

Site 5—Wallahah
Darkinjung Land Rezoning Site
Aboriginal Heritage, Due Diligence Assessment
Report prepared for Darkinjung Local Aboriginal Land Council

September 2017



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Report Register

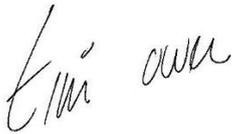
The following report register documents the development and issue of the report entitled Site 5—Wallahah, Darkinjung Land Rezoning Site—Due Diligence Assessment undertaken by GML Heritage Pty Ltd in accordance with its quality management system.

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1.0 Introduction

1.1 Project Background

In June 2014 Darkinjung Local Aboriginal Land Council (DLALC) lodged a multi-stage planning proposal for rezoning a number of land parcels, in its ownership, within the Central Coast Council area (Figure 1.1). The Department of Planning and Environment separately assessed the planning proposals, each receiving its own gateway determination. Gateway determinations have been received for:

- Site 1—Lake Munmorah Rezoning (19 February 2015);
- Sites 3 and Site 4—Bushells Ridge Rezoning (2 May 2016); and
- Site 5—Wallarah Rezoning 380 Motorway Link (9 December 2016).

The three gateway determinations each require a location specific assessment of Aboriginal cultural heritage considerations. This has been interpreted as determining the presence or absence, and assessing the significance, of any Aboriginal archaeological and cultural resources (such as sites, objects or relics) within each site. These assessments must be undertaken in consultation with the DLALC and Guringai Tribal Link (GTL).

GML Heritage Pty Ltd (GML) was engaged by the DLALC to prepare Aboriginal cultural heritage reports for each of the separate gateway determination areas. This report presents Aboriginal cultural heritage considerations for Site 5. A holistic Aboriginal cultural landscape approach has been taken for the three sites—this has entailed a large-scale investigation into the range of potential Aboriginal values, sites and traditional landscape use at the regional level, with a consequential focus on the investigation of each individual site. This approach has been taken because it is best practice, and provides a context for comparison between the three different sites. The approach has allowed for contextualisation of potential development impacts (*harm*), application of the precautionary principle (under Office of Environment and Heritage [OEH] policy¹) and consideration of intergenerational equity.

1.2 Site Location

The location and boundary of Site 5 (the study area) is shown in Figure 1.1 and Figure 1.2. Site 5 is located south of the suburb of Bushells Ridge and west of Blue Haven. Budgewoi Lake is to the southeast of Site 5. The northern edge of the study area is bound by the Motorway Link and the eastern and southern edges are bound by the Sydney–Newcastle Railway. The site includes Lot 2 and 3 and part of Lot 1 DP 1156997.

This study has focused on the portion of Site 5 associated with the proposed concept masterplan—the site investigation involved only lands to the north of Wallarah Creek.

1.3 Objectives for the Assessment

Through consultation with project planners, ADW Johnson and the DLALC, the scope and need for the Aboriginal heritage assessments has been determined. Given that Aboriginal heritage values extend across Country and are not limited by recent subdivision boundaries, a cultural landscape approach has been adopted. This approach considers the Aboriginal heritage of the region, placing each of the three sites within the wider environmental and heritage landscapes. Consideration of Aboriginal

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heritage at the wider regional level has allowed comparison to be made between the three sites, so that pragmatic decisions relating to conservation or impact to values is based on a holistic, cumulative basis.

The objectives of the assessment for Site 5 were:

- to understand the number, extent, type, condition, integrity and archaeological potential of Aboriginal heritage sites and places within Site 5, with a focus on the land areas designated as potentially developable;
- to determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;
- to understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;
- to determine how the proposed project may impact the identified Aboriginal cultural heritage items;
- to provide statutory heritage advice as to future permit requirements; and
- to aim to minimise impacts to Aboriginal cultural heritage through sensible and pragmatic site and land management.

The purpose of this report is to identify whether Site 5 possesses or has the potential to possess Aboriginal heritage archaeological sites, places, objects, landscapes and/or values, in accordance with the NSW OEH guidelines for Aboriginal heritage assessment (listed below). This report provides a due diligence approach to the management of Aboriginal heritage and can be used as the basis for future Aboriginal heritage assessment. This report forms part of the Environmental Assessment for the study area prepared under Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). However, this report is neither an Archaeological Technical Report (ATR) nor an Aboriginal Cultural Heritage Assessment Report (ACHAR). Should an Aboriginal Heritage Impact Permit (AHIP), under Section 90 of the *National Parks and Wildlife Act 1974* (NSW) (NPW Act), be required then the relevant ATR and ACHAR will need to be developed.

Central Coast Regional Plan 2036

The *Central Coast Regional Plan 2036* contains directives and goals relevant to the Aboriginal community and heritage management. A key action includes supporting the 'Darkinjung Local Aboriginal Land Council in the strategic assessment of its landholdings to identify priority sites for further investigation of economic opportunities'.² Three key actions underpin this goal:

- Direction 6: Strengthen the economic self-determination of Aboriginal communities.
- Direction 8: Recognise the cultural landscape of the Central Coast.

*Aboriginal people have a strong connection to the landscape and the region is fortunate to have a rich Aboriginal heritage. Conserving this heritage and respecting the Aboriginal community's right to determine how it is identified and managed, will preserve some of the world's longest-standing spiritual, historical, social and educational values.*³

- Direction 19: Accelerate housing supply and improve housing choice.

This report presents an approach which addresses Actions 8.2 (identification and protection of heritage values) and 8.3 (cultural landscape mapping).

1.4 NSW Legislation Relevant to Aboriginal Heritage

In NSW Aboriginal heritage is principally protected under two Acts:

- the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act); and
- the *National Parks and Wildlife Act 1974* (NSW) (NPW Act).

1.4.1 Environmental Planning and Assessment Act 1979

The EP&A Act provides a statutory framework for the determination of development proposals. It provides for the identification, protection and management of heritage items through inclusion in schedules to planning instruments such as Local Environmental Plans (LEPs) or Regional Environmental Plans (REPs). Heritage items in planning instruments are usually historic sites but can include Aboriginal objects and places. The EP&A Act requires that appropriate measures be taken for the management of the potential archaeological resource by means consistent with practices and standards adopted in meeting the requirements of the NPW Act.

