the environment.

Further detailed information was available for site 45-6-1649 (Pyes Creek 1 (Cherry brook)), a large sandstone shelter complex with two areas of overhang, approximately 15 metres from the eastern side of Pyes Creek. The larger overhang measured 10 metres long x 3 metres deep x 3 metres high (at dripline) and the smaller measured 5 metres long x 2 metres deep x 3 metres high (at dripline). A total of 72 surface artefacts were recorded along the driplines of the overhangs. Deposit within the shelters was loose sandy brown loam and appeared to be at least 15 centimetres deep. The site was considered to be in good condition, with little evidence of disturbance. No art was identified on the shelter walls but these were thickly covered by lichen.

This site was originally identified during an archaeological survey of the Cherrybrook Development Estate in 1984 (McDonald 1984) which covered approximately two square kilometres. Within the survey area, a total of nine Aboriginal archaeological sites were identified. These included six closed context rockshelter sites with PAD, one rockshelter with art and one rockshelter with archaeological deposit (site 45-6-1649). One open context grinding groove site was also identified, consisting of six grinding grooves situated around a deep rock pool on a minor tributary of Pyes Creek. It was recommended that the identified sites be considered as part of the development process and avoided where possible. Test excavation of two rockshelters with PAD was recommended, and further investigation was suggested for site 45-6-1649 should harm from the proposed works be unavoidable.

The site was subsequently excavated in 1985, ahead of proposed impact from the construction of a wastewater pipeline along Pyes Creek (McDonald 1985). A total of 4.5m^2 was excavated at the site, split between a 6 x 0.5 metre trench, four 0.5 x 0.5 metre test pits and a 1 x 0.5 metre square. Excavation was conducted in five centimetre spits, with spit depths altered to accommodate stratigraphic levels where encountered. Spatial analysis of artefact distribution suggested that knapping activity had occurred primarily around the dripline of the shelter. In terms of the vertical sequence, artefacts were concentrated between Spit 2 and Spit 4 and in the top stratigraphic units (Units I and II), suggesting that the most intensive use of the site occurred within a relatively short time frame. Quartz was the dominant raw material, accounting for 67.6% of all artefacts. Silcrete was the second most common, accounting for 24.1% of artefacts. Other artefactual raw materials included mudstone, quartzite and petrified wood. The bipolar knapping technique was predominant at the site and based on technological characteristics of the assemblage including the presence of backed blades the possible age range of the site was determined to be between 2,500 and 3,000 years ago.

The 2016 rezoning assessment also included a field survey component, undertaken where access was available at the time of the assessment (approximately 30% of the assessment area). Landforms included upper slopes and crests of the main ridgeline occupied by Old Northern Road, smaller east-west ridge spurs, drainage lines leading to Georges Creek, and areas of steeper slopes around the creek gullies. Assessment of archaeological potential was also carried out, focusing on a combination of factors such as landform, topography, gradient, erosion, flood level, solar aspect, distance to water and relation to identified Aboriginal sites. The level of soil disturbance was also assessed, as this has the potential to impact upon any subsurface archaeology that may be present.

No Aboriginal archaeological sites or objects were identified within the assessment area. Four areas of moderate archaeological potential were identified based on landform and assessment of likely integrity (i.e. low visible disturbance). Areas with moderate potential were located along the Georges Creek valley and either displayed sandstone outcropping suitable for use by past Aboriginal people, or low gradient areas of low disturbance and apparent soil integrity suitable for preserving open context sites. Outside of the identified areas of moderate potential, the remainder of the study area inspected as part of the Aboriginal heritage study, displayed low archaeological potential due to steeply sloping topography and a combination of erosion, flood energy, agricultural activity and contemporary disturbance of the land. It was recommended that the identified areas of moderate archaeological potential and lands not physically inspected as part of the Aboriginal heritage study be subject to visual inspection if subsequent development planning indicated they may be impacted by development following rezoning.

3 Landscape context

The study area is located on the southern fringes of the Hornsby Plateau, the high plateau located at the north east margin of Sydney's Cumberland Plain. These distinctive physiographic regions form part of the Sydney Basin, a large geological feature stretching from Batemans Bay in the south, Newcastle in the north and Lithgow to the west. The formation of the basin began between 300 to 250 million years ago when river deltas gradually replaced the ocean that had extended as far west as Lithgow (Pickett and Alder 1997). The oldest, Permian layers of the Sydney Basin consist of marine, alluvial and deltaic deposits that include shales and mudstone overlain by coal measures. The underlying geology of the Cumberland Plain is predominantly shale-based, while the Hornsby Plateau is formed from older sandstones.

