



ARCHAEOLOGY & HERITAGE CONSULTANTS

**PROPOSED EAST BLOCK
DEVELOPMENT
PENRITH HEALTH CAMPUS
KINGSWOOD, NSW.**

**BASELINE ABORIGINAL AND HISTORICAL
ARCHAEOLOGICAL ASSESSMENT**

Prepared by *Archaeological & Heritage Management Solutions Pty Ltd (AHMS)* for Architectus Pty Ltd.

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Introduction

NSW Health is proposing to undertake a series of upgrades to the Nepean Hospital (hereafter known as the Penrith Health Campus, Derby Street, Kingswood, NSW (refer to Figure 1). Part of this upgrade will involve the demolition of certain existing infrastructure and construction of a new East Block.

This report presents results of a baseline Aboriginal and historical archaeological assessment and impact assessment of the footprint of the proposed East Block and its associated infrastructure (Figure 2). It does not include a formal *Aboriginal Heritage Impact Assessment (AHIA)* in accordance with NSW Department of Environment & Climate Change (DECC) Guidelines and does not include Aboriginal community consultation, as is required in accordance with DECC's (2004) *Interim Community Consultation Requirements for Applicants*. Neither is this report a formal *Historical Archaeological Assessment* prepared in accordance with NSW Heritage Branch, Department of Planning (DOP) Guidelines.

The report does not include heritage assessments of extant built, landscape, technical or social elements of the Study Area.

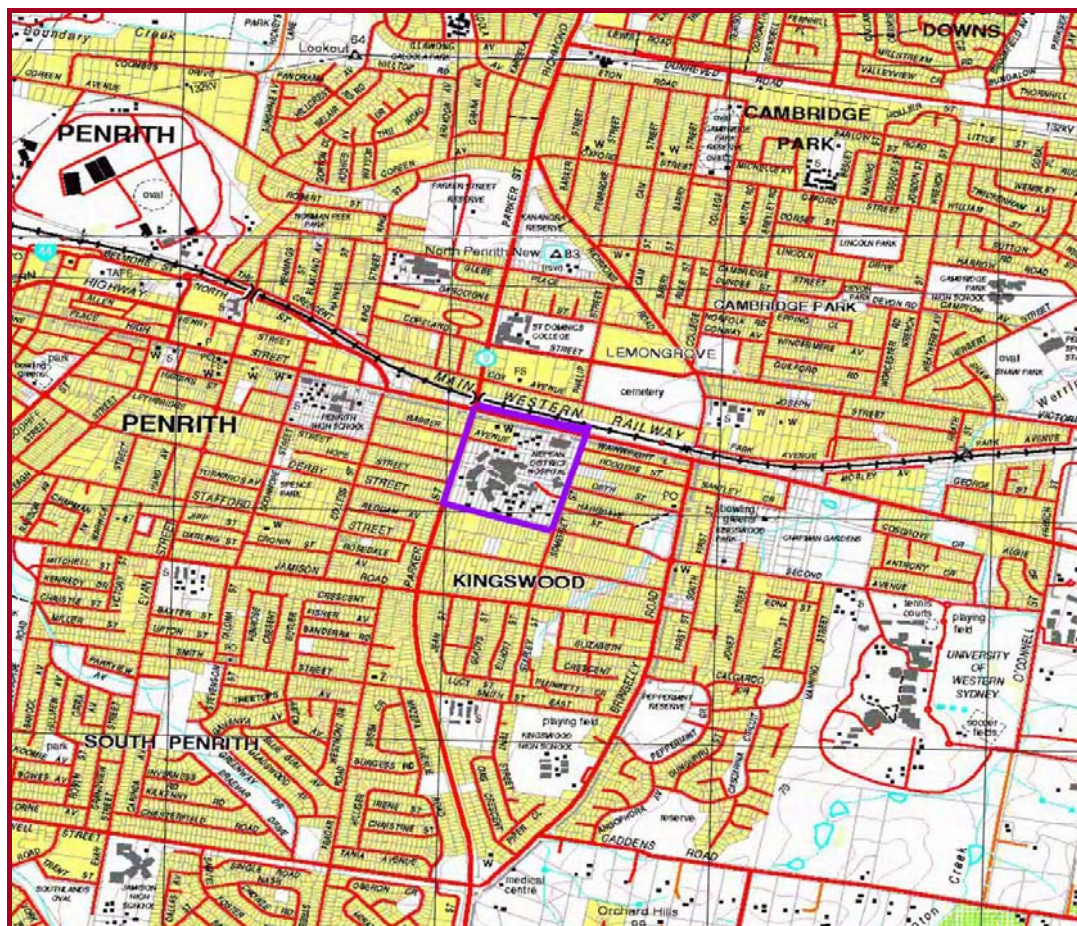


Figure 1 - Location Plan the Penrith Health Campus is outlined in purple.