Site 5 is located within the Central Coast Council area, within the former Wyong Shire Council area. This area is covered by the *Wyong Local Environmental Plan 2013* (LEP); Schedule 5 lists heritage items. A search of this list determines there are no listed heritage items within Site 5.

1.4.2 National Parks and Wildlife Act 1974

The NPW Act provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Indigenous occupation of New South Wales) under Section 90 of the NPW Act, and for 'Aboriginal places' (areas of cultural significance to the Aboriginal community) under Section 84 of the NPW Act. Aboriginal objects and places are afforded automatic statutory protection in New South Wales whereby it is an offence (without the Minister's consent) to harm an Aboriginal object or declared Aboriginal Place.

The NPW Act defines an Aboriginal object 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.

The protection provided to Aboriginal objects and places applies irrespective of the level of their significance or issues of land tenure. Sites of traditional significance that do not necessarily contain material remains may be gazetted as 'Aboriginal Places' and thereby be protected under the NPW Act. However, areas are only gazetted if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is of special significance to Aboriginal culture.

A strict liability offence applies for harm to or desecration of an Aboriginal object or declared Aboriginal Place.⁴ The definition of 'harm' includes destroying, defacing, damaging or moving an Aboriginal object or declared Aboriginal Place. The strict liability offence of harming Aboriginal objects has a number of defences. The two defences relevant to the proposed development are the statutory defence of due diligence through complying with an adopted industry code or compliance with the conditions of an Aboriginal Heritage Impact Permit (AHIP).

The potential for Aboriginal objects, sites, places and/or values within the study area, and the question of whether the proposed development may impact on such objects, has been assessed and the results presented in this report.

1.5 Approach to Aboriginal Heritage Management

In order to administer the NPW Act and EP&A Act, the OEH has issued a series of best practice guidelines and policies. The applicability of these depends upon the approval mechanism for a project. Therefore, the approach to the preparation of this document was based on the following current best practice guidelines:

- *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*;⁵
- *Operational Policy: Protecting Aboriginal Cultural Heritage*;⁶
- *Aboriginal cultural heritage consultation requirements for proponents 2010, Part 6, National Parks and Wildlife Act 1974*;⁷
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (the Due Diligence Code)*;⁸
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (the Code of Practice)*;⁹
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*;¹⁰ and
- the *Australia ICOMOS Burra Charter 2013 (the Burra Charter)*.¹¹

1.5.1 Due Diligence Approach

The OEH adheres to the Due Diligence Code which defines a 'due diligence' approach to Aboriginal heritage. The Due Diligence Code is designed to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects, and/or Aboriginal Places, and to determine whether they should apply for consent in the form of an AHIP.

The Due Diligence Code sets out the reasonable and practicable steps which individuals and organisations need to take in order to:

- identify whether or not Aboriginal objects are, or are likely to be, present in an area;
- determine whether or not their activities are likely to harm Aboriginal objects (if present); and
- determine whether an AHIP application is required.

Due diligence is a legal concept that describes a standard of care in considering the likely risks a proposed activity may have and any obligations that may apply. In the case of the NPW Act, the OEH has defined due diligence as

*taking reasonable and practical steps to determine whether a person's actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.*¹²

The steps that are required to follow the due diligence process are:

- searching the Aboriginal Heritage Information Management System (AHIMS);

- checking for landscape features which may indicate the presence of Aboriginal objects;
- strategies to avoid harming Aboriginal objects; and
- desktop assessment and visual inspection to confirm the presence of Aboriginal objects.¹³

In preparing this report, GML complied with the guidelines set out in the Due Diligence Code. The extent of land covered by the due diligence process is described as the study area (see below).

Application to the Current Assessment

In preparing this report, GML complied with the guidelines set out in the Due Diligence Code. The extent of land covered by the due diligence process is described as the study area (Figure 1.2). The scope of work included the following tasks:

- a review of historical and Aboriginal cultural and archaeological research within the vicinity of the study area;
- collation of any additional existing information on the ethnohistory of the study area;
- a search of the AHIMS for known Aboriginal objects and/or sites within the vicinity of the study area;
- evaluation of the previous predictive model and significance assessment for the study area based on the background research;
- examination of aerial photographs to identify any disturbances or changes to the study area since 2009;
- preparation of a report that complies with relevant OEH guidelines; and
- updating recommendations for management of Aboriginal and historical heritage within the study area in the future.

1.5.2 The Burra Charter Process

The Burra Charter process (Article 6) defines a broad three-stage process—comprising seven smaller steps—for the management of heritage. The three stages involve:

1. developing an understanding of significance;
2. ensuring policy is developed appropriate to the significance; and
3. ensuring management is undertaken in accordance with that policy.

The definitions presented in the Burra Charter have provided the basis for definitions used in this report. The Burra Charter's Indigenous Practice Note provides further guidance for application of the Burra Charter to Aboriginal heritage. Of relevance are the following definitions.

Article 1.1—Place

*Place means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.*¹⁴

*'Place' includes locations that embody spiritual value (such as Dreaming places, sacred landscapes, and stone arrangements), social and historical value (such as massacre sites), as well as scientific value (such as archaeological sites). In fact, one place may be all of these things or may embody all of these values at the same time.*¹⁵

Article 1.2—Cultural Significance

*Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.*¹⁶

Article 1.10—Use

*Use means the functions of a place, including the activities and traditional and customary practices that may occur at the place or are dependent on the place.*¹⁷

Article 1.11—Compatible Use

Compatible use means a use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Article 8—Setting

*Conservation requires the retention of an appropriate setting. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place.*¹⁸

Places of significance to Indigenous people require a holistic approach to 'setting'. 'Setting' may encompass the broadest of experiential factors including a sense of 'intrusion' occasioned when people of the 'wrong' gender, age or level of initiation trespass on defined areas, as well as auditory and visual intrusion.