The study area is located in a transitional zone between the Hawkesbury Sandstone and the Wianamatta Group shales, which dominate the geology of the Cumberland Plain to the west. Underlying geology of the study area includes both formations (Figure 4). The western part of the study area is underlain by Hawkesbury Sandstone, a medium to coarse grained quartz sandstone with very minor shale and laminate lenses (Herbert 1983). Hawkesbury Sandstone comprises a Triassic sedimentary deposit over the older sediments of the Narrabeen Group. Ashfield Shale occurs on the higher ground capping the main ridgeline in the eastern part of the study area along Old Northern Road. This formation comprises black to dark grey shale, laminite and sideritic claystone that grades into fine sandstone. To the northwest, outside the study area, are two small occurrences of Jurassic volcanic intrusions (the Dural Diatreme), comprising volcanic breccia, varying amounts of sedimentary breccia, and basalt.

Sources of lithic raw materials suitable for artefact manufacture occur around the study area. Chert and quartz may have been obtained from the Hawkesbury sandstone formations beneath and adjacent to the study area, distributed in pebble and cobble clasts along the incised drainage lines of the plateau. The Tertiary alluvial deposits known as the Rickabys Creek Gravels are widely distributed across the Cumberland Plain, offering a raw material source of quartzite, quartz, granite, chert, silicified tuff, silcrete and others. Similar raw materials are offered by the Cranebrook and Agnes Bank formations along the Hawkesbury/Nepean River. Materials such as basalt and other tough volcanics suitable for axes may also have been obtainable from eroding volcanic intrusives such as those north west of the study area.

The majority of the study area is located atop erosional soils of the Glenorie soil landscape (Figure 4). Glenorie soils commonly occur on the undulating to rolling low hills associated with the Wianamatta Group shales. Local relief varies by 50 – 80 metres, with slope gradients generally between 5-20% on narrow ridges, hill crests and valleys. Glenorie soils consist of topography-dependent shallow to moderately deep red, brown and yellow podzolic soils, with a high erosion hazard (Chapman & Murphy 1989). Gully erosion along roads/tracks is common, as is moderate sheet erosion in overgrazed paddocks. Evidence of prior erosion is often commonplace, with eroded topsoil deposited against fencelines on the moderate slopes. The Glenorie soil landscape is generally not conducive to the survival of Aboriginal objects in situ, but archaeological potential is increased where suitable low-gradient topography has remained intact and erosion rates are low.

Residual Lucas Heights soils are present around the headwater valleys leading to O'Haras Creek to the west and occur below the south-western corner of the study area. Lucas Heights soils generally occur on the gently undulating crests and ridges on plateau surfaces, where sandstone and shale/laminites are interbedded (Chapman & Murphy 1989) but may also be present along the less-incised upper reaches of the drainage systems of the Hornsby Plateau. Soils consist of moderately deep hardsetting yellow podzolics and soloths, with yellow earths occurring on outer crest edges. Rock outcropping is absent although soils may be stony. Soils are generally stable but display moderate susceptibility to erosion depending on landform and slope gradient.

Landforms within the study area are primarily moderate to moderately-steep slopes descending to the west from the main ridgeline occupied by Old Northern Road (Figure 5). From the ridge crest there are panoramic views of the Blue Mountains, including the distinctive profiles of Mt Hay, Mt Banks, and Mt Wilson. There is a small area of level ground along the western edge of Lot X DP501233, and at the southern end of Lot 9 DP237576. The study area is often exposed to strong westerly winds. Drainage is to the west and includes one minor watercourse, modified and now grass covered, which is the head of a first order tributary of O'Haras Creek. This runs through the middle of Lot 9 DP237576.

Disturbance within the study area results primarily from contemporary and historical land use practices. The Old Northern Road, following the ridge crest, was constructed using convict labour between 1825 and 1836, and houses and businesses centred along it. The block next to the study area is Dural Public School. This was set up on the present site in the 1880s. Historical parish maps show the study area was once land owned by James Byrnes (100 acres, Lot 138) and Stephen Smith (40 acres, Lot 139). The study area is completely cleared of native trees and historical aerial photos show that most of the study area has been previously heavily cultivated, primarily as orchards (Plates 1-3). The former orchards and market gardens are now overgrown, with large areas of ground disturbance evident. Construction and demolition of sheds and other farm structures, as well as tracks, fencing and residential construction along the ridgeline fronting Old Northern Road has also led to localised areas of high disturbance. Drainage works and farm dam construction along the creek lines has also contributed to disturbance within the study area.

Plate 1. 1947 aerial photo (NSW Government Spatial Services). Approximate study area boundary shown in purple.