Source: Topoview 2006 Penrith

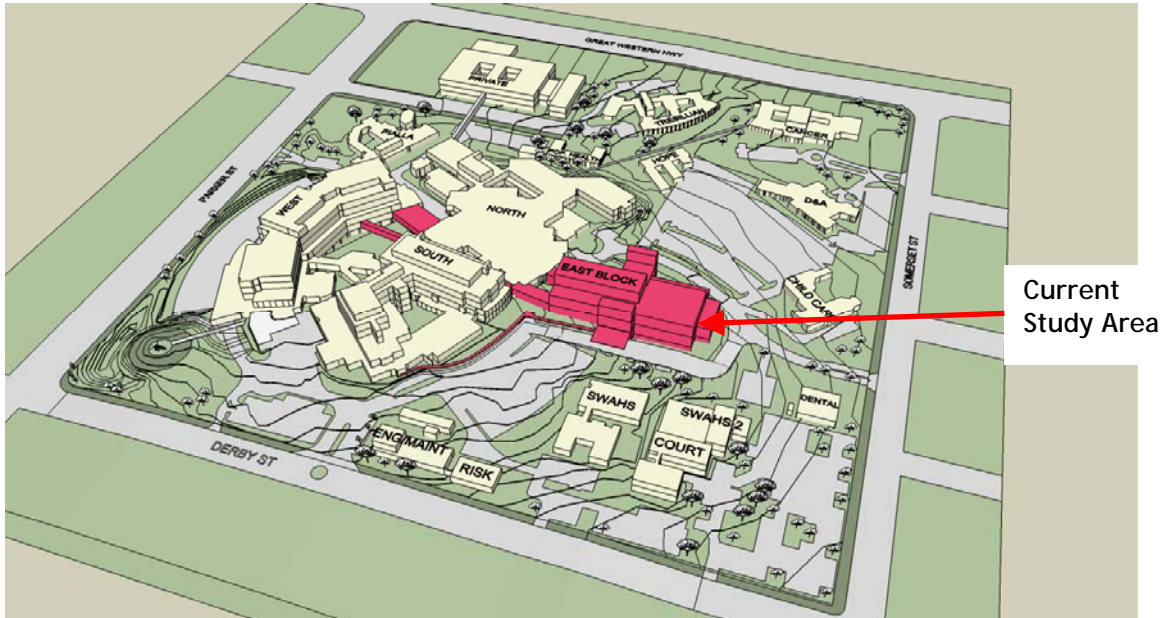


Figure 2 - Location of the current Study Area - the Proposed East Block (shown in red with red arrow) Source: NSW Health

Aims

Specific aims of the study were to:

1. Identify known Aboriginal and historical archaeological elements and resources by searching relevant heritage registers and databases;
2. Undertake desktop research and initial site inspection to identify areas of potential archaeological heritage sensitivity and produce overlays to determine whether any previous historical occupation and use of the Study Area (including now non-extant previous hospital occupation and use) is indicated; and
3. Identify potential archaeological constraints and opportunities, including whether or not detailed significance assessment and impact assessment is required to inform the Environmental Assessment.

Investigation Methodology

1. Archaeological Literature & AHIMS Review

Previous reports, surveys and studies in the locality were reviewed to determine the potential for archaeological sites within the Study Area. The DECC Aboriginal Heritage Information Management System (AHIMS) was consulted to identify any known Aboriginal archaeological sites within the subject land and to gauge the type and nature of sites in the local area. This involved an overview of contextual information about soils and geotechnical data¹ (where

¹ No invasive geotechnical data was available for this review. However a preliminary geotechnical report was available and results will be incorporated into the final report.

available) to determine the likely depth and disturbance of soils with potential to contain Aboriginal archaeological deposits.

Local Environmental Plan heritage schedules and the State Heritage Inventory were also reviewed to determine whether there were any listed historical sites or places within the hospital campus or in its vicinity.

2. Historical Background/Site Specific Research

Targeted historical research and review of relevant primary and secondary sources was undertaken to prepare a brief contextual site history that included occupation phases and sequences of improvements (buildings, works, services etc), demolition and redevelopment over time. The history and phasing compiled in the site history has been used to identify the potential for surviving archaeological deposits and relics at the site. This work also informed the Aboriginal heritage assessment by identifying the level of previous disturbance within the study area so that areas of Aboriginal archaeological potential/no potential could be defined.

3. Site Investigation

The subject land was inspected to determine the likelihood of archaeological deposits and/or objects buried below ground surfaces and their integrity. The observations resulting from the site inspection were combined with the results of desktop research to determine the potential survival of archaeological resources of the site and the potential impact of the proposal on those resources.

4. Baseline Assessment Report and Constraint Mapping

The report identifies and documents the archaeological potential of the site in text and overlay plans, indicating where sites or areas of potential relating to site's Aboriginal or historical occupation may survive.

Statutory Context

It is likely that the proposed development (within the study area) will be assessed and determined as a 'Concept Plan' within the meaning of *Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act)*. Although at the time of writing this report, the project had not yet been confirmed as a State significant project, a number of a *draft* Director General's Requirements (DGRs), pursuant to the Part 3A provisions of the Act, had been issued. This report has been undertaken in response to the Aboriginal and historical archaeological requirements of the Draft DGRs.

While Part 3A projects are not subject to most heritage statute in NSW, current (otherwise applying) heritage statute is summarised below to provide a context for the report and to indicate its consistency with heritage assessment best practice.

Historical Archaeology

Items of environmental heritage in NSW can include buildings, works, relics, moveable objects and precincts in NSW. Some items of local or State heritage significance are statutorily protected if listed on the State Heritage Register (SHR) or are subject to an interim heritage order (within the meaning of the *NSW Heritage Act, 1977*).

An item may also be provided statutory protection through listing within an environmental planning instrument, such as a local, regional or state environmental plan. These plans have specific provisions for the protection and development of (and in the vicinity of) listed heritage items.

Historical archaeological 'relics', are also afforded statutory protection under the *Heritage Act, 1977*. Sections 139 to 145 of the Act prevent the excavation or disturbance of land for the purpose of discovering, exposing or moving a relic, unless an excavation permit or an 'exception' to the need to obtain a permit, has been issued by the Heritage Council of NSW. A 'relic' is defined by the Act as 'any deposit, object or material evidence that relates to the settlement of NSW (not being Aboriginal settlement) and is over 50 years of age'.

However projects considered under Part 3A of the EP&A Act relevant to historic heritage negate the need for approvals from a local Council to affect a heritage item listed on an EPI and from the Heritage Council of NSW to affect an historical archaeological 'relic'.

Section 75U² of the EP&A Act specifically outlines that sections of the *Heritage Act, 1977* do not require separate approval for a project approved under Part 3A of the EP&A Act. An 'approved project' is defined by section 75A of the EP&A Act as a project which has been approved under Part 3A and is not a Concept Plan approval. Accordingly, the relevant historic heritage approval requirements (under Part 4, or Section 139 or Division 8 of Part 6 of the Act) apply while the project remains a Concept Plan or in the event a future approval is sought under Part 4 of the EP&A Act. These sections include:

1. Approval under Part 4 or an excavation permit under Section 139 (This means no approvals are required for items listed on the State Heritage Register (SHR) or places subject to an Interim Heritage Order. It also means no approval is required for excavation of archaeological relics/sites³ on land subject to part 3A Approval); and
2. Approval under Division 8 of Part 6 of the Act (This means items which are not listed on the SHR or subject to an IHO cannot be protected by 'protection orders' e.g. under s136).

Notwithstanding the pending application of Part 3A to the Penrith Health Campus re-development Project, historical archaeological resources have been included as a matter for consideration in the Environmental Assessment documentation.