*For some Indigenous peoples, nature and culture are indivisible. The social significance and spiritual significance of a place for Indigenous people may be wholly or partly dependent on the natural environment that the place forms a part of, including aspects such as biodiversity, and totemic and resource species.*¹⁹

Application to the Current Assessment

Stages 1 and 2 of the Burra Charter process have been applied during the current project. The following steps have thus been undertaken.

Step 1—Understand the Place

This involved desk-based investigation into the environment, archaeology, history and literature relevant to the study area. Field survey was undertaken in collaboration with the Aboriginal community (in 2009). The outcome of the Step 1 investigations was the development of archaeological and landscape zoning plans, which show the known sites, places and values connected to the study area. The approach followed the notion that the study area is part of an Aboriginal cultural landscape, and the study area represents a small zone within this landscape.

Step 2—Assess Cultural Significance

A preliminary indication of cultural significance considered aesthetic, historic, scientific and social aspects to the study area. This preliminary assessment of value should be used for future assessments, noting both that 'cultural significance may change'²⁰ and 'tangible heritage should not be emphasised at the expense of intangible heritage'.²¹

Step 3—Identify Factors and Issues

The results from Steps 1 and 2 were used to identify obligations arising as key future management factors and/or issues. The issues and factors define future needs, opportunities and constraints connected with possible future compatible use.

Step 4—Develop Policy

The outcome from Step 3 was applied to develop appropriate management policy, in consultation with the Aboriginal community and in accordance with relevant NSW statutory processes.

1.6 Exclusions

This assessment was limited by a number of factors, notably that the assessment was the first stage in the assessment process. Limitations to our understanding of this place include: the extent of survey (one day) and ground visibility within the study area; an absence of archaeological test excavation to validate the inference of archaeological sensitivity; the restrictions of background archival investigations to the available and searchable material within a three-day period in government archives; and the fact that relatively little prior heritage assessment has occurred in this region in the past.

1.7 Investigators, Contributors and Authorship

This project has undertaken by the personnel listed in Table 1.1. Each person's role and affiliations are detailed in the table below. In addition, GML would also like to acknowledge Sharon Hodges and Tracie Howie who have assisted in the project through their involvement in the field inspection and assistance with several aspects relating to local Aboriginal culture and heritage.

Table 1.1 Investigators and Contributors.

Person (Qualification)	Affiliation	Role
Dr Tim Owen	GML	Project Director
Jodi Cameron	GML	Project Manager
Shezani Nasoordeen	GML	Coauthor
Angela So	GML	Historical research
Tracey Howie	Guringai Tribal Link (GTL)	Aboriginal Representative
Sharon Hodges	Darkinjung Local Aboriginal Land Council (DLALC)	Aboriginal Representative Section 3.2 author



Figure 1.1 Darkinjung LALC re-zoning development sites. (Source: NSW Best Imagery with GML additions, 2017)

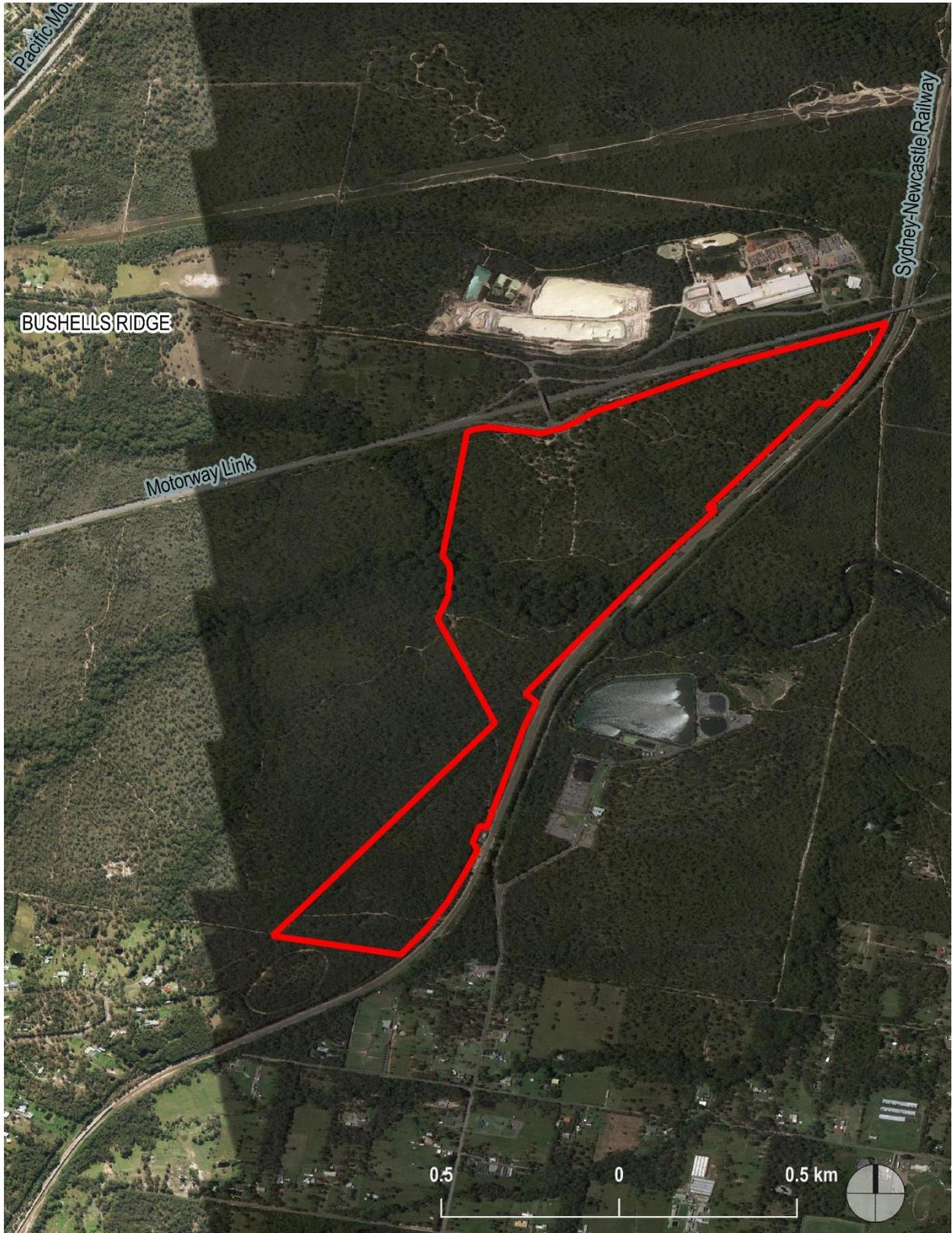


Figure 1.2 Site 5—location and boundary. (Source: NSW Best Imagery with GML additions, 2017)