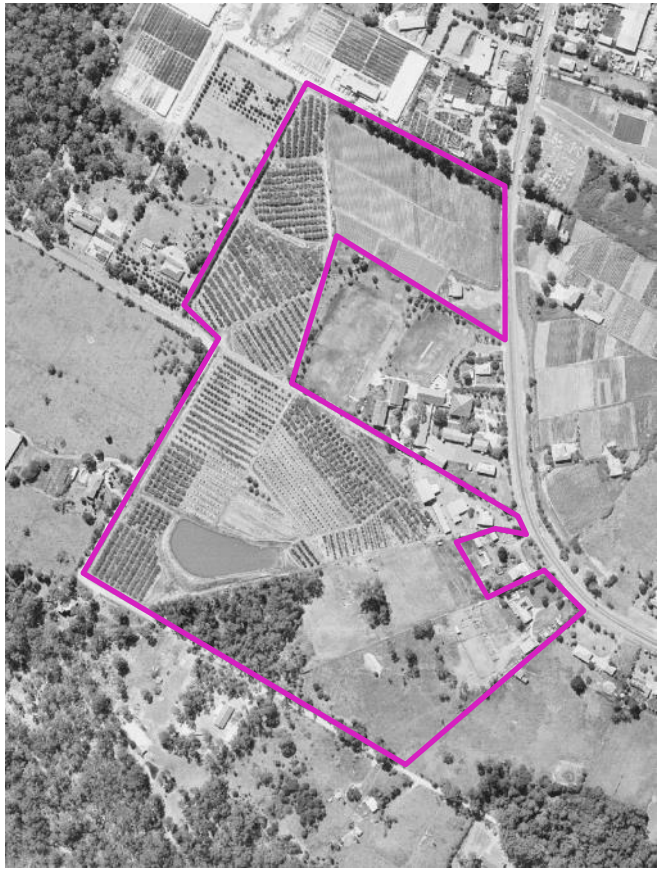

Plate 2. 1978 aerial photo (NSW Government Spatial Services). Approximate study area boundary shown in purple.

Plate 3. 2005 aerial photo (NSW Government Spatial Services). Approximate study area boundary shown in purple.