² Section 75U (1) (d), (NSW) Environmental Planning & Assessment Act, 1979

³ See definition of 'relic' above and section 4, (NSW) Heritage Act, 1977

Aboriginal Archaeology and Heritage

Aboriginal objects (material evidence of Indigenous occupation), and Aboriginal Places (areas of cultural significance to the Aboriginal community) whether known or unknown, are afforded blanket statutory protection under the *National Parks and Wildlife Act, 1974* (NP&W Act). Under Section 90 of the Act it is an offence to disturb, destroy or deface Aboriginal objects without the Consent of the DECC.

However, Section 75U⁴ of the EP&A Act states that an approval under Section 87 or a consent under Section 90 of the NP&W Act is not required for 'approved projects' under Part 3A of the Act. Notwithstanding this, the DECC released draft guidelines for Aboriginal cultural impact assessment of Part 3A Major Projects in July 2005. These form a guide for procedures to be included in Aboriginal heritage assessments that accompany Part 3A applications.

The draft guidelines state:

'all project applications state whether or not the project is likely to have an impact on Aboriginal cultural heritage and must include information about how this assessment was made.'

'This assessment must demonstrate that input by affected Aboriginal communities has been considered, when determining and assessing impacts, developing options, and finalising the application.'

This report has been prepared as a preliminary assessment to determine if the project is likely to have an impact on Aboriginal cultural heritage and whether or not a formal detailed assessment in accordance with these DECC guidelines is warranted.

Historic Heritage

Heritage Listings

There are no known or statutorily listed historical heritage or historical archaeological items in the Study Area or the wider Penrith Health Campus. There are, however, several heritage items currently listed on the Penrith Local Environmental Plan (PLEP) 1991, schedule 2 'Heritage Items' which are situated outside, but in the general vicinity of, the Study Area (Table 1).

⁴ Section 75U (1) (d)

Table 1: Historic Heritage Listings

| LISTING | NAME OF ITEM | SUBURB | ADDRESS |
|--------------------------------------|------------------------------|-----------|---|
| PLEP 1991 (#P10) | Timber Cottage | Penrith | Part portion 15, Bk 1367, No 210, 71 Parker Street |
| PLEP 1991 (#K2) | Penrith General Cemetery | Kingswood | Bounded by Copeland St, Richmond road and Cox Avenue |
| PLEP (Heritage Conservation Area) | Derby Street Area | Penrith | The area bounded by the rear boundary of those lots on the eastern side of Warwick Street; from Lot 17 and 18, DP 793668 Stafford Street to the boundary between Lot 789, DP 739013 and Lot H, DP 373977 Stafford Street; the boundary between Lot 5, Sec 13, DP 1582 and Lot 1, DP 778044, Castlereagh Street; the boundary between Lot 73 and Lot 74, DP 2167 Castlereagh Street; the rear of lots 63 to 73, DP 2167; the boundary between Lot 1, DP 571613 and Parts 42 and 43, DP 2167 Brown Street; the boundary between Lots 26 and 27, DP 2167 Brown Street; the boundary between Lots 6 and 7, DP 2167 Woodriff Street; Derby Street; the boundary between Lots 16B, DP 347812 and Lot 172, DP 558077 Derby Street; the boundary between Lot 14, Sec 8, DP 1582 and Lot 15A, DP 347812 Castlereagh Street; the boundary between Lot 21, DP 700430 and Lot A, DP 318320 Castlereagh Street; the western boundary of Lot B, DP 318320 and Derby Street, Penrith |
| PLEP 1991 (#K6) | St. Phillips Anglican Church | Kingswood | Corner Lot 1, Sec 10, 32 Bringelly Road |

In addition to the 1991 LEP, Penrith City Council has a draft LEP with an attached heritage schedule dated 2008. This document was also reviewed and identified no additional heritage items within the Study Area, although several draft heritage items were identified in an adjoining suburb (Orchard Hills), well outside the existing Study Area.

There are no items situated within the Study Area which are currently listed on the State Heritage Register (SHR) or the subject of an Interim Heritage Order.

The Study Area does not include any places currently listed on the National Heritage List (NHL), the Commonwealth Heritage List (CHL) or the Register of the National Estate (RNE).

Historical Archaeological Review

Regional Context

The area of western Sydney was initially explored by Europeans within the first 2 years of settlement via the Hawkesbury and Nepean Rivers and on foot from Parramatta. The overland exploration party discovered one of the few crossing places on the Nepean River, which

became a crucial factor in the development of Penrith and Emu Plains. In 1803, Governor King permitted settlement to expand south of the Hawkesbury River and on the eastern side of the Nepean, including the areas now known as Penrith and Kingswood.⁵

The Hawkesbury and Nepean region played a crucial role in the early 19th century, essentially as the granary for the colony, with convict labour used in the early settlement of Penrith to meet Sydney's desperate food needs. The crossing of the Blue Mountains in 1813 by Blaxland, Wentworth and Lawson marked an important turning point in the colony to reach important grazing land beyond the Sydney Region. The importance of that crossing can be seen in the speedy construction of the road across the mountains by William Cox in 6 months in 1814-1815. The Penrith region, at the foot of the mountains, became an important commercial centre marked by the movement of people, trade and later livestock⁶ between western NSW and the colony in Sydney and Parramatta. Its importance is further seen in the construction of the Western Road from Parramatta to the Nepean River by 1817.

In the first decade of the 19th century, government surveyors traversed the creek systems to mark out Crown grants. The area east of the Nepean was subdivided and by the 1820s Governor Macquarie had issued many such grants. This meant land in the Nepean area was opened up for farming and the population slowly began to increase with that settlement. The agricultural and pastoral industries continued to remain constant factors in the development of the region until urbanisation of the area increased in the mid 20th century.

The Western Road continued to be an important factor in the prosperity of the Nepean region as it fostered commercial activity from early on. This is seen in the number of inns located at varying distances between Parramatta and Penrith due to the need to change and rest horses. However, following the construction of the railway through to Penrith in the 1860s, use of the highway diminished until the advent of the motorcar in the early to mid 20th century.

Development of the region was further enhanced with the construction of the railway from Parramatta to Wallerawang over the Blue Mountains in the 1860s and the road bridge over the Nepean River (Knapsack Bridge) around the same time. This infrastructure enabled goods to be transported between the pastures west of the Mountains and Sydney. In later years (i.e. the 20th century), the railway became a key factor in the development of the suburb of Kingswood, which essentially developed as a 'rail yard town' and an area to service nearby timber yards.

