SYDNEY SCIENCE PARK – LUDDENHAM ROAD LUD 3
LUDDENHAM, NSW

Aboriginal Heritage Due Diligence Assessment

Prepared for Orion Consulting
On behalf of Celestino Developments Pty Ltd

Penrith Local Government Area

May 2023

Ref. 2234

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Document Information

Project Name	Sydney Science Park – Luddenham Road LUD3, Luddenham NSW Aboriginal Heritage Due Diligence Assessment
Project Number	2101
Version	V2
Client Name	Orion Consulting (on behalf of Celestino Developments Pty Ltd)
Recipient	Natalie Galea
Issue Date	12/05/23
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1 Introduction

Celestino Developments Pty Ltd (Celestino) propose the construction of a 650 metre upgrade of part of Luddenham Road including provision of a new interim signalised intersection, relocation of services and associated site works. The proposed works are located in Luddenham, NSW within the Penrith City Council local government area (LGA). The proposal is generally referred as 'LUD3 Intersection'. The proposal constitutes the 'study area' for this assessment and is shown on Figure 1. The study area encompasses a section of the existing road reserve on Luddenham Road (approximately 650m) and land within properties on either side of this section as noted below:

- Lot 204 DP 1280188 (Celestino) known as 581 Luddenham Road, Luddenham
- Lot 206 DP 1280188 (Celestino) known as 599 Luddenham Road, Luddenham
- Lot 205 DP 1280188 (Metro)
- Lot 24 DP1277418 (Metro)
- Lot 26 DP1277418 (Metro)
- Road reserve (Penrith City Council)

Kelleher Nightingale Consulting Pty Ltd (KNC) was engaged by Orion Consulting (on behalf of Celestino) to undertake an Aboriginal heritage due diligence assessment of the study area. The assessment aimed to identify if Aboriginal objects were likely to be located in the study area and if so, whether the proposed works were likely to harm those objects.

This report presents the findings of a due diligence Aboriginal heritage assessment of the study area. This assessment has been conducted in accordance with the Heritage NSW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Heritage NSW 2010a).

1.1 Assessment process

The due diligence assessment process is a step by step method designed to give proponents a baseline level of information outlining opportunities and constraints related to Aboriginal heritage. The relevant steps are:

- Determining if the activity will disturb the ground surface or any culturally modified trees (Step 1)
- Database search: Aboriginal heritage information management system (AHIMS) and known information sources (Step 2a)
- Landscape assessment (Step 2b)
- Impact avoidance assessment (Step 3)
- Desktop assessment and visual inspection (Step 4).

The *Code of Practice* specifies that if the initial assessment process identifies that Aboriginal objects will be or are likely to be harmed, then further investigation and impact assessment is required (Step 5). The process involves "taking *reasonable and practical measures* to determine whether your actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm" (Heritage NSW 2010a:4).

1.2 Due Diligence Assessment Summary

Assessment under the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* identified one Aboriginal archaeological site, Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) within the study area. Landform and disturbance assessment found that the remainder of the study area had been disturbed by road construction and road-related infrastructure.

Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) was identified within the current study area (Figure 4). The location of the identified site should be avoided by all pre-construction and construction activities related to the current project.

Luddenham Road Cosgroves Creek AFT 1 is located within the Sydney Metro Western Sydney Airport Project (SMWSAP) SSI approved construction footprint (SSI 10051). Based on the construction footprint, the archaeological constraint will be destroyed as part of SSI construction works.

No Aboriginal archaeological constraints will remain within the study area following completion of the SMWSAP construction, which will occur prior to the Celestino proposed Luddenham Road intersection upgrade. Following completion of the SMWSAP construction the proposed Celestino Luddenham Road intersection works may proceed with caution.

The proposed works also overlaps an area that has been previously assessed for Aboriginal cultural heritage values and is covered under an existing AHIP (C0003861) (AHIP issued to Celestino). Any works undertaken within the existing AHIP area must be undertaken in accordance with AHIP conditions.

Summary

Provided the proposed Luddenham Road intersection works are completed following SMWSAP construction, that the SMWSAP remove all Aboriginal heritage constraints (specifically AHIMS site 45-5-5479) and that the intersection works comply with conditions of AHIP C0003861 then no additional Aboriginal heritage assessment or AHIP is required and the proposed Luddenham Road intersection works may proceed with caution.