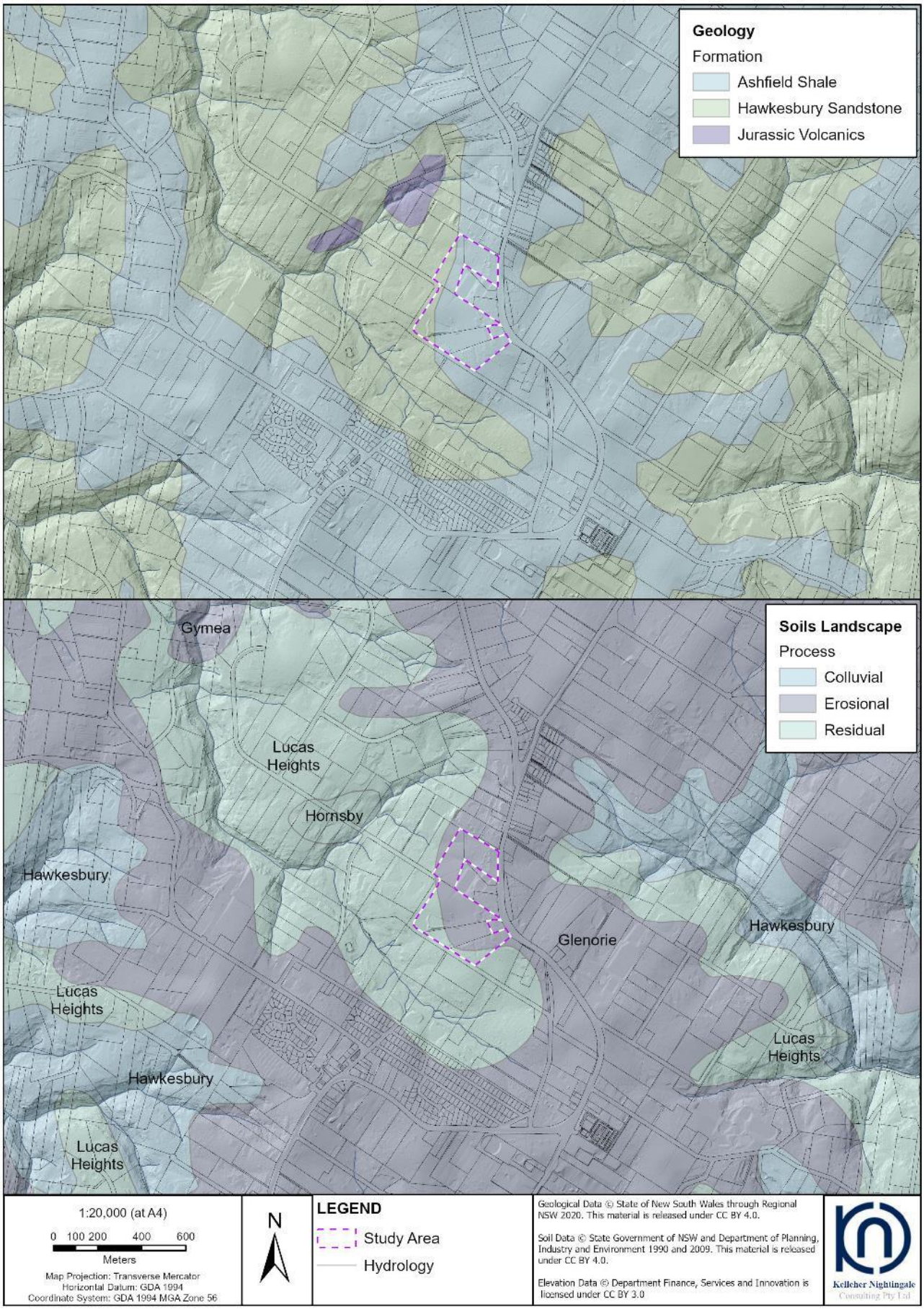

Figure 4. Geology and soil landscapes of the study area

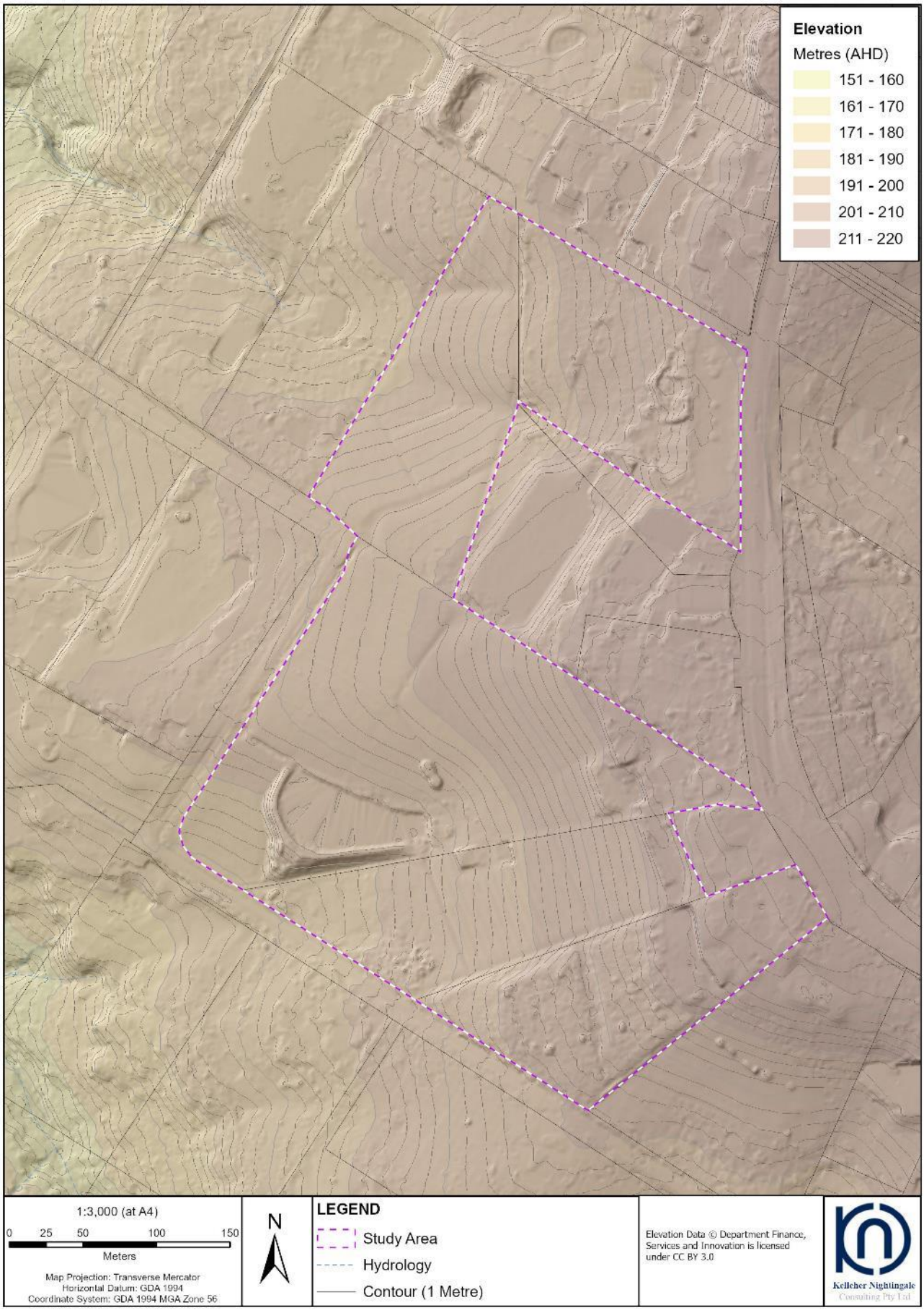

Figure 5. Topography of the study area

4 Regional character and site predictions

Previous archaeological investigations have provided data on site distribution, site typology and lithic raw material use that aid in assessing the archaeological character of the region. Site frequency and density can be related to key landscape factors including distance to water, landform, degree of slope, soil landscape and proximity to environmental resources. Given that the study area is located in a transitional zone between the Cumberland Plain and the Hornsby Plateau, the archaeology of the region tends to display characteristics of both regions.