However the 1860s saw a marked decline in wheat and other crop production in the area due to damage caused by stem rust. This then led to an increase in market gardening, including fruit and vegetable production and dairying in the late 19th century and early 20th century along the Nepean. Although fruit fly outbreaks in the 1930s resulted in the closure of several orchards⁷.

In addition to agricultural and pastoral activities, numerous commercial and industrial activities were undertaken in and surrounding the Kingswood/Penrith areas. Most of these industries were established during the mid to late 19th century and early 20th century and

⁵ Paul Davies 2006 vol 2: 6

⁶ E.g. in 1823 Governor Brisbane enabled pastoralists to take livestock across the mountains

⁷ Fox and Associates 1991

included e.g. tanneries and brick-makers⁸, industries which required constant access to fresh water.

Health in the Penrith Area

Prior to the establishment of district hospitals and dispensaries by benevolent societies in the Hawkesbury/Nepean region in the mid 1840s, health care was either the responsibility of the individual or, if you were in the penal system, the responsibility of the government. In 1846 the Penrith Dispensary and Benevolent Society was established in Penrith. It aimed to provide medical relief to the aged, destitute and infirm. In 1856 a small but purpose built hospital was constructed at Lemongrove and operated until its closure in 1871. It operated as a 'cottage' hospital, affording basic services and treatment for severe accidents and the poor who could not afford the travel to government facilities elsewhere.

In 1890, a short lived hospital operated again within Penrith, but it was not until 1895 that the purpose built Nepean Cottage Hospital was built once more in Lemongrove which sought to address the health needs of the Penrith community. In 1926 the hospital was renamed the Nepean District Hospital. Large improvements in government health care services took place during the 1950s and as a result a new hospital (the Penrith Health Campus site) was constructed to replace the facility at Lemongrove. The Nepean District Hospital was relocated to its current location in Kingswood in 1956⁹.

Local context (The Penrith Health Campus)

The Penrith Health Campus is located on the eastern side of the Nepean River on the border of the suburbs of Penrith and Kingswood. It fronts the Great Western Highway, which follows the line of the old Western Road and the Western Railway line.

It forms part of the original 470 acre grant (named 'Hornseywood Farm') made by Governor Lachlan Macquarie to John Best in January 1814. Best was an emancipated convict who arrived in the colony with the First Fleet. He retained Hornseywood Farm until 1828 when the estate was purchased by another emancipated convict, John Tindale. Tindale later became quite heavily involved in the development of the Penrith area¹⁰.

The Hornseywood Estate was initially subdivided around the 1860s, around the time that the railway was constructed from Parramatta to Penrith. This was followed in the mid 1880s by a major subdivision of the remaining Estate. Consequently the land was cleared and used for agricultural and pastoral purposes in addition to light industry, such as the Nepean Brick & Tile Co. which was established in the southeastern corner of the former Estate.

However, most of the former Estate was generally slow to develop and it was not until the 1950s that urbanised development in Kingswood and Penrith began to take off. RTA 1943 aerial photography (Figure 3) shows the limited development surrounding the Penrith Health Campus site prior to the commencement of urbanisation in the 1950s.

⁸ *The tannery in Kingswood was run by Fred Jones from 1897 to the 1950s and several brickmakers operated in the Penrith area from as early as the 1820s, Paul Davies 2006: vol 1, 29, 30*

⁹ *Paul Davies 2006 vol 1: 74-77*

His involvement included the construction of several residences and donation of land for the St Stephen's Anglican Church and cemetery at Penrith

In 1952 the construction of the Nepean District Hospital began and was completed in 1956 and at this time the new hospital replaced the former Nepean Cottage Hospital situated in Lemongrove.

Table 2: Summary Sequence of Occupation

| Date Phase | Occupation | Activities |
|--|---|--|
| 1814 -1860s | Hornseywood Estate / Farm Land grant to John Best , sale to John Tindale and use by Tindale and Family | Agriculture, pastoralism |
| 1860s- mid 1880s | Subdivision and sale of Hornseywood Estate | Major land clearance and use for agricultural, pastoral and light industrial purposes. |
| 1952 - 1981 1981 to present day | Hospital constructed and site used from this time by the Nepean District Hospital Name change to Nepean Hospital | Demolition of any existing buildings Construction of buildings over time for the Hospital |