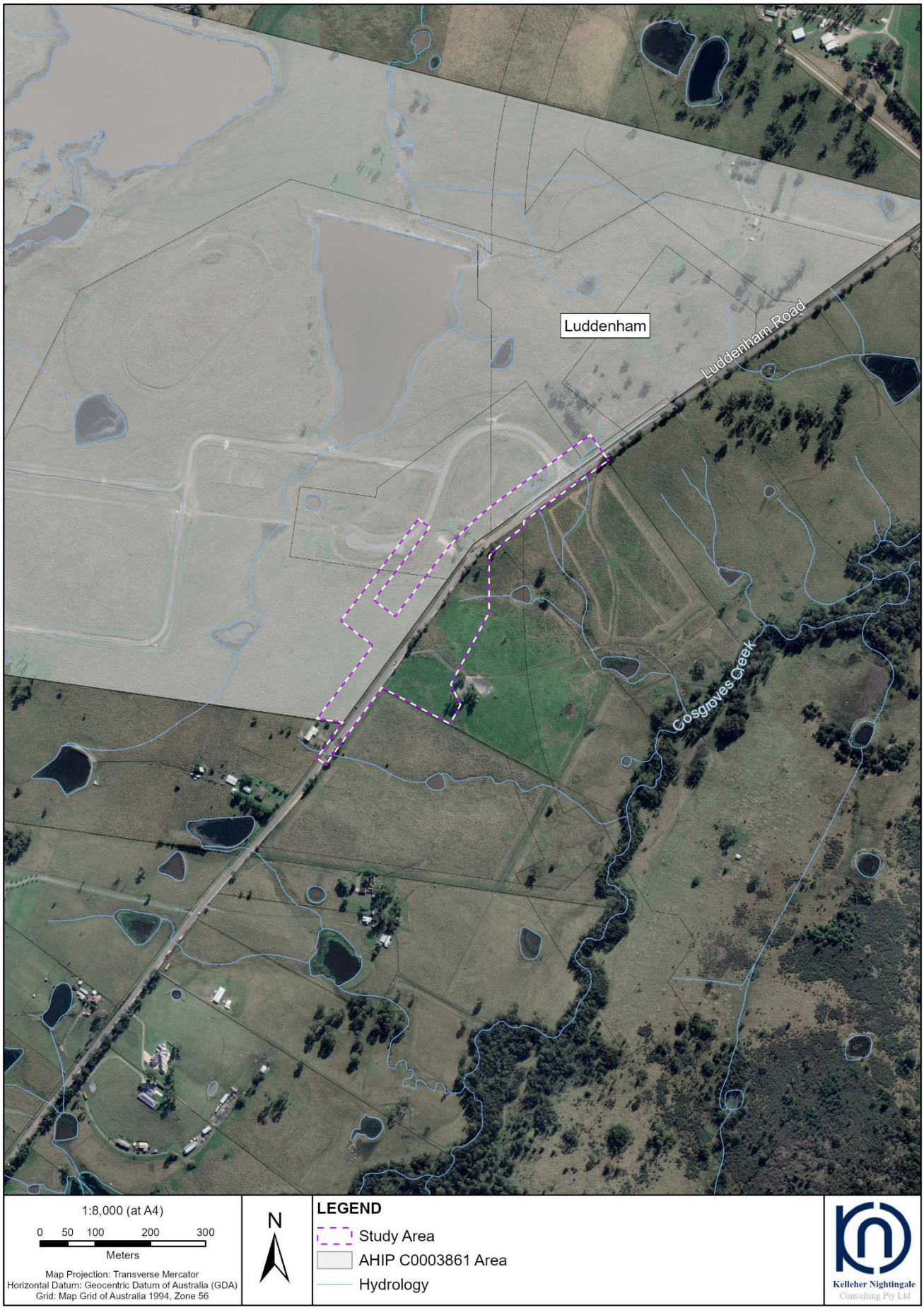

Figure 1. Overview of study area

2 Assessment Process

2.1 Identify if the proposed activity will disturb the ground surface

The proposed activity would likely include tree and vegetation removal, road construction, and the removal and relocation of road related infrastructure. These activities will include These activities would impact the ground surface and have the potential to impact on any Aboriginal objects or Aboriginal heritage items that may be present. Some level of ground disturbance is unavoidable for the proposal as a whole. As a result, the due diligence process progressed to the next step.

2.2 Database searches and known information sources

2.2.1 AHIMS web service and other heritage databases

The Aboriginal Heritage Information Management System (AHIMS) is a database regulated under section 90Q of the *National Parks and Wildlife Act 1974*. AHIMS contains information and records pertaining to registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places (as defined under the Act) in NSW. An AHIMS search was conducted on 21 April 2023 to identify registered (known) Aboriginal sites or declared Aboriginal places within or adjacent to the study area (AHIMS Client Service ID: 775213). The search results are attached as Appendix A.

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

Eastings:	290089 – 29163
Northings:	6252081 – 6253696
Buffer:	0 metres (search area included an extensive buffer)

The AHIMS search results showed:

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

The distribution of recorded Aboriginal sites within these coordinates is shown on Figure 2. The frequencies of site types within the AHIMS database search area are listed in Table 1.