Atop the Wianamatta shales of the Cumberland Plain, Aboriginal archaeological sites generally occur as open camp sites or surface scatters and as isolated finds on the underlying Bringelly/Ashfield shale geologies. Open sites predominate as the underlying geology of the Plain is not conducive to the formation of rock shelters. Previous studies have demonstrated the relationship between artefact densities and proximity to water sources and landform. Relatively elevated, gentle gradient landforms along the margins of creeks, especially those offering permanent water, would have been favourable for occupation by Aboriginal people. This is reflected in the archaeological record by higher artefact densities recorded at these sites, potentially reflecting repeated or more intensive use of these locations.

Where the Hawkesbury sandstone geology exists, archaeological sites generally occur as rockshelters with art and/or archaeological deposit. Grinding grooves occur on sandstone outcrops located near water. In areas where the shale/sandstone geologies meet, archaeological sites types are varied and often include examples of all of the above. Shale/sandstone transitional zones would have offered a wide variety of resources for past Aboriginal people and would likely have been heavily utilised. The prevalence of silcrete, chert and quartz in local assemblages is reflective of regional geologies, with the Rickabys Creek gravels available at several locations north west of the study area and widely distributed across the Cumberland Plain to the south west, while quartz and chert are available from the Hawkesbury sandstone geology.

Survey effort in the immediate vicinity of the study area has to date been low, however archaeological investigations further afield have revealed a rich settlement history in the region. Gentle lower slopes and raised terraces in close proximity to water sources were favoured for occupation, with increases in site complexity linked to both repeated occupations and a wide variety of activities taking place. Elevated locations on hilltops and ridge crests tend to display a different archaeological signature, chiefly a sparser artefact distribution and less evidence for 'everyday' or utilitarian activities, suggesting that these areas were often used differently. Where historical disturbances are minimal, these contexts have been demonstrated to retain significant archaeology. Within the closed context of rockshelter sites, art and archaeological deposit also survive where disturbance is low. Excavated rockshelter sites in the vicinity of the study area (e.g. site 45-6-1649) also demonstrate that significant archaeological deposit remains at sites where historical and environmental disturbance levels are low.

Regional archaeology has been variably impacted by historical and current land use practices as well as by natural processes. Preservation of archaeological sites in open contexts is difficult because of the adverse effects of erosion, soil movement, flooding and disturbance from various human activities. In particular, the more archaeologically-sensitive level ridgetops and stable, low gradient areas close to water sources were usually the focus of early European settlement and land use, and have a long history of ground disturbance. The study area is located within a landscape with varying levels of natural and human disturbance. Within these contexts Aboriginal objects are unlikely to survive in situ and the archaeological potential of such sites is generally low. Conversely, ground surface visibility is often increased by these processes, leading to increased identification of surface artefacts in these areas.

The information outlined in previous sections allows several predictions to be made about the nature of the archaeology that may be expected in the study area.

- Archaeological sites are likely to consist of low density open artefact scatters and/or isolated finds on the rolling hills associated with the Ashfield shale landscape.
- It can be expected that silcrete will be the most commonly encountered artefact raw material in open context sites, with occurrences of silicified tuff, quartz and occasional chert.
- Clearance of original vegetation lessens the likelihood of identifying culturally modified trees, but any old growth trees present in the study area have the potential to display scars of Aboriginal origin.
- Grinding grooves and rockshelter sites are unlikely given the lack of suitable sandstone outcrops.
- Identification of archaeological sites is likely to be affected by differential visibility of the ground surface, but successful assessment of areas of PAD or archaeological potential can be made based on landform and other environmental factors such as erosion, aspect, soil integrity and distance to water.

5 Sampling strategy and field methods

The aim of the archaeological survey was to conduct a pedestrian walkover of the study area and to record any Aboriginal archaeological sites or areas with potential to contain Aboriginal objects. The study area was inspected by pedestrian survey in July 2022 by Mark Rawson (Senior Archaeologist, KNC). The study area was divided into five survey units based on the cadastral boundaries (Figure 6).

Survey Unit 1 comprised Lot 2 DP541329 (626 Old Northern Road. It included a small portion of the level ridge crest fronting Old Northern Road, dropping to moderately steep south-west facing slopes to the rear.

Survey Unit 2 comprised Lot 9 DP237576 (27 Derriwong Road). It included south-west and north-west facing slopes on either side of a first order drainage depression running west, and a low crest occupied by a house in the southern corner.

Survey Unit 3 was the largest, comprising Lot X DP501233 (618 Old Northern Road). It included a small area of the level crest along Old Northern Road, adjoined by steep to moderate slopes running down to Derriwong Road. This survey unit also included a large farm dam.

Survey Unit 4 was located at Lot 2 DP567995 (21 Derriwong Road) and comprised predominantly moderate to steep slopes below the edge of the ridge crest occupied by the house beyond the eastern lot boundary.

Survey Unit 5 comprised Lot Y2 DP91653 in the southern part of the study area (614 Old Northern Road). This survey unit incorporated part of the main ridge crest in the north east, with steep to moderate slopes running down to the west towards Derriwong Road.