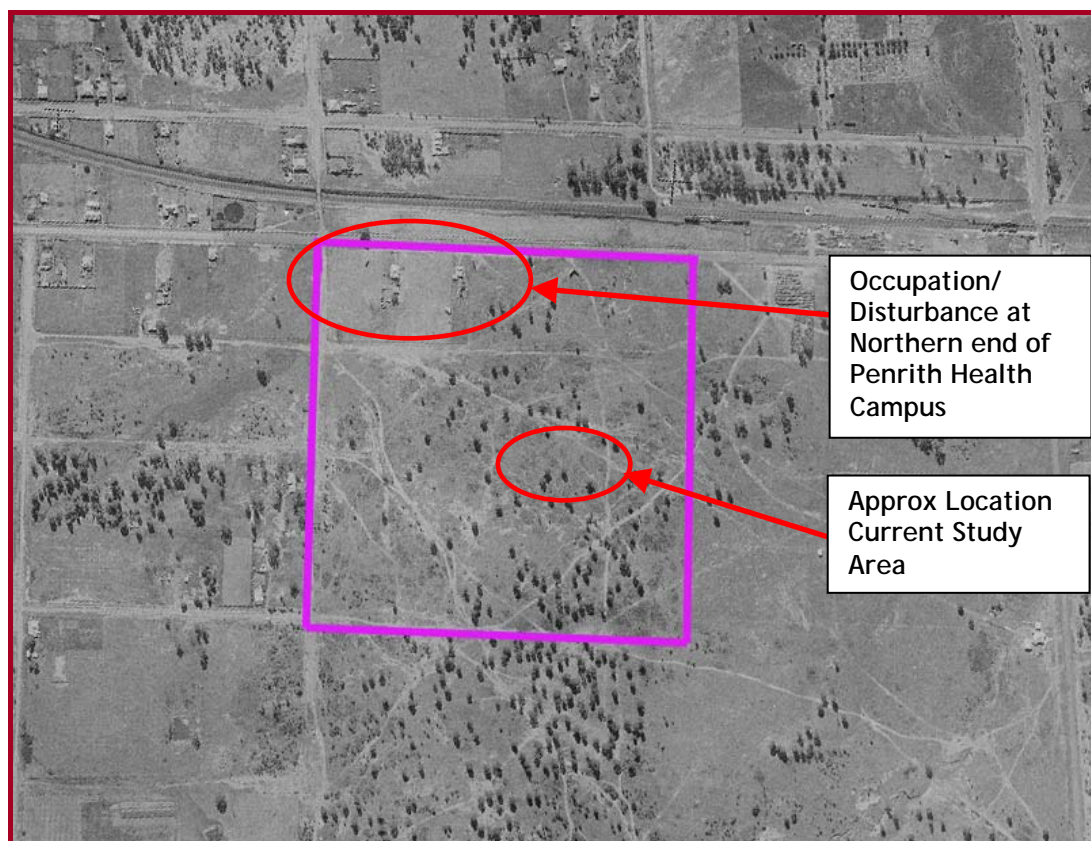


Figure 3 - The 1943 aerial photograph showing the Penrith Health Campus (formerly Nepean Hospital) grounds (outlined in purple). This figure demonstrates the limited occupation over much of the Study Area. (Source: RTA 2005)

Historical Archaeological Predictive Modelling

Based on a review of existing information available for the Study Area, little historical archaeological evidence relating to the early occupation associated with Kingswood is expected to survive at the hospital campus or in the Study Area. Most of the historic occupation tended to be focused along the main roads (e.g. Great Western Highway) and later in association with the railway. Other associated occupation was linked to local and regional industry (e.g. brick-making, tanneries) which was (historically) often sited close to steady water sources. The remainder of the suburb of Kingswood, the study area included, involved agricultural and pastoral usage, with associated small farms and homesteads which were later replaced by suburban development. This means most of the heritage items expected would involve built heritage items or possibly associated features with settlement within the broader landscape. This can be seen in those identified and listed items within the Penrith Local Environmental Plan (and the new draft document) located surrounding streets and suburbs of the Penrith Health Campus.

Aboriginal Heritage

AHIMS Database Search

A search of the DECC AHIMS database found 50 site recordings within a 4 kilometre radius of the Study Area (Figure 4). None are in the Study Area.

The 50 registered sites include 44 open camp sites (or artefact scatters), 4 isolated finds, 1 rock engraving and 1 open camp site with potential archaeological deposit (PAD). Hence of the 50 sites identified, the majority (n=48, 96%) are artefactual in nature. No Aboriginal sites have been recorded in or within 1.5 km of the Study Area.

With regard to distribution, Figure 4 shows that the 50 sites are distributed across the Penrith region with most identified along the Nepean River or other creeklines such as Werrington Creek, Claremont Creek and South Creek.

There are no sites located within the Study Area, but three occur in the general vicinity - #45-5-2484, #45-5-3574, and #45-5-3575. The closest site is #45-5-2484 (an isolated find), which is situated approximately 1.2 km away on a low rise near a semi-permanent water course. Two further sites, #45-5-3574 and #45-5-3575 (both open camp sites), were located on lower slope landforms within the direct vicinity of the 1st order tributary of Werrington Creek - some 2 km south-east of the Study Area.

OAD-1, which is discussed below is located some 3 km to the southeast of the Study Area.

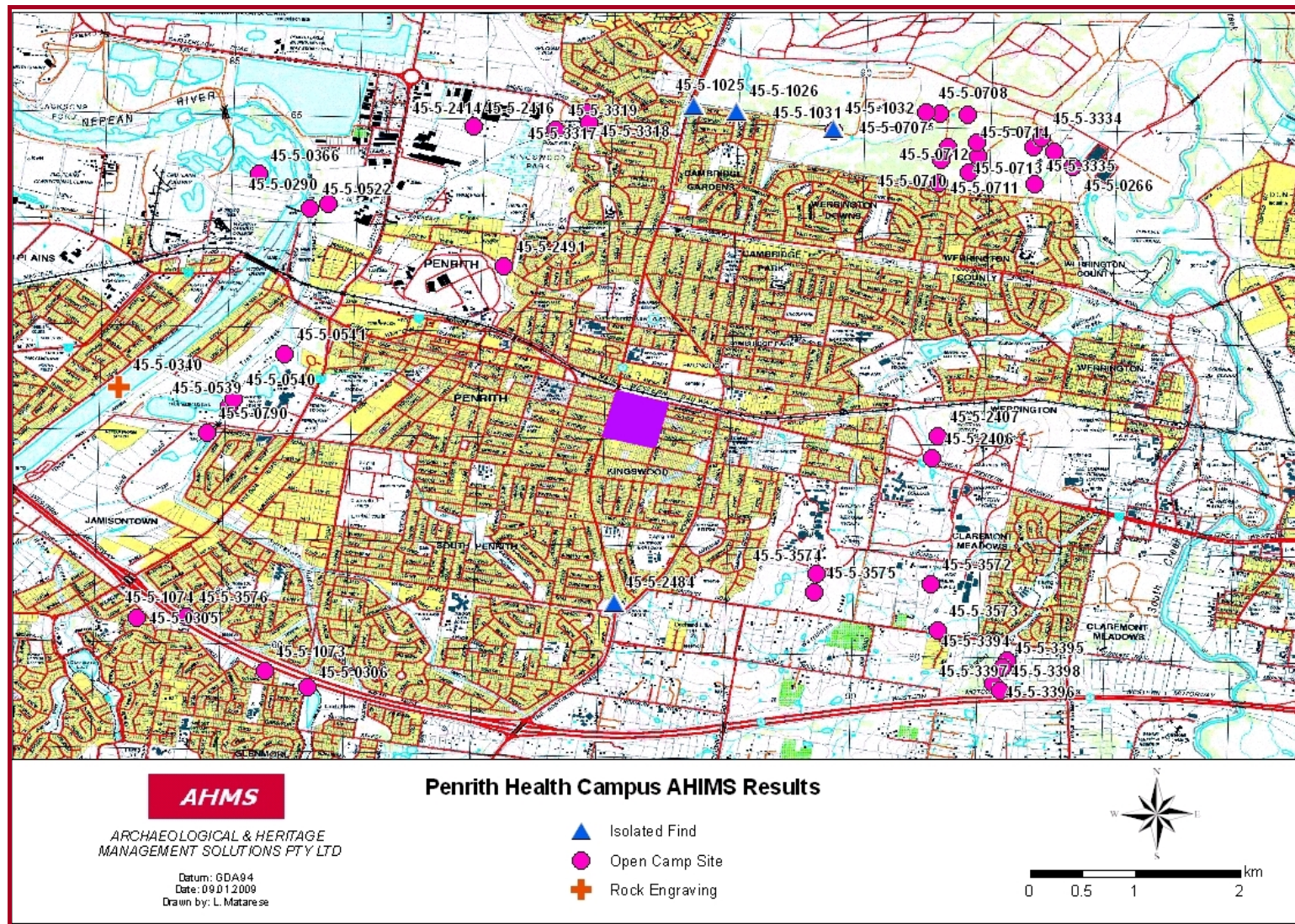


Figure 4 - Topographic map showing Aboriginal sites recorded on the AHIMS database within 4 km of the Penrith Health Campus (in the centre marked purple). *Source: Topoview 2006*