Table 1. Site features and context from AHIMS database search

Site Context	Site Feature	Number	*Frequency (%)*
Open	Artefact	5	*62.5*
	Modified (Scarred or Carved) Tree	3	*37.5*
Total		***8***	***100***

2.2.2 Other heritage register searches

A search was undertaken of the following statutory and non-statutory heritage registers for Aboriginal heritage items:

- State Heritage Register and State Heritage Inventory
- Penrith Local Environmental Plan 2010
- Western Sydney Aerotropolis Plan – March 2022
- Section 170 Heritage and Conservation Registers
- National Heritage List
- Commonwealth Heritage List
- Australian Heritage Database (Register of the National Estate – Non-statutory archive) and
- Australian Heritage Places Inventory (Register of the National Estate – Non-statutory archive).

A small portion of the study area (south eastern corner) was identified on the Western Sydney Aerotropolis Precinct Plan (March 2022) as displaying moderate Aboriginal cultural sensitivity. This area has been assessed during the visual inspection (See Section 2.6).

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

Figure 2. AHIMS search results

2.2.3 Previous archaeological investigations

Several archaeological investigations have been conducted within and in the vicinity of the current study area. Previous archaeological investigations have primarily been undertaken as part of planning for large scale residential development and infrastructure projects. Pertinent studies are discussed below.

Western Sydney Aerotropolis Growth Area Drinking Water Mains

Aboriginal heritage due diligence assessment was undertaken for new drinking mains proposed to service the Western Sydney Aerotropolis Growth Area (WSAGA) (KNC 2021). The assessment included four main alignments along the Luddenham Road, Badgerys Road, Elizabeth Drive and Mamre Road corridors. The assessment including the portion of Luddenham Road located within the current study area.

Visual inspection confirmed that the majority of the study area had been heavily modified by road construction, utilities installation, clearing activities and ground surface modification. Despite this, two previously registered sites were identified along Elizabeth Drive, one newly identified site was recorded within the Luddenham Road corridor, Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) and one newly identified Aboriginal archaeological site was recorded within the Mamre Road corridor. Four newly recorded PAD areas were also identified within the study area, bordering the Kemps Creek watercourse.

Site Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) was recorded on a cutting within the eastern road verge of Luddenham Road, opposite the Sydney Science Park development. The site was identified on the crest of a small spur running roughly east-west. The crest extended approximately 20 metres to the east, with views to Cosgroves Creek, approximately 480 metres further to the east. The road verge at this location contained a cluster of young Grey Box trees. A driveway to the rural property located at 606 Luddenham Road was present at the southern end of the cutting. Two artefacts were identified 50 centimetres apart on a sheet erosion exposure measuring 10 x 0.5 metres long. Artefacts identified included one silcrete utilised broken flake and one complete silcrete flake. The assessment concluded that provided the sites and PAD areas could be avoided by construction and pre-construction activities, the proposal could proceed with caution.

Sydney Metro Western Sydney Airport Project

Aboriginal heritage assessment has been undertaken for the Sydney Metro Western Sydney Airport project (AECOM 2021). The assessment included archaeological survey, archaeological test excavation and archaeological salvage excavations. Sites SMWSA-AS6 (AHIMS 45-5-5333), SMWSA-IA1 (AHIMS 45-5-5536) and SMWSA-AS7 (AHIMS 45-5-5534) were identified as a result of the assessment undertaken for the project. These sites are located within proximity to the current study area. SMWSA-AS6 comprised a low density surface artefact scatter consisting of two silcrete complete flakes and one petrified wood flake shatter. The site was found to be located within a disturbed context. SMWSA-IAS1 consisted of an isolated subsurface artefact identified as a result of archaeological test excavation. SMWSA-AS7 comprised a subsurface artefact scatter comprising 13 artefacts recovered from a flat landform during the test excavation program. The project was approved as critical state significant infrastructure (SSI 10051) on 23 July 2021. The approved construction footprint covers a portion of the current study area.

Sydney Science Park Development

Aboriginal heritage assessment including background research and archaeological field survey was undertaken for rezoning lands near Luddenham, Western Sydney for future development of Sydney Science Park (KNC 2013). The assessment included a portion of the current study area adjacent to the Luddenham Road corridor. Background research identified one previously recorded site within the assessment area. RPS LTPAS01 (AHIMS 45-5-4189) was located immediately west of a large dam formed along the line of an unnamed tributary. RPS LTPAS01 was an open surface artefact scatter site measuring approximately 40 x 25 metres where 16 artefacts were identified. Raw materials identified were silcrete and quartz.