Based on the archaeological background, landscape context and regional character, it was anticipated that overall surface visibility would be low. Field assessment focused on areas of surface exposures on the upper slopes and ridge crest, where there was a greater chance of identifying artefactual material due to better visibility. The generally poor visibility of the remainder of the study area led to an increased focus on landform and topography. Old growth trees were also examined for evidence of cultural modification.

Assessment of archaeological potential was also carried out, focusing on a combination of factors such as landform, topography, gradient, erosion, flood level, solar aspect, distance to water and relation to identified Aboriginal sites. The level of soil disturbance was also assessed, as this has the potential to impact upon any subsurface archaeology that may be present.

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

Figure 6. Survey units and landforms

6 Results

No Aboriginal objects, archaeological sites or areas of Aboriginal archaeological potential were identified within the study area. Surface visibility was poor, with few exposures, however the steeply sloping terrain was not found to be archaeologically sensitive, and extensive previous land use disturbance severely limited any archaeological potential.

6.1 Field inspection

The inspection was carried out by Mark Rawson (Senior Archaeologist, KNC) on Wednesday 27 July 2022. Conditions were clear, with cold westerly winds. Access was via a gate on 618 Old Northern Road, then along a sealed laneway down to Derriwong Road. The study area is completely cleared of native trees. Most of the ground is covered by low grass, except for Lot 2 DP541329 (Survey Unit 1) and Lot Y2 DP 91653 (Survey Unit 5) which are overgrown with tall kikuyu grass and blackberry bushes. Visibility was very low to zero across the study area. There were only a few small exposures, the largest being sheep tracks at a gate above the dam in Survey Unit 3. This showed dark brown silty loam. Some vehicle tracks in Survey Unit 2 showed patches of similar dark brown to grey brown silty loam, which was waterlogged.

The study area includes two bitumen access driveways, a large dam, a farm complex with brick house and sheds on the ridge crest (618 Old Northern Road), and a brick house in Lot 2 (21 Derriwong Road) on mid slopes. Lot Y2 (614 Old Northern Road) includes a house, swimming pool and sheds with driveway and landscaped gardens on the ridge crest. In the north-west corner of 626 Old Northern Road is an abandoned concrete building fronting the main road, with exotic tree plantings near it covered in weeds. These areas were found to be highly disturbed and affected by previous construction. No Aboriginal objects, archaeological sites or areas of potential archaeological deposit were identified.

Survey Unit 1, Lot 2 DP 541329, in the north-east corner of the study area, has steeply sloping ground off the ridge crest (626 Old Northern Road). This is now overgrown with tall kikuyu grass and blackberry bushes. It was entirely covered by a market garden in the 1970s. On the ridge crest is a level area fronting Old Northern Road. Ground surfaces were compacted and covered in blue metal and sandstone rubble. There were a few exotic trees covered by weeds, and trees along the boundary with Dural Public School. It includes an abandoned concrete building, formerly used by a local strawberry grower. Some small exposures were present around the edges of the bitumen however visibility was low due to introduced gravels and overgrown grasses. Archaeological potential of the survey unit was considered low due to the steepness of slope, and previous land use disturbance on slopes and ridge crest.

Plate 4. View to north-west. Lot 2 DP 541329. Side slopes off ridge are steep, now covered in blackberry and tall grass. This was once all cultivated.

Plate 5. View to south. Lot 2 DP 541329. 626 Old Northern Road. Level area on ridge crest. Covered in bitumen, blue metal, dumped sandstone rubble, and weeds. Previous driveway and parking area. Abandoned concrete building in background right.

Survey Unit 2 (Lot 9 of DP237576) is a cleared block on undulating land, with moderate slopes inclined down to the west. This was covered by orchard trees, as far back as at least 1947, as seen on aerial photos. There is a small level area on the midslope at the southern end of the survey unit with a small brick house (27 Derriwong Road). Through the centre of the lot is an open drainage depression, now grassed over, the head of a first order tributary of O'Haras Creek, running to the west. Surfaces were covered by recently slashed kikuyu grass, and soils waterlogged underfoot. Recent tracked vehicle marks exposed occasional patches of wet, dark brown silty loam. Archaeological potential is low considering previous land use disturbance.

Plate 6. View to north-east. Lot 9 DP237576. This lot was previously covered in orchard trees.

Plate 7. View to south-west from northern boundary. across grass covered drainage line

Survey Unit 3, Lot X DP501233, comprises steep slopes covered in low grass, running to a large dam and Derriwong Road. Undulations from the previous orchard are still visible on slopes. Sheep were grazing during the inspection, enclosed by electric fences. On the ridge crest there is a red brick house (618 Old Northern Road), and farm sheds once used for processing fruit from the orchard. Behind the sheds to the west, is a levelled rectangular area cut into the slope and a hole filled with dumped farm rubbish. Orchard trees were removed some time in the late 1980s according to the current tenant. Archaeological potential for this survey unit is considered low, due to the steepness of slope, and previous land use disturbance.