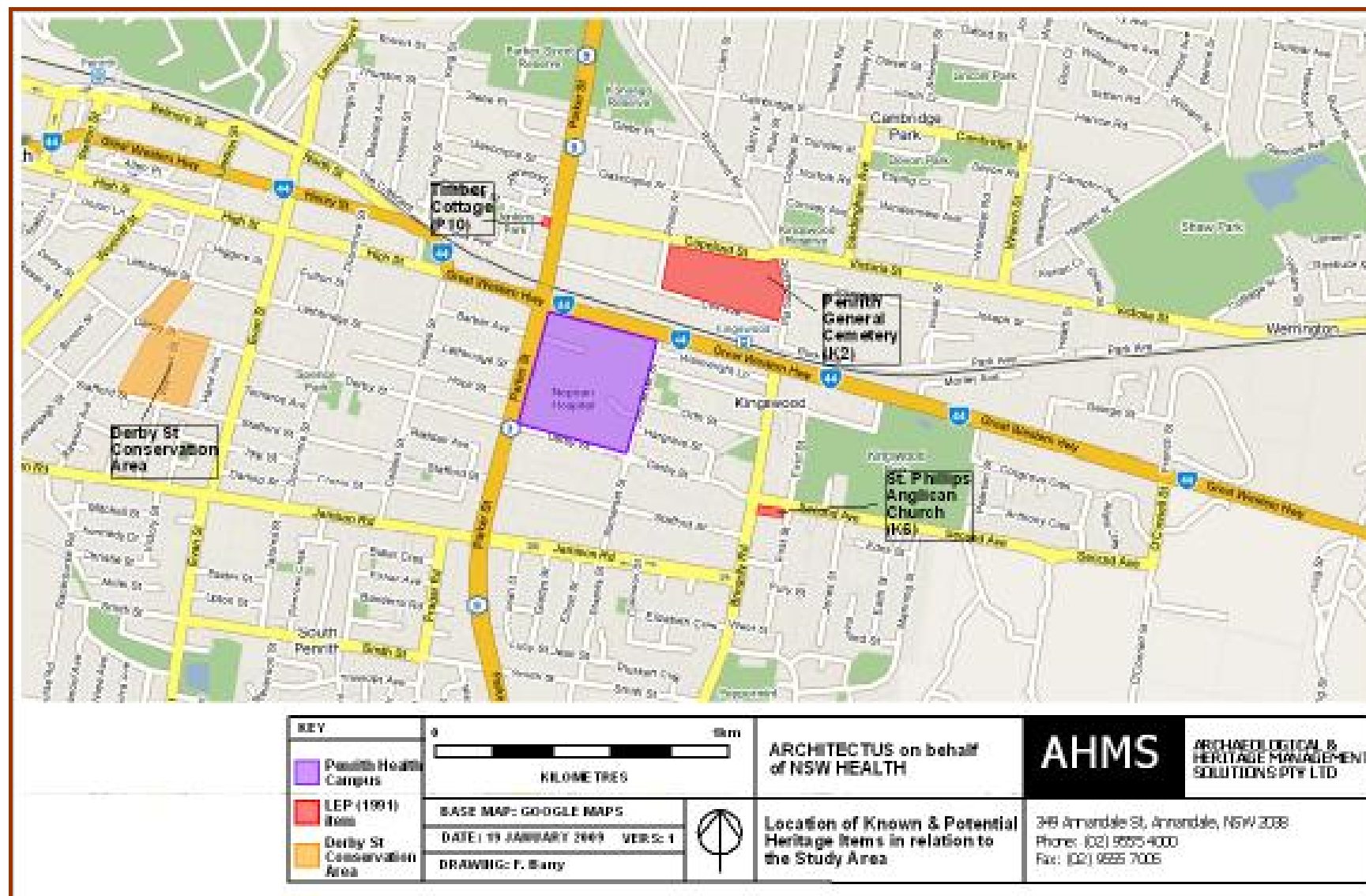


Figure 5 - Historic Heritage Items shown in relation to the Penrith Health Campus (outlined in purple). *Source: Googlemaps*

Aboriginal Background Review

For the purposes of determining settlement and site location patterns, archaeologists examine regional and local trends in the distribution of known sites in relation to environment and topography. This provides evidence about economic and social systems in the past and also assists archaeologists in predicting likely site types and locations in any given area.

Regional Context

In terms of regional archaeology, the Study Area falls within the Sydney Basin. Aboriginal occupation in this region dates back well into the Pleistocene period (i.e. before 10,000 years ago). This evidence comes from radiocarbon dates retrieved from excavated sites such as Cranebrook Terrace (41,700 years before present), Shaw's Creek K2 (14,700 years before present) and George & Charles St Parramatta (c.25,000-30,000 BP)¹¹. The dating of Cranebrook Terrace is currently under review¹², so at this time the Charles & George St site is considered to be the oldest reliable date for Aboriginal occupation in the Sydney region. The oldest coastal site in the Sydney region is Prince of Wales Hospital (8,400 BP), closely followed by Curracurrang Rockshelter in Royal National Park (7,450 BP)¹³.

The vast majority of dated sites in the Sydney region are less than 5,000 years old (35 out of a total of 48 dated sites). It has been argued that this is a result of increased populations and 'intensification', during this period¹⁴. The prevalence of sites dating to the last 5000 years may also be a result of the last significant rise in sea level, approximately 6000 years ago. The sea level rise would have submerged many of the older sites along the coastal fringe.