1.8 Endnotes

- ¹ Department of Environment and Climate Change (DECC), *Operational Policy: Protecting Aboriginal Cultural Heritage*, February 2009, viewed 17 May 2017 <<http://www.environment.nsw.gov.au/resources/cultureheritage/09122ACHOpPolicy.pdf>>.
- ² Department of Planning & Environment, 2016, *Central Coast Regional Plan*, p 7.
- ³ Department of Planning & Environment, 2016, *Central Coast Regional Plan*, p 30.
- ⁴ Department of Environment, Climate Change and Water (DECCW) 2010, NPWS Act 1974, *Fact sheet 1*, September 2010.
- ⁵ DECC, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, 2009, viewed 16 May 2017 <<http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>>.
- ⁶ DECC, *Operational Policy: Protecting Aboriginal Cultural Heritage*, February 2009, viewed 16 May 2017 <<http://www.environment.nsw.gov.au/resources/cultureheritage/09122ACHOpPolicy.pdf>>.
- ⁷ DECCW, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, April 2010.
- ⁸ DECCW, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*, September 2010, Sydney.
- ⁹ DECCW, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, September 2010.
- ¹⁰ OEH, *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, Sydney, April 2011.
- ¹¹ Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, 2013, Australia ICOMOS Inc., Burwood, VIC, 2013.
- ¹² DECCW, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*, September 2010, Sydney, p 18.
- ¹³ DECCW 2010, NPWS Act 1974, *Fact sheet 2*, September 2010.
- ¹⁴ Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, 2013, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 1.1.
- ¹⁵ Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, p 2.
- ¹⁶ Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, 2013, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 1.2.
- ¹⁷ Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, 2013, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 1.10.
- ¹⁸ Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, 2013, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 8.
- ¹⁹ Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, p 5.
- ²⁰ Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, p 4.
- ²¹ Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, pp 2 and 4.

2.0 Environmental and Cultural Landscape Context

The purpose of this section is to provide environmental contextual information for use in developing a predictive model of Aboriginal site locations associated with the study area. Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The nature and availability of resources including water, flora and fauna and suitable raw materials for the manufacture of stone tools and other items had (and continues to have) a significant influence over the way in which people utilise the landscape.

Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials that may have been deposited, whilst current vegetation and erosional regimes affect the visibility and detectability of Aboriginal sites and objects. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

2.1 Archaeological Background

In line with OEH reporting requirements,¹ this section provides a review of previous archaeological work, the landscape context, regional character and an Aboriginal heritage predictive model.

The purpose of this section is to synthesise available information from previous archaeological and ethnohistorical studies to provide a context and baseline for what is known about Aboriginal cultural heritage in the subject area. The location of previous archaeological studies is shown in Figure 2.1.

2.1.1 Previous Archaeological Reports

A literature review of the NSW OEH library (and additional reports held by DLALC and GML) was undertaken to understand the broader region's archaeological patterning. This review was targeted to those reports relevant to the study area (Figure 2.1). Keyword searches were used to find reports for the locality in AHIMS. A review of key reports is provided, in chronological order, below.