An archaeological field survey was undertaken. Field inspection identified five Aboriginal archaeological site locations and three areas of PAD. Identified sites included RPS LTPAS01 and newly recorded sites SSP 1 (AHIMS 45-5-4707), SSP 2 (AHIMS 45-5-4708), SSP 3 (AHIMS 45-5-4709) and SSP 4 (AHIMS 45-5-4922). Archaeological sites SSP 1 and SSP 4 consisted of isolated finds, while RPS LTPAS01, SSP 2 and SSP 3 consisted of open artefact scatters. Two areas of PAD were also identified in the assessment area: SSP PAD 1 and SSP PAD 2. One additional PAD SSP PAD 3 was also identified in an adjoining property in a subsequent 2016 field inspection.

Initial archaeological significance assessment was undertaken for the sites, with three found to be of low significance and two found to be of moderate significance. Sites SSP 2, SSP 3 and SSP 4. SSP 2 and SSP 3 exhibited a moderate level of archaeological significance based on their depositional integrity. SSP 4 exhibited a stable landform but low localised depositional integrity resulting in a low level of archaeological significance. Sites RPS LTPAS01 and SSP 1 were located in less defined landform contexts, associated with colluvial and alluvial material. It was recommended that an AHIP be sought for the assessment area, with the AHIP process to include further assessment, consultation and mitigation to comply with relevant legislation and associated requirements.

Further archaeological investigations of the Sydney Science Park project was undertaken by KNC (2018a; 2018b). Archaeological assessment included a test excavation program of the wider proposed precinct as well as the preparation of a CHAR for the rezoned portion of the proposed precinct. Testing was undertaken at sites RPS LTPAS01, SSP 1, SSP 2 and SSP 3 and within three areas previously defined as areas of potential archaeological deposit (SSP PAD 1, SSP PAD 2 and SSP PAD 3). SSP 4 was not subject to testing, due to localised high levels of disturbance.

The test excavation program established the presence of subsurface archaeological deposit in all six of the test excavation areas. Excavated PAD areas (SSP PAD 1, SSP PAD 2 and SSP PAD 3) were subsequently designated as sites SSP 5 (AHIMS 45-5-5075), SSP 6 (AHIMS 45-5-5074) and SSP 7 (AHIMS 45-5-5073) respectively. The Aboriginal archaeological sites within the assessment area consisted of open camp sites (artefact scatters and isolated artefacts). A total of 206 artefacts were recovered across the six excavated sites. A range of raw materials including silcrete, silicified tuff, quartz and quartzite were identified. The majority of the overall test excavation assemblage contained unmodified flaking debitage consisting of complete flakes and flake fragments. Complete examples and fragments of cores, microblade cores, backed artefacts and utilised flakes were also identified in lesser numbers across the sites. The sites with the highest artefact densities were located on low lying landforms adjacent to the larger unnamed watercourses (RPS LTPAS01, SSP 2, SSP 3, SSP 5) and the slopes and flats adjacent to Cosgroves Creek (SSP 7). Archaeological significance assessment was undertaken for the overall project area. SSP 1 and SSP 4 were assessed as having low scientific significance. The remainder of the sites within the overall project area (RPS LTPAS01, SSP 2, SSP 3, SSP 5, SSP 6 and SSP 7) were assessed as displaying moderate archaeological significance.

Two CHAR reports were subsequently produced for rezoned portions of the overall project area to facilitate development works. A CHAR report was prepared for whole impacts to Aboriginal archaeological sites (RPS LTPAAS01, SSP 1, SSP 3 and SSP 4) located within Lot 201 DP 1152191 and part Lot 202 DP 1152191, located at 565-609 Luddenham Road, NSW. The CHAR confirmed sites RPS LTPAS01 and SSP 3 were of moderate significance and required impact mitigation through salvage excavation. Based upon the low significance of sites SSP 1 and SSP 4, no further archaeological impact mitigation was recommended for these sites (KNC 2018).

AHIP #C0003861 was subsequently granted on 23 July 2018 for proposed works associated with the Sydney Science Park (integrated mixed-use development). The current study area covers a portion of this AHIP area. Any works related to the current proposal undertaken within this existing AHIP area will be required to comply with the AHIP conditions.

A separate CHAR was prepared for the Water Recycling Facility Access Road & Earthworks within the Sydney Science Park at Luddenham, NSW (KNC 2020a). The CHAR noted that one Aboriginal archaeological site (SSP 2) would be wholly impacted by the proposed works. The CHAR confirmed that the site was of moderate significance and would require archaeological mitigation in the form of salvage excavation prior to any proposed works. AHIP #4663 was subsequently granted on 16 October 2020 for the proposed works associated with the Water Recycling Facility Access Road and Earthworks.