Plate 8. View to west. Lot X DP501233. Steep grassy slopes were once covered by a peach and nectarine orchard.

Plate 9. View to north-east. Lot X DP501233. From Derriwong Road looking back upslope. This corner was also once covered in orchard fruit trees.

Survey Unit 4 (Lot 2 of DP567995) comprises steep slopes which run down to Derriwong Road. These are covered by low pasture grass and bordered by electric fences enclosing grazing sheep. On the mid slopes is a brick house (21 Derriwong Road). Further downslope to the west is a large area of log stockpiles. Visibility was very low to zero for the entire block. This block has historically been subject to ploughing and cultivation, and trees seen in 1978 aerial photos have been removed. Archaeological potential is considered low due to the steepness of the slope and previous land use practices.

Plate 10. View to west. Lot 2 DP567995. Steep slopes covered in low grass. House at right is 21 Derriwong Road.

Plate 11. View to east. Lot 2 DP567995. View along northern boundary of lot. Sealed driveway runs up to 21 Derriwong Road.

Survey Unit 5 to the south (Lot Y2 DP91653) was also found to display low archaeological potential. The cleared area along the ridge crest contains a house and outbuildings with landscaped gardens (614 Old Northern Road). Behind these to the west are two cuts into the steep slopes leading down to Derriwong Road. These form an artificial terrace on the mid slope. Historical aerial photos indicate the lot was formerly cultivated, likely orcharding, and was stripped of topsoil c.2018 (Plate 13). The slopes are now covered by tall grass with regrowth acacias and zero visibility. Archaeological potential is considered minimal due to the steepness of the terrain and extent of previous ground disturbance including stripping.

Plate 12. View to east. Lot Y2 DP91653. Looking upslope from Derriwong Road.

Plate 13. Aerial from March 2018 showing stripping/disturbance across Lot Y2 DP91653, outlined in yellow (Source: Google Earth)

6.2 Survey coverage analysis

Overall exposure across the survey area was very low, primarily limited to vehicle tracks, erosion scours and cleared areas surrounding modern disturbance. Visibility on exposures was also low, with the ground surface obscured by introduced gravels or vegetation. Details of survey coverage and landform coverage are outlined in Tables 2 and 3.

Table 2. Survey unit coverage calculations

Survey Unit	Landform	Survey Unit area (m^2)	Exposure %	Visibility %	Effective Coverage Area (m^2)	Effective Coverage Area (%)
1	Crest	5,122	15	20	153.7	3
	Slope	15,121	1	5	7.6	0.05
2	Open Depression	1,887	1	5	0.95	0.05
	Slope	18,345	5	50	458.6	2.5
3	Crest	3,175	5	20	31.75	1
	Slope	43,411	10	60	2604.7	6
4	Crest	847	1	5	0.4	0.05
	Slope	19,504	1	5	9.75	0.05
5	Crest	4,672	1	5	2.3	0.05
	Slope	14,806	1	5	7.4	0.05

Table 3. Landform coverage calculations

Landform	Landform Area (m^2)	Area Effectively Surveyed (m^2)	Area Effectively Surveyed (%)
Crest	13,816	188.15	1.36
Slope	111,187	3,088.05	2.77
Open Depression	1,877	0.95	0.05

Survey coverage analysis indicates that the slope landforms were the most effectively surveyed in terms of landform coverage. This is attributable to more frequent exposures and higher visibility due to disturbance and erosion on the vehicle tracks and within the eroded area around the dam. Crest landforms had a lower level of exposure and visibility due to disturbance around structures and modern landuse practices. Depression landforms were the least effectively surveyed due to vegetation.

7 Analysis and discussion

Background research, AHIMS records and archaeological field survey did not identify any Aboriginal objects, archaeological sites or areas of archaeological sensitivity within the current study area.

The archaeological field survey found that overall ground surface exposure across the study area was low and restricted to areas where land use practices had removed vegetation or restricted its growth. Visibility within exposed areas was generally low impeded by introduced gravels, grasses and leaf litter. Despite the lack of surface visibility it was still possible to assess the archaeological potential within the study area during the field survey. The characterisation of archaeological potential was based on several factors known to influence both the location and preservation of archaeological sites within the region. These factors included landform context, slope gradient, erosion, solar aspect, distance to water and integrity of the ground surface / assessment of disturbance.

The study area was considered to display low archaeological potential. The sloping nature of the study area's topography strongly influenced archaeological potential as the majority of the ground exhibited gradients too steep to enable the accumulation of archaeological objects. Archaeological potential for intact subsurface deposits was also limited by the long history of contemporary land use disturbance including vegetation clearing, orcharding and subsequent tree removal, cultivation/ploughing, earthworks cut into the slope and construction.