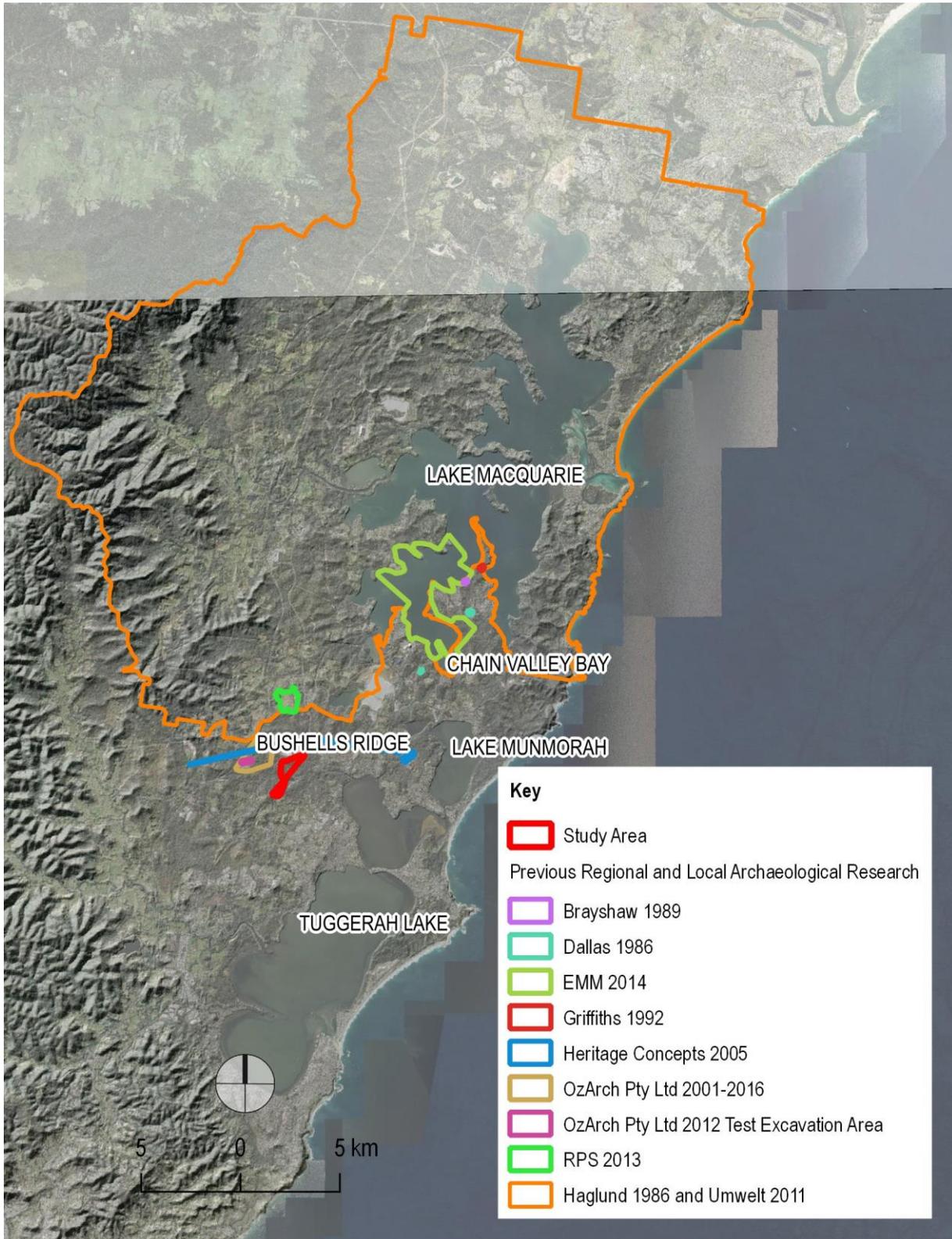


Figure 2.1 Previous regional and archaeological reports. (Source: NSW LPI with GML additions, 2017)

Regional Archaeological Landscape Context

OzArch Pty Ltd, 2016—Wallarrah 2 Project Area Environmental Impact Statement (EIS)

The Wallarrah 2 Coal Project has provided environmental assessment for a large land area within the Wyong Local Government Area. Most of the project application area was located west of the F3 freeway. A small portion of the study area, called the Tooheys Road Site Survey Area, is relevant to current investigations as it is 500m to the west of the current study area and bisects the Resource Recovery Area and Site 5.

OzArch² prepared an Aboriginal cultural heritage assessment for the Wallarrah 2 Coal Project EIS; this report synthesises the 2016 survey and summarises previous work, which included baseline³ and continued survey in 2006 and archaeological test excavation in 2012. The surveys focused around Wallarrah Creek, a major upper catchment in the coastal hinterland region. Open sandstone art sites/grinding grooves were predicted, in addition to artefact sites associated with ridgetops and high slopes located 10m from ridgetop/slope break. Freshwater middens were also considered to be common along creek lines but predicted to be affected by flooding, erosion and/or soil movement.

Two areas were considered to contain archaeologically sensitive landforms: along Wallarrah Creek valley and Spring Creek valley, based on the presence of quaternary alluvium. The landscapes around Wallarrah Creek predicted to have been transitory camps, as the water from the creeks was not considered supportive of large permanent populations.

WC-OS2 was identified during the 2001 and 2006 surveys and associated with the banks of Wallarrah Creek. The site was archaeologically test excavated in 2010. Aboriginal objects recovered included quartzite, mudstone and quartz.⁴ It was suggested the evidence demonstrated 'random tool re-sharpening and isolated events rather than an occupational camp,⁵ and the 14 artefacts were listed as a single site (WC-OS2, AHIMS #45-3-3584). The excavations at Tooheys Road Site confirmed that Wallarrah Creek did hold potential for past Aboriginal use, and demonstrated that the diffuse scatter was in an area lacking archaeological stratigraphy or features.⁶ In summary:

The very low artefact frequency established that no discrete Aboriginal site exists within the excavation area ... Further inspection of the soil profiles showed disturbed horizons and thin top soils, and with knowledge of past land use disturbance, it was assessed that there is a very low probability of an Aboriginal site of any structural integrity remaining undetected within the excavation area.⁷

The outcomes from survey and test excavation confirm the presence of stone objects and grinding grooves within the wider landscape. The excavations on erosional soils described a shallow deposit with a low density of dispersed lithics, in an area which had some identified previous land impact. This provides a context for the interaction between coastal hinterland and coastal/lake foreshore terrain contexts.

Heritage Concepts Pty Ltd 2005—Aboriginal Archaeological Assessment and Statement of Heritage Impact, Proposed Gas Turbine Facility

As part of an environmental assessment for the Munmorah Gas Turbine Facility, Heritage Concepts Pty Ltd assessed six areas or a 'corridor' for the works.

- Area A—Munmorah Power Station and delivery facility;
- Area B—Munmorah Power Station to Scenic Drive (eastern section of pipeline route);
- Area C—Scenic Drive to the Link Road;

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- Area D—The Link Road to Thompson Vale Road;
- Area E—Thompson Vale Road to the Main Northern Railway Line; and
- Area F—Main Northern Railway Line to Tooheys Road.

The corridor extended 765m to the north of Site 5. The primary landforms investigated during the survey and assessment involved the coastal plains and coastal hinterland landforms. The proposed route intersected a number of first order creeks of the Spring Creek Catchment. Areas of potential were defined as follows:

Table 2.1 Summary of Heritage Concepts Predictive Model.⁸

Area	Level of Aboriginal Archaeological Potential	Landforms	Areas of PAD Identified
A—Munmorah Power Station and delivery facility	Nil to low	Heavily modified industrial area	Nil.
B—Munmorah Power Station to Scenic Drive	Low to moderate	Spring Creek Catchment	Wetland.
C—Scenic Drive to the Link Road	Low to moderate	Spring Creek Catchment	Present. Stone artefacts identified.
D—The Link Road to Thompson Vale Road	Moderate to high	Spring Creek Catchment, Colongra Wetland Swamp	Swamp wetland.
E—Thompson Vale Road to the Main Northern Railway Line	High	Tributary of Spring Creek Catchment along creekline	Present. Stone artefacts identified.
F—Main Northern Railway Line to Tooheys Road	Low to moderate	Spring Creek Catchment	Present. Stone artefacts identified.