Sydney Science Park Water Related Infrastructure

Archaeological investigations were undertaken in 2020 for water-related infrastructure along the Luddenham Road corridor connecting to the future development of the Sydney Science Park (KNC 2020b). The assessment included a portion of the Luddenham Road corridor located within the current study area. The assessment included archaeological survey of a section of Luddenham Road from Mamre Road at Orchard Hills to the site of the Sydney Science Park. The assessment identified a total of six newly recorded Aboriginal archaeological sites and two PAD areas within or bordering the road corridor. The sites identified consisted of four surface artefact scatters, one isolated find and one culturally modified (scarred tree). The stone artefacts consisted entirely of silcrete raw material and were predominantly flakes, flake fragments and angular fragments. Several cores, core fragments and retouched artefacts were also recorded at site locations.

Landforms associated with the sites located outside of the road corridor were found to have moderate archaeological potential, while areas within the road corridor were determined to have been significantly affected by past road construction and utilities installation and were assessed as being of low archaeological significance with low to nil potential for archaeological deposit. The culturally modified (scarred) tree was assessed as being of high significance. The survey found that the Luddenham Road corridor contained little to nil potential for subsurface archaeology due to high levels of ground surface disturbance. No Aboriginal archaeological sites or PAD areas identified as part of the assessment were identified within or within proximity to the current study area.

Summary and Implications for Study Area

A review of the database searches and associated background information identified one Aboriginal archaeological site within the study area. One Aboriginal archaeological site, Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) was identified on the western road verge within the Luddenham Road corridor. The site comprised a low-density surface artefact scatter site. Previously identified Aboriginal archaeological sites within proximity of the study area generally consist of low-density artefact scatters, isolated finds, scarred trees and PAD areas. These have mostly been identified on elevated landforms in proximity to major watercourses such as Cosgroves Creek.

Archaeological evidence suggests that whilst Aboriginal objects are known to occur near the study area, the likelihood of intact subsurface deposit will vary significantly based on the level of environmental and anthropomorphic disturbance. The majority of the current study area has been subject to disturbance related to existing road construction, utilities installation and water related infrastructure, in addition to natural erosional processes, leading to a low likelihood of any intact archaeological deposit remaining within the study area.

2.3 Landscape Assessment

The *Code of Practice* identifies several landscape features that were often used by Aboriginal people in the past and consequently are often associated with Aboriginal objects, provided that the landscape has not been significantly disturbed. An evaluation of landscape features within the study area aids in assessing whether Aboriginal archaeology is likely to exist.

The study area is located on the Cumberland Plain, a physiographic region of the Sydney Basin characterised by low lying, gently undulating low hills and plains atop the Wianamatta Group of Triassic Period sedimentary shales. The Sydney Basin is a large geological feature stretching from Batemans Bay in the south to Newcastle in the north and Lithgow in the west. The formation of the basin began between 250 to 300 million years ago when river deltas gradually replaced the ocean that had extended as far west as Lithgow (Clark and Jones 1991). The oldest, Permian layers of the Sydney Basin consist of marine, alluvial and deltaic deposits that include shales and mudstone overlain by coal measures. The underlying geology of the Cumberland Plain is predominantly shale-based.

The topography of the study area is characterised by a broad low ridgeline descending northeast towards low-lying areas adjacent to the south to north trending Cosgroves watercourse (Figure 4). A series of gentle to moderately inclined hillslopes and rolling low hills descend from the ridge crest towards drainage tributaries and creeks located to the north, east and west. Several permanent waterways such as Badgerys Creek and Kemps Creek flow generally north towards a confluence with South Creek located to the east of the study area.

The study area is underlain by Bringelly Shale, a complex formation of different lithologies forming the upper unit of the Wianamatta group of Triassic Period sedimentary shales (Clark & Jones 1991). The Wianamatta group was deposited during the subsidence of an alluvial plain and represents the continuous supply of sediment filling the Sydney Basin and pushing the original shoreline out. The group grades upwards from shallow marine deposits through a shoreline sand and the uppermost unit represents the increasingly terrestrial alluvial deposits. This uppermost unit is the Bringelly Shale, consisting of claystone/siltstone, shale, carbonaceous claystone, laminate, fine to medium-grained lithic sandstone, rare coal and occasional tuff.

Residual soils of the Blacktown soil landscape, developed in situ from the underlying Bringelly Shale, are present on the broad rounded crests and ridges and gently inclined slopes found in the southern part of the study area. The residual Blacktown soil landscape consists of shallow to moderately deep hard setting red, brown and yellow podzolic soils. Soil fertility and soil drainage are low. Erosional susceptibility of this soil landscape is relatively low, but is increased where surface vegetation is not maintained (Bannerman, Hazleton and Tille 1990). Archaeologically, these soils may retain intact archaeological deposit where disturbance levels are low but these are likely to retain only horizontal integrity.