The archaeology of the Sydney region has been well documented through a large number of academic, amateur and impact assessment investigations over the past 30 years. Approximately 4,300 sites have been recorded and registered with the NPWS Sites Register for Sydney¹⁵, reflecting both the wealth of archaeology in the region and the number of archaeological investigations undertaken.

These studies have permitted a comprehensive model of archaeological site distribution to be developed for the Cumberland Plains, including the Penrith/Nepean region. The model suggests that archaeological sites are focussed upon the higher order creeks (such as the Nepean River and South Creek), situated on the surrounding river terraces, lower slopes and to a lesser extent surrounding elevated areas. Confluences of major creeks are also significant for archaeological distribution. In these areas, the soil profile is often preserved and can be in excess of 70 cm, permitting good stratigraphic and temporal retention of archaeological sites. Due to this depth of deposit, Jo McDonald Cultural Heritage Management Pty Ltd (JMCHM) state that subsurface archaeological deposits are frequently found regardless of the presence or absence of surface archaeological evidence¹⁶. Proceeding away from the creek lines, archaeological site distribution rapidly drops in spatial extent and complexity within 150 to

¹¹ McDonald, 2007

¹² Attenbrow, 2002:20-21

¹³ As cited in Attenbrow, 2002:18-19; Cranebrook Terrace [41 700 ±3000/-2000 ANU-4016]; Shaw's Creek [14 700±250 Beta-12423]; Prince of Wales Hospital [8 400±800 lacks a lab no. from source] and Curracurrang 1 [7 450±180 Gak-482]

¹⁴ Hiscock & Wallis, 2005; Smith et al., 2008

¹⁵ Attenbrow, 2002: 48

¹⁶ JMCHM, 1999, 2001, 2002a, 2002b, 2005

200 m¹⁷. The ridges and hills between the drainage lines generally exhibit only minimal archaeological evidence. JMCHM further suggest that the archaeological distribution is significantly effected by recent human activities and impacts.

Local Context

There have been several archaeological investigations within the Kingswood/Werrington area and the wider Penrith region.

These investigations have predominately been undertaken for land subdivisions and development from the 1980's to present¹⁸. They have included both survey and excavations and were located mostly to the east of the Study Area at a distance of between 2 km and 6 km. However, with the exception of the ADI site, only limited excavations aimed at salvaging Aboriginal objects and sites has occurred to date.

Mostly in both surveys and excavations, sites are characterised as of low frequency and are generally identified as low density artefact scatters or isolated finds¹⁹. The sites identified during these investigations are often recovered from disturbed contexts as a result of recent human activity and development. For example, at a site in South Werrington, Laila Haglund recovered 121 artefacts (mainly composed of silcrete), most of which were considered 'debitage'²⁰ within a heavily disturbed deposit.

However occasional excavations within other portions of Western Sydney, such as at Claremont Meadows in 2006 have recovered extensive archaeological material and provided significant information to the archaeological literature of the region. In the case of Claremont Meadows, approximately 2,000 stone artefacts from an area totalling 141.5m² (an average artefact density of 14/m²) were recovered²¹. Analysis of this excavation confirmed some spatial patterning was visible indicating complex activity zones through overlapping stone artefact manufacturing (knapping) floors. The site (OAD-1) enabled a review of existing Aboriginal occupation models in the Cumberland Plain and was concluded to indicate a location for local exploitation of resources associated with South Creek and as an interface between the flood plain and low/simple slope (small hills) in the local vicinity.

In addition to archaeological excavations, the ERM excavations at Claremont Meadows also sought to investigate more closely the predictive model based on landscape in this part of Sydney. Based on the results from their investigations they presented a number of economic models identifying where Aboriginal sites could be located within this landscape and in different landforms. However this model is dependant on elements such as the stream order and landform in addition to the economic model to best identify areas of archaeological potential, and is similar in nature to existing predictive models. The implication for sites located at distance from water-courses is that they are less likely to contribute to the economic model, and hence water courses still form a significant criterion in site distribution in this region.

¹⁷ AMBS 1998

¹⁸ E.g. Hanrahan 1981; Haglund and Associates 1984, ERM 2003; JMCHM 2008

¹⁹ JMCHM 2008, ERM 2003, AHMS 2006

²⁰ Haglund 1984: 6, 10

²¹ ERM 2006

Aboriginal Archaeological Predictive Modelling

Existing Environment

Historic evidence seen in the 1943 aerial photograph, which encompasses the site, indicates the Study Area was not used extensively in the past. However, while activities prior to the site's current use as a hospital appear relatively minor, the 1943 aerial does indicate a general lack of vegetation, and therefore some form of clearing and/or other pastoral activity has therefore occurred historically. This was confirmed during the site inspection, since trees observed in the Study Area were all relatively recent additions (i.e. since c. 1950).

However the more recent use of the Study Area as a hospital (from 1950s) has clearly modified the landscape extensively. The development of the hospital included activities such as excavation, levelling, service installation, building and car park construction. The site inspection identified several buildings that were situated below ground level, and hence in many areas the natural soil profile will have been completely removed.

A geotechnical report by Golder Associates, January 2009, confirms that construction of certain structures on the site has required some excavation and that fill has occurred in other areas to provide level building platforms. No soil profile information from bore testing was undertaken, however, the report indicates that as a result of excavation and filling shale bedrock may have been exposed at foundation levels for structures located in cuts, while residual soils or fill may be present at foundation level for other buildings at the site.

The Study Area is sufficiently distant from the Nepean River and other higher order creek lines such as Werrington Creek, that it is unlikely that flooding/inundation would have impacted the Study Area. However, this lack of nearby water courses - the closest being a low order ephemeral creek line some 470 m to the south - also reduces the likelihood of archaeological material being present as discussed in the sections above.

Potential Archaeological Resource

Based on the review above, the topography and distribution of natural resources near the Study Area generally indicates a potential for:

- Open artefact scatter sites;
- Potential archaeological deposits within intact topsoils; and
- Isolated finds anywhere across the landscape;

However, from an archaeological resource perspective, the site is located along generally flat (gently undulating slopes), at over 400 m from a low order, semi-permanent creekline. The closest higher order creekline is over 3.5 km away (Werrington Creek) and roughly the same distance to the Nepean River. According to JMCHM's model (and the more recent ERM additions) outlined above for occupation in Western Sydney, Aboriginal occupation was less intensive and likely more transitory at a distance of over 200 m from creeklines. Hence, the likelihood of extensive or significant archaeological materials in this location is low to nil.