This study identifies a strong link between the exposure and erosion of different landforms and the appearance of Aboriginal archaeological sites. Many of the sites were identified in erosional scours, and sites appeared to correlate strongly with tributaries of the Spring Creek Catchment. One tree was identified as not culturally modified by the Darkinjung Land Council.

EMM Pty Ltd 2014—Chain Valley Colliery Mining Extension 1 Project Statement of Environmental Effects (SEE)

This study formed part of a SEE for the extension of the Chain Valley Colliery and was located 8km northeast of Site 5. An Aboriginal cultural heritage assessment was undertaken to assess the impact of the project on the Aboriginal archaeological resource. The review of previous studies identified that the proposed lakeshore areas of impact were likely to contain middens, yet that the locations and elevations within the AHIMS database were inaccurate, and that ground truthing and accurate surveyor recorded data of locations was necessary to evaluate the potential impact. No new sites were identified during the survey.

Umwelt 2009a, 2009b and 2011—Lake Macquarie Aboriginal Heritage Study 1a/1b Survey and Sustainable Management of Aboriginal Cultural Heritage in the Lake Macquarie Local Government Area, Lake Macquarie Aboriginal Heritage Management Strategy

Umwelt undertook three major Aboriginal heritage management projects for the Lake Macquarie area, primarily focusing on land parcels which are outside of Darkinjung Land Council landholdings. However, these form comparative studies for site prediction and landscape sensitivity for archaeological sites of significance. Desktop assessment was followed by large scale site survey, with major landscape groups identified to inform the Lake Macquarie Aboriginal Heritage Management Strategy.

This resulted in the classification of five major landscape groups identified containing Aboriginal heritage sensitivity. The terrain-based modelling was formulated to counteract any visibility and exposure limitations of survey investigation, and assumes that if part of an archaeological site is present within a particular terrain unit that it has equal potential to continue across that terrain unit.

Table 2.2 Landscape Groups of Archaeological Sensitivity, after Umwelt 2011.

Culturally Sensitive Landscapes	Archaeological Sensitivity Types	Interpretation
Lake foreshore areas	Middens, artefact scatters, isolated finds	Short term resource exploitation sites.
Major creek catchments	Artefact scatters, isolated finds, grinding grooves, scarred trees	High level of cultural sensitivity— estuarine and freshwater diversity of resources supporting large populations.
Minor creek catchments	Artefact scatters, grinding grooves, middens, rockshelters, PADs	Diversity of resources.
Mountainous inland areas	Artefact scatters, grinding grooves, crying trees, burial sites, scarred trees, potholes/water wells, stone arrangements/direction markers, rock shelters and Aboriginal pathways	Grinding grooves due to sandstone outcrops.
Coastal areas	Middens	Site identification difficult due to ground surface visibility.

They further characterised and specified where archaeologically sensitive sites may be located within seven landscapes, within these five categories within the HMS (these are provided in Figure 2.2 and Figure 2.3).