Sources of lithic raw materials suitable for artefact manufacture occur close to the study area. The Tertiary alluvial deposits known as the Rickabys Creek Gravels are widely distributed across the western Cumberland Plain, offering a raw material source of quartzite, quartz, granite, chert, silicified tuff, silcrete and others. Silcrete cobbles have been observed during archaeological assessment undertaken to the north and east of the study area. These were exposed along the confluence of South and Badgerys Creeks and are known to occur in the Berkshire Park soils between the Cosgroves Creek and South Creek watercourses, as well as Kemps Creek further east. Raw material sources (especially of silcrete) have also been documented at St Marys (approximately nine kilometres to the northeast) and Plumpton Ridge (approximately 16 kilometres to the northeast).

The study area is located in proximity to landform features (within 200 metres of waterways) which are often associated with Aboriginal occupation/activity as determined by the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Heritage NSW 2010a). Based on the landscape assessment, the study area has the potential to retain Aboriginal objects and archaeological deposit in contexts where the ground has not been subject to significant disturbance.

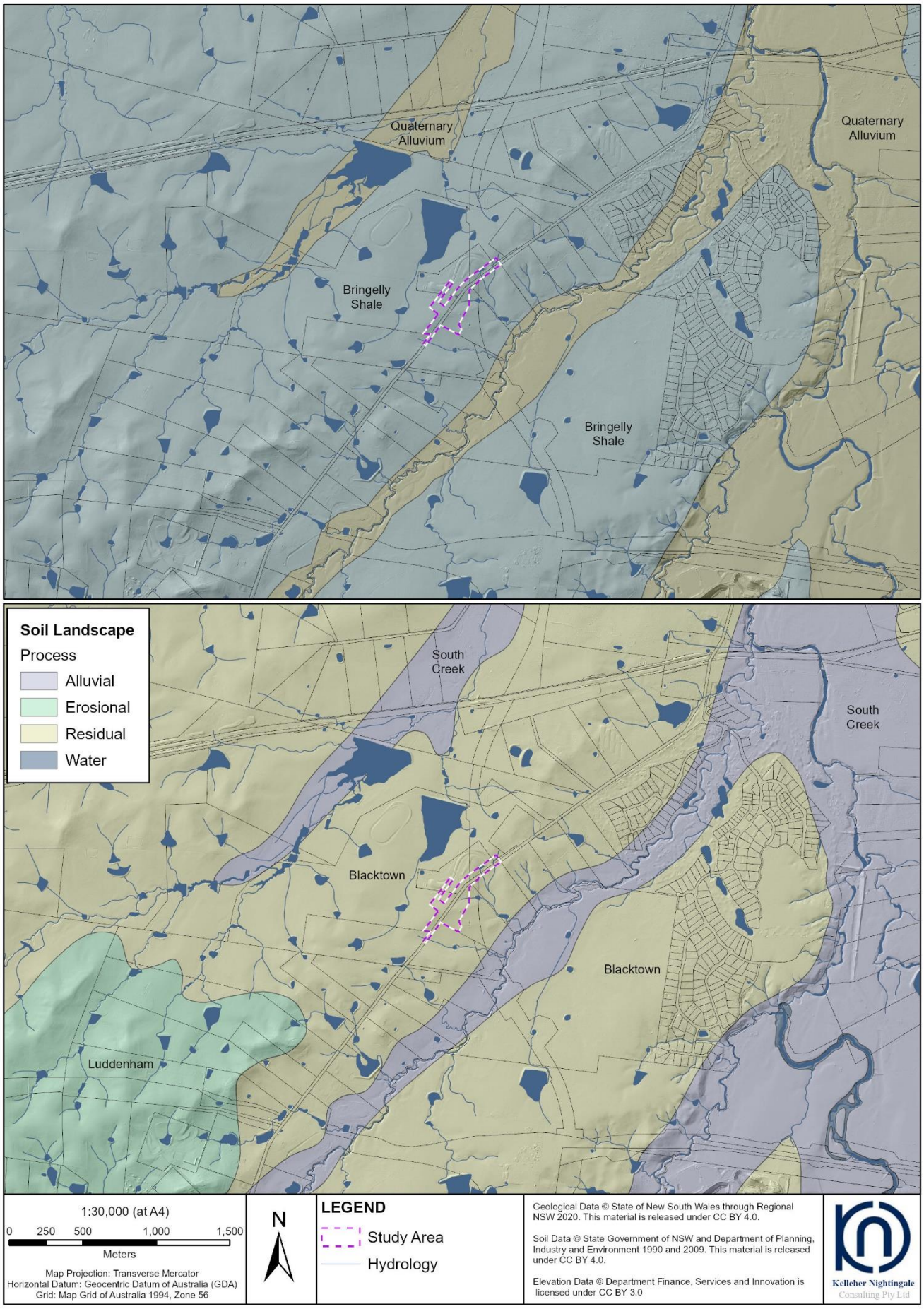

Figure 3. Geology and soils of the study area

2.4 Impact Avoidance

Background research identified one Aboriginal archaeological site Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) within the study area.