Fresh water, in the form of the Nepean River and Werrington Creek, is located in excess of 3 km away. Consequently middens are unlikely to be present within the Study Area. There is no potential for scarred and/or carved trees because the Study Area does not contain remnant

old growth trees. No natural outcrops of rock such as sandstone or silcrete, required for occupation and artefactual manufacture, respectively, are known within the locality. This means there is no potential for axe grinding grooves, rock engravings or rockshelters across the Study Area.

Based on previous archaeological investigations, past occupation of the Study Area is likely to have consisted of low density artefact scatters and/or isolated finds. However, the previous impacts to the Study Area indicate original soil profiles are likely to have been heavily disturbed and in places completely removed (i.e. for cutting to level buildings for the hospital).

Therefore, we conclude that the Study Area does not have potential to retain Aboriginal objects due to past land use/disturbance.

Site Inspection

On 15 January 2009, Lisa Newell and Felicity Barry (AHMS) inspected the proposed 'East Block' Study Area on foot. The inspection sought to identify areas of potential archaeological sensitivity, and/or the degree and extent of site disturbance.

The Study Area is located in the centre of the Penrith Health Campus and currently encompasses a three-storey brick Learning & Development block (L&D block) building and a demountable building located adjacent to (and south of) the L&D block structure. Two carparks, one in the south-west and one in the south-east, and a landscaped garden are located within the Study Area. Several other ancillary developments, such as pathways, services and drainage and roads traverse the Study Area.

Initial observations of the Study Area supported the predictions posed above, that the extant buildings, road construction, landscaping and services installation (i.e. the brick L&D block and several demountable buildings) have heavily disturbed the original landform of the site. The survey indicated that the Study Area has been significantly developed since the 1950's through the use of the site as a hospital. Impacts include the levelling (through excavation and filling) of several areas for the structures within the Study Area, most notably the L&D block structure. Such excavation (in some cases of 1 m) being most evident along the eastern and western margins of the structure (**Figure 6**). Inspection of the existing road alignments within the Study Area further confirmed they have required excavation and grading for their establishment, again to a depth of between 50 cm and 1 m (**Figure 6**).

In addition to the levelling activities, extensive services, such as electricity, telecommunications, water, sewerage, etc, were evident, most notably along a footpath between the L&D block building and a series of demountable structures along the southern boundary. Although the existing demountable structure (in the southwestern portion of the Study Area) was sited on brick piers, it is believed that the construction of the adjacent L&D block building would have required levelling of the immediate vicinity for its installation. This is likely to have heavily modified and truncated original soil profiles within the Study Area.

In relation to vegetation within the Study Area was young in age and/or deliberately landscaped. There was no evidence of established or significantly old trees. The absence of such vegetation indicates that the area has been extensively cleared historically, most likely

prior to and/or during the establishment of the hospital. Such clearance would have led to significant disturbance and soil destabilisation of the Study Area historically.

In summary, the site investigation indicates that the Study Area has received extensive impacts through the last 50 years of use as a hospital, and it is unlikely that any significant intact landforms and/or soil profiles remain. For this reason, there is limited potential for any archaeological materials to remain within the Study Area (see further discussion below).



Figure 6 - Eastern part of L&D block building within Study Area (facing south). The level change for the road and construction of the building are clearly evident.

Results

Historical Archaeology

No historical archaeological relics or sites were identified during the site inspection of the Study Area. Based on the pattern of historic occupation in the Kingswood area, it is likely that any earlier occupation (than the extant hospital) would have focussed along the Great Western Highway and have fronted that land and/or been associated with a particular industry, or agricultural/pastoral usage. As outlined in a previous section, these activities did not occur within the footprint of the current Study Area. This means there is little likelihood/potential that archaeological evidence associated with this type of occupation would be present within the Study Area. Impacts that occurred to the site as a result of the hospital's construction in the 1950s would have further reduced the likelihood for any historical archaeological relics or sites to survive within the Study Area.

In summary there are no known historical archaeological relics or sites and there is no potential for meaningful historical archaeological relics or sites within the Study Area. No further reporting would be required on these grounds.

Aboriginal Archaeology

A review of existing Aboriginal heritage in the region indicates that the Study Area is unlikely to retain Aboriginal objects and/or sites. Existing studies in the region identify the significance of large creek lines and surrounding buffers (<200 m), as well as lower slope landforms for the distribution of Aboriginal objects and/or sites. None of these criteria are met through the Study Area, which is located some distance from any form of water source.

A key aim of the site investigation was to review existing soil profiles to establish whether there are any areas likely to contain potential Aboriginal occupation within the Study Area.

As outlined above, the inspection identified the existing soil profile was excavated in most areas in order to construct the extant L&D block structure and other ancillary buildings within the Study Area. Disturbance was also identified as a result of the installation of associated services to these buildings, in addition to the associated road infrastructure.

The vegetation of the Study Area is relatively young and suggests establishment as part of the hospital activities, and therefore dating to 1950 or later. The landscape within the Study Area has clearly been sufficiently disturbed that the presence of intact soil profiles and/or the potential for buried Aboriginal objects are low. The highly developed nature of the Study Area also precludes the presence of surface Aboriginal objects, none of which were identified during the site investigation.

In summary there are no known Aboriginal objects or sites and there is negligible potential for Aboriginal archaeological sites or objects to be found within the Study Area. This assessment indicates that there are no further Aboriginal archaeological heritage constraints in relation to this project.

Archaeological Constraints

This assessment indicates that there are no identifiable (known or predicted) Aboriginal or historical archaeological constraints to the proposed East Block development. Accordingly, the proposed East Block development would not impact or constrain any identifiable (known or predicted) Aboriginal or historical archaeological resources.

No further work is recommended on Aboriginal or historical archaeological grounds within the current Study Area.

Recommendations

It is recommended that:

1. No further action is required in relation to Aboriginal or historical archaeology prior to the proposed development within the current Study Area; and

2. While this report has not identified any Aboriginal heritage issues, consideration should be given to undertaking Aboriginal consultation in accordance with DECC's (2004) *Interim Community Consultation Requirements for Applicants*, since such a requirement is likely to form a condition of any DGR's or Conditions of Consent issued by DoP. This will also enable cultural values of the Study Area, which are beyond the scope of this document, to be explored.

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