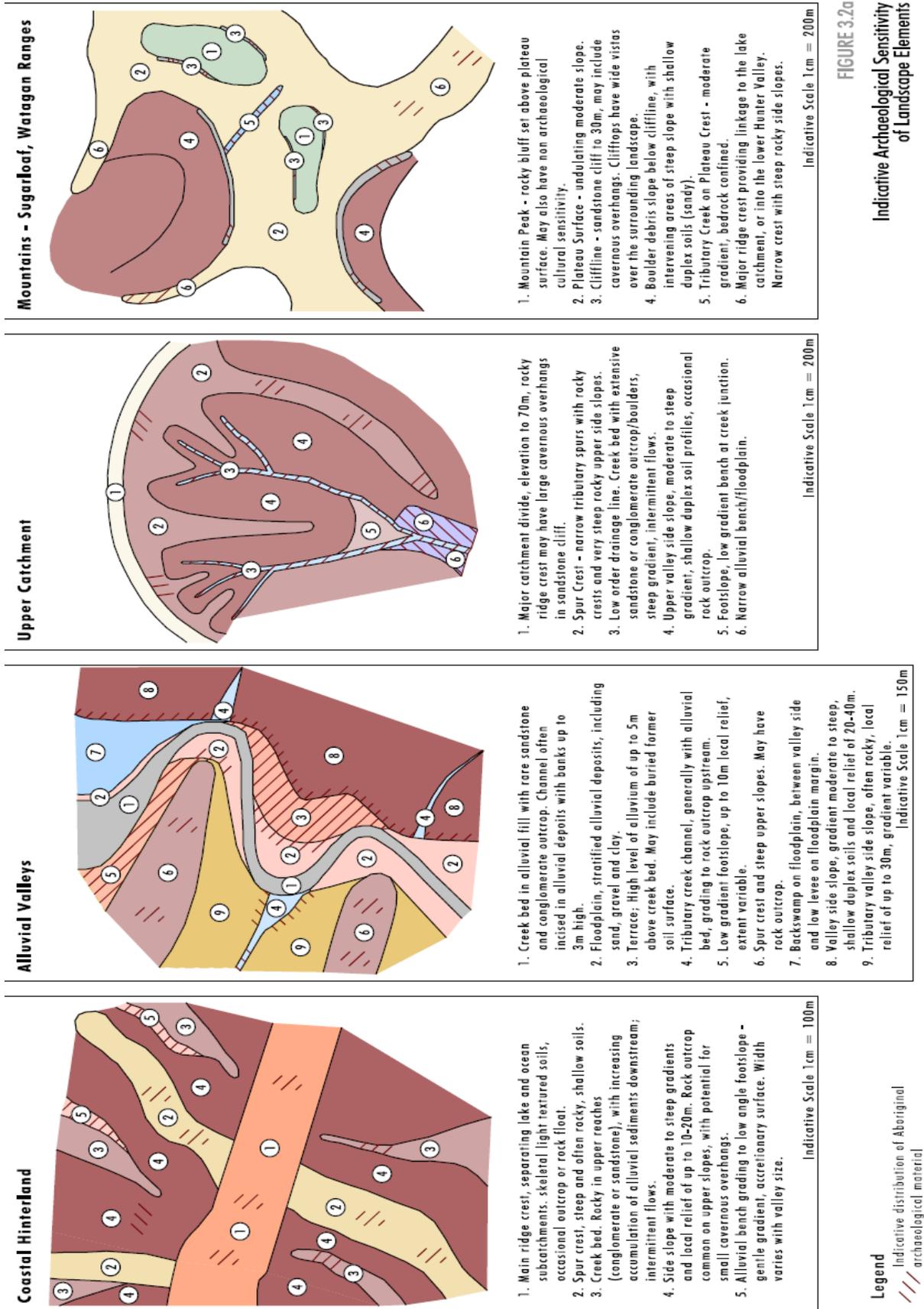


FIGURE 3.2a
Indicative Archaeological Sensitivity of Landscape Elements

Figure 2.2 Terrain units with Aboriginal archaeological potential. (Source: Umwelt Pty Ltd, 2011, Figure 3.2a)

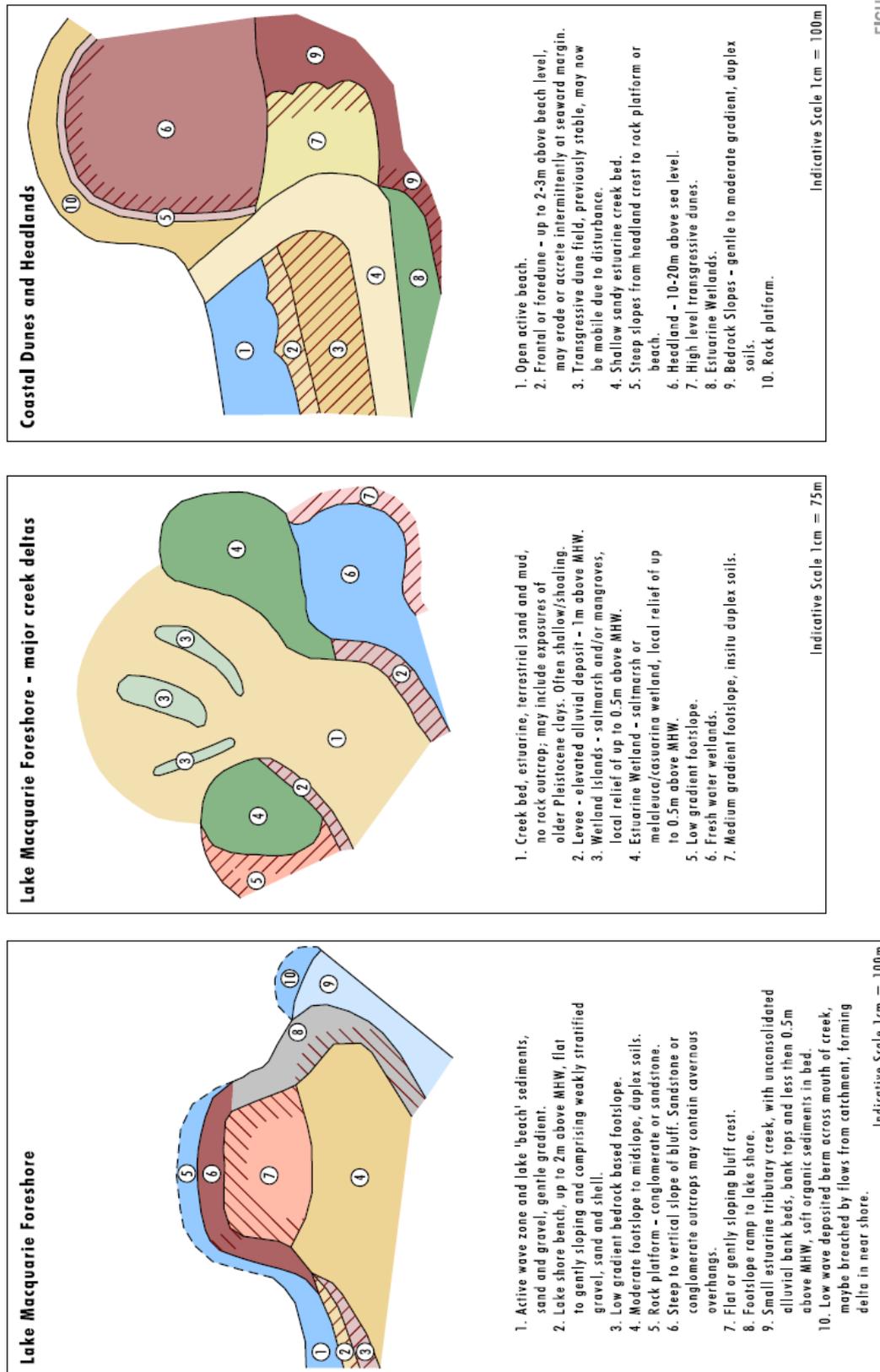


FIGURE 3.2b

Indicative Archaeological Sensitivity of Landscape Elements

Figure 2.3 Terrain units with Aboriginal archaeological potential. (Source: Umwelt Pty Ltd, 2011, Figure 3.2a)

Modelling associated with the research has not been extensively tested through detailed programs of archaeological excavation. However, the premise for the basis of modelling is correct within a wide landscape context. The fundamentals of this modelling have been applied to the current study. The relevant landscapes for the current study area are referred to below:

Riverine or Riparian Landscapes—Archaeological Site Types

Archaeological sites along riverine corridors may be associated with the creek bed (grinding grooves), or with alluvial deposits (artefact scatters on creek terraces) or with bedrock based footslopes (open campsites/artefact scatters). These are three separate terrain units. For any riparian corridor, combinations of these three terrain units may define the boundaries of Aboriginal archaeological sites. It is also possible that stratified Aboriginal sites will occur in creek terrace deposits, where old land surfaces have been buried by more recent material.⁹

Coastal Hinterland—Archaeological Site Types

Archaeological sites may be associated with ridge crests or with various side slope elements. Individual landscape units may be quite large. The most likely site type is an open artefact scatter with a low density of objects. Grinding groove sites are a frequent occurrence in sandstone creek beds. Both artefacts and rock art may be located in rock shelters on steep slopes. The density of flaked stone artefacts on open slopes in steep terrain is predicted to be very low, based on previous survey results.