Landscape assessment identified landscape features considered archaeologically sensitive by Heritage NSW under the *Due Diligence Code of Practice* (study area is within 200 metres of waterways). Previous investigations in the region have identified Aboriginal objects in disturbed contexts similar to the current study area.

Activities associated with construction of the proposal would impact the ground surface and therefore have the potential to harm any Aboriginal objects which may be present. Some level of ground disturbance to the identified archaeologically sensitive landforms is unavoidable for the proposal as a whole. As a result, the due diligence process progressed to the next step.

2.5 Desktop Assessment

The desktop review and assessment combined the results of heritage register searches, previous investigations and landscape assessment. Background research identified one Aboriginal archaeological site within the study area.

The desktop assessment identified the potential for additional Aboriginal sites in the form of stone artefact scatters (open camp sites) and isolated artefacts occur within the region, especially on elevated landforms in proximity to watercourses and across hill crests and ridgelines. Previously recorded sites of these types have been recorded within the vicinity of the study area, including sites SMWSA-AS6 and SMWSA-IA1 located to the east of the current study area.

Soil landscapes found within the study area are generally conducive to the preservation of archaeological deposit where disturbance levels are low. In general, disturbance levels across the study area appears moderate, associated with existing road and road related infrastructure. Nonetheless, Heritage NSW identifies particular landscape features that are often linked with the presence of Aboriginal objects, including waterways and ridgelines. These features are known to occur in and around the study area, necessitating a visual inspection to identify the spatial relation to the proposed works and assess the level of landscape disturbance and archaeological potential.

A favourable landscape assessment (waterways), and the presence of known Aboriginal archaeological sites within the vicinity of the study area therefore necessitated a visual inspection of the study area. Visual inspection aimed to identify Aboriginal objects, sites and areas of potential and to confirm the location and extent of previous recordings within proximity to the study area.

2.6 Visual Inspection

The visual inspection aimed to identify Aboriginal objects or sites and assess the potential of the archeologically sensitive landforms within the study area to contain Aboriginal objects.

Visual inspection commenced within the northern portion of the study area and continued south along Luddenham Road and neighbouring properties throughout the remainder of the study area. The study area was undulating and included the crest and side slopes of small, gentle eat to west oriented spur. Gentle slopes descending east towards the Cosgroves Creek watercourse and west to drainage tributaries of South Creek.

The study area had been disturbed and modified by construction of the existing road corridor, the construction of a new and related drainage infrastructure. Buried services were also present within the road verges. The neighbouring properties had been disturbed by previous land clearing activities and semi-rural land use.

Ground surface visibility across the study area was generally low and restricted to patches of small exposures and erosion scours associated with road construction. The majority of the landscape was covered by tall weed grasses and regrowth native trees. Visibility on exposures was generally low and impeded by ironstone, introduced gravels, blue metal and leaf litter.

The location of previously registered site Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) was assessed; the site was confirmed to be located within the study area.

The portion of the study area (south eastern corner) identified on the Western Sydney Aerotropolis Precinct Plan (March 2022) was assessed. This area had been disturbed by agricultural land use activities and was confirmed not to display any Aboriginal cultural sensitivity.

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

Plate 1. Example of type of exposure present on top of road cutting. Visibility limited by grass, blue metal, and shale and ironstone fragments, with reddish clay soils.

Plate 2. Facing southwest. View looking to 611 Luddenham Road (white house in right distance) across stud area. Western road verge.

In summary, visual inspection confirmed that one Aboriginal archaeological site Luddenham Road Cosgroves Creek AFT 1 was identified within the current study area. The remainder of the study area had been impacted and disturbed by previous land clearing activities, existing road construction, utilities installation and the construction of water-related infrastructure.

Figure 4. Location of Aboriginal archaeological site within the study area

3 Statutory Requirements

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)]. An Aboriginal heritage impact permit (AHIP) issued under section 90 (1) of the Act is required for any activity which will harm an Aboriginal object or declared Aboriginal place.

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". This defence appears to specifically relate to Aboriginal objects.

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).

4 Conclusions and Recommendations

The proposed Luddenham Road signalised intersection study area was assessed under the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. Visual inspection confirmed that one previously registered Aboriginal archaeological site, Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) was located within the study area. Visual inspection confirmed that the majority of the study area had been disturbed by the construction and maintenance of the existing Luddenham Road corridor and related activities.