Previous archaeological investigations have shown that open context artefact sites in the region are more commonly identified on stable, low gradient landforms in proximity to water sources. Art and artefact sites may also be associated with rock shelter formations occurring in suitable outcrops of Hawkesbury sandstone. Grinding groove sites are also associated with this geology. No outcropping sandstone was identified within the study area. Similarly, the lack of sheltered, level landforms and water sources make the study area unlikely to have been used for Aboriginal campsites. The more level areas along the main ridge crest would have been suitable for use as a transit corridor from the lowlands up onto the Hornsby Plateau towards the Hawkesbury River, however this landform has a long history of European land use disturbance including earthworks/levelling and construction along Old Northern Road.

8 Significance and impact assessment

No Aboriginal objects (artefacts) or Aboriginal archaeological sites were identified within the study area. No significant Aboriginal cultural features were identified within the study area on the basis of background information review and heritage register searches.

An assessment of archaeological potential within the study area considered factors including landform context, slope gradient, erosion, solar aspect, distance to water and integrity of the ground surface / assessment of disturbance. The study area is considered to display low archaeological potential due to unsuitable landform (steep slopes) and a long history of land use disturbance.

The proposed development of the study area would not impact on any known Aboriginal archaeological heritage objects or sites, potential archaeological deposits or areas of Aboriginal archaeological sensitivity.

9 Legislative considerations

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

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

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

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

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

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

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

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

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

10 Conclusions and recommendations

The study area was assessed under the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.*

No Aboriginal objects, archaeological sites or areas of archaeological potential or sensitivity were identified within the study area as a result of the assessment.

Background research including AHIMS and other database searches, and review of previous archaeological investigations, did not identify any archaeological sites within the study area. Archaeological field survey confirmed that the study area has been affected by land use practices and natural processes, with the sloping landforms not considered suitable for Aboriginal camp locations. The more level areas along the ridge crest have been heavily disturbed by land use including road and house construction and landscaping and do not display any archaeological potential. No outcropping sandstone suitable for rockshelters or grinding groove sites occurs within the study area.

It is therefore reasonable to assume that no Aboriginal objects or sites would be affected by the proposed rezoning and eventual development of the lots. Based on the results of this assessment there are no archaeological constraints to the proposal and according to the Heritage NSW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, works may proceed with caution.

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Appendix A AHIMS Search Results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 2205 update
Client Service ID : 864394

Kelleher Nightingale Consulting Pty Ltd (Generic users)

Date: 15 February 2024

Kelleher Knightingale Consulting Pty Ltd Level 10, 25 Blight Street
Sydney New South Wales 2000

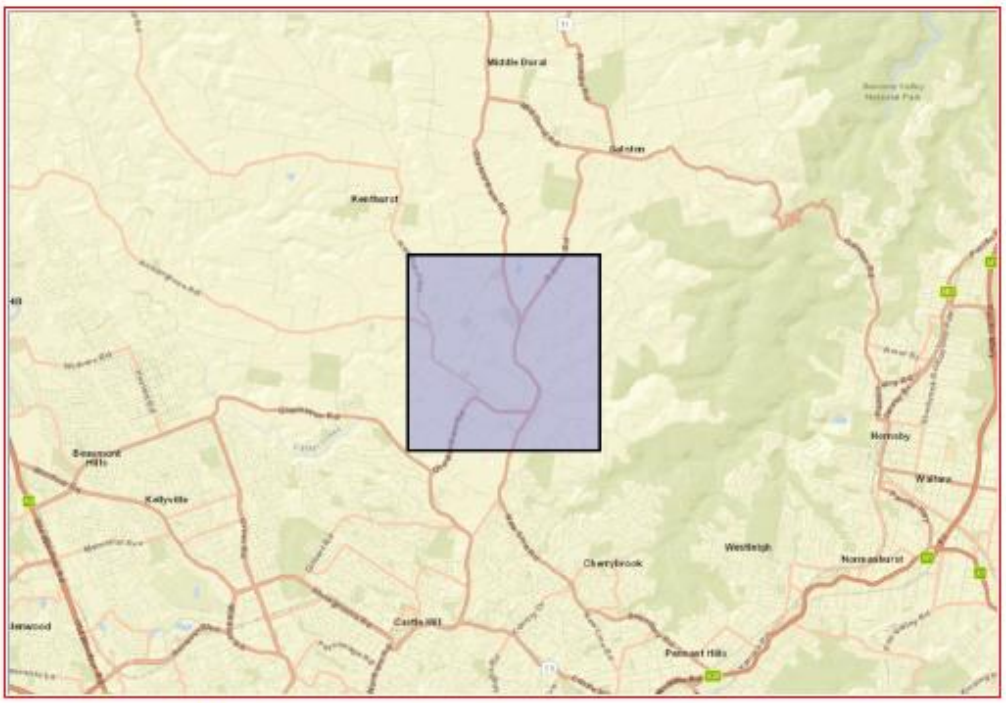
Attention: Matthew Kelleher

Email: knc.ahims@gmail.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 315260.0 - 318670.0, Northings : 6269130.0 - 6272675.0 with a Buffer of 0 meters, conducted by Matthew Kelleher on 15 February 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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