- Luddenham Road Cosgroves Creek AFT 1 (AHIMS 45-5-5479) was identified within the current study area. The location of the identified site should be avoided by all pre-construction and construction activities related to the current project.

- Luddenham Road Cosgroves Creek AFT 1 is located within the SMWSAP SSI approved construction footprint (SSI 10051). Based on the construction footprint, the archaeological constraint will be destroyed as part of SSI construction works.

- The proposed works also overlaps an area that has been previously assessed for Aboriginal cultural heritage values and is covered under an existing AHIP (C0003861) (AHIP issued to Celestino). Any works undertaken within the existing AHIP area must be undertaken in accordance with AHIP conditions.

Conclusion
Provided the proposed Luddenham Road intersection works are completed following SMWSAP construction, that the SMWSAP construction works remove all Aboriginal heritage constraints (specifically AHIMS site 45-5-5479) and that the Luddenham Road intersection works comply with conditions of AHIP C0003861 then no additional Aboriginal heritage assessment or AHIP is required and the proposed Luddenham Road intersection works may proceed with caution.

References

AECOM Pty Ltd, 2021. Sydney Metro – Western Sydney Airport: Revised Aboriginal Cultural Heritage Assessment Report. Report prepared for Sydney Metro.

Bannerman, S.M. and Hazelton, P.A. 1989. *Soil Landscapes of Penrith 1:100 000 Sheet*. Soil Conservation Service of NSW, Sydney.

Clark N.R. and Jones D.C. 1991. *Penrith 1:100 000 Geological Sheet 9030, 1st edition*. Geological Survey of New South Wales, Sydney.

Heritage NSW, 2010a. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. Office of Environment and Heritage, Sydney.

Heritage NSW, 2010b. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales: Part 6 National Parks and Wildlife Act 1974.* Department of Environment, Climate Change and Water NSW, Sydney.

Heritage NSW 2010c. Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010: Part 6 National Parks and Wildlife Act 1974. Department of Environment, Climate Change and Water NSW, Sydney.

Kelleher Nightingale Consulting Pty Ltd (KNC), 2013. Sydney Science Park Planning Proposal: Aboriginal Heritage Assessment. Report prepared for APP Corporation Pty Ltd.

KNC, 2018a. Sydney Science Park Development, Luddenham NSW: Cultural Heritage Assessment Report (CHAR). Report to Celestino Developments SSP Pty Ltd.

KNC, 2018b. Sydney Science Park Development, Luddenham, NSW: Aboriginal Archaeological Assessment - Test Excavation Report. Report prepared for Celestino Developments SSP Pty Ltd.

KNC, 2020a. Water Recycling Facility Access Road & Earthworks, Sydney Science Park, Luddenham NSW: Cultural Heritage Assessment Report. Report prepared for Celestino Developments SSP Pty Ltd.

KNC, 2020b. Sydney Science Park Sewer Rising Main, Luddenham and Orchard Hills, NSW: Aboriginal Cultural Heritage Assessment Draft Report. Report prepared for GHD on behalf of Celestino Pty Limited.

KNC, 2023. Western Sydney Aerotropolis Growth Area, Drinking Water Mains: Aboriginal Heritage Due Diligence Assessment. Report prepared for Sydney Water.

Appendix A – Extensive Search Results

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 2234
Client Service ID : 775213

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-4709	SSP 3	GDA	56	290685	6253669	Open site	Valid	Artefact : -		103913,103914
	Contact	**Recorders**	Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd,Ms.Cristany Milicich					**Permits**	4302	
45-5-5534	SMWSA-AS7	GDA	56	291135	6252271	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Doctor.Darran Jordan					**Permits**		
45-5-5668	Cosgrove creek Scar tree 2	GDA	56	291257	6252357	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Brad Welsh					**Permits**		
45-5-5479	Luddenham Road Cosgroves Creek AFT 1	GDA	56	290771	6252813	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generic users)					**Permits**		
45-5-5536	SMWSA-IA1	GDA	56	290970	6252572	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Doctor.Darran Jordan					**Permits**		
45-5-5666	Casgrove Scar tree 1	GDA	56	291112	6252389	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Brad Welsh					**Permits**		
45-5-5667	Cosgrove creek Scar tree 1	GDA	56	291112	6252389	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Brad Welsh					**Permits**		
45-5-5533	SMWSA-AS6	GDA	56	290901	6252757	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Doctor.Darran Jordan					**Permits**		

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

Report generated by AHIMS Web Service on 21/04/2023 for Matthew Kelleher for the following area at Datum :GDA, Zone : 56, Eastings : 290089.0 - 291630.0, Northings : 6252081.0 - 6253696.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 8

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