Ceremonial sites may also be present on high ridge crests, although it is likely that most have been irreparably damaged by subsequent land uses. For instance, no evidence appears to remain of the ceremonial stone arrangements on the tops of landmark hills around Lake Macquarie, described by Biraban and Threlkeld in the nineteenth century.

For any specific location, consultation with the Aboriginal community may provide further details about Aboriginal sites, gazetted Aboriginal Places and other places of cultural heritage value. Protocols for referral and consultation about settlement planning, rezoning proposals and development applications are discussed in Section 6.0.

The information in Figures 3.2a and 3.2b and Appendix 4 allows the following distinctions to be made about the archaeological sensitivity of parts of the landscape:

- *the extent of archaeological sensitivity will depend on the extent of specific assemblage of terrain units and is not a consistent or standard width around any natural feature;*
- *it is possible to qualify the probability that an actual archaeological site or deposit will occur within part of a terrain unit, using information about the type of evidence that is generally associated with that terrain (i.e. archaeological terrain modelling); and*
- *a combination of terrain character and modelling of archaeological associations can be used to inform decisions about the type of archaeological assessment that is necessary to satisfy the requirements of the NPW Act 1974.*

Local Archaeological Landscape Context

Haglund 1986—Assessment of Prehistoric Heritage in the Lake Macquarie Area

Haglund undertook a heritage study for the characterisation of the nature and type of sites in a baseline study of the Lake Macquarie area. She found shell middens, open campsites, rockshelters (some with art), culturally modified trees, quarries, and one natural mythological site. She interpreted that the spatial distribution of these sites was likely related to a seasonal model suggesting winter hinterland occupation and summer coastal occupation. The estuarine area of Lake Macquarie formed the resource bridge between the hinterland and the coast. The implication from this model is that the sites located along the shore of Lake Macquarie may be small transitory camps between the two main occupation areas.

Dallas 1986—Pipeline Route between Gwandalan and Mannering Park Sewage Treatment Works

The pipeline survey assessment included a survey for archaeological sites. The study is 11km northeast of the current study area. The survey identified the presence of a large midden, measuring 60m x 40m in soft black soils, near Tiembula Creek. This is relevant to the current study area, as it demonstrates that middens may be found on the Lake Macquarie foreshore. The size of the midden also identifies that Lake Macquarie can be considered a focus of Aboriginal habitation in the region.

Brayshaw 1989—Archaeological Survey for Proposed Tourist Resort 0020 at Summerland Point, Lake Macquarie, NSW

Brayshaw conducted archaeological survey of a proposed tourist resort 0020 at Summerland Point, Lake Macquarie, NSW, 11.8km northeast of the current study area. Located on the Lake Macquarie foreshore, the survey identified one midden site west of Bonny Boy Gully described as a thin layer of shells, with possible hearth stones, and flaked stone artefacts were rare/absent.

Griffith 1992—Inspection for Aboriginal Sites and Relics for Proposed Water Sports Club and Holiday Cabins, Kanangra Drive, Gwandalan, NSW

Griffith surveyed the site of a proposed recreational club on the Lake Macquarie foreshore, 12.9km northeast of the current study area. The survey identified middens containing cockle shell located within 200m of the Lake Macquarie foreshore.

Synopsis

A small number of archaeological surveys have been undertaken surrounding and adjacent to the study area. The pattern of archaeological survey has resulted in the recording of local and regional Aboriginal sites and the patterning observed in the AHIMS data. Very little archaeological excavation has occurred within the region; this means that models for Aboriginal site patterning have not been tested (given that a holistic program of testing defines both where archaeology is and is not).

Research themes and general patterning arising from the prior reports is discussed below, notably including the outcomes of archaeological excavation and the predictive modelling for this region.

2.1.2 Aboriginal Heritage Information Management System (AHIMS) Search

A search of the OEH AHIMS database of an area 20km by 14km surrounding the study area was undertaken on 31 March 2017. The results of the search are shown in Figure 2.4. The search identified 155 recorded Aboriginal sites, which are summarised in Table 2.3. No AHIMS sites are recorded in site 5. This search indicated that artefact sites, culturally modified trees and middens constitute the predominant remnants recorded in this area. An overview of the AHIMS results is shown in Table 2.3. The complete results of the AHIMS search are provided in Appendix A.

Table 2.3 Results of the AHIMS Search.

Site Feature	Frequency	Percentage
Artefact and PAD	3	1.9
Artefact Site	49	31.6
Axe Grinding Groove	26	16.8
Burial and Scarred Tree	1	0.6
Habitation Structure	1	0.6
Isolated Find (artefact)	1	0.6
Midden (Artefact, Shell)	32	20.6
Midden, Ochre Quarry (Artefact, Ochre Quarry, Shell)	1	0.6
Ochre Quarry	1	0.6
Open Camp Site (Artefact)	7	4.5
PAD	2	1.3
Scarred Tree (Modified Tree)	11	7.1
Stone Arrangement	1	0.6
Unclassified Site Type (Shell)	18	11.6
Water Hole	1	0.6
	155	100

The general patterning of Aboriginal sites in the local area shows a strong association with certain geographic and environmental factors, although patterning is biased by those areas subject to recent development impacts, and thus Aboriginal heritage investigations.

The extent of industrial activity and land use has resulted in the identification of many of the sites located around Lake Macquarie. In this area, archaeological survey has concentrated on lake foreshore areas, with a strong correlation between the exposure and visibility of substrates and the identification and common occurrence of archaeological sites. The most commonly sites comprise stone artefacts or shell middens. Both are spatially limited by particular terrain units. Middens are generally located within 200m of the foreshore and coastal areas, and are evidenced as later Holocene archaeological phenomena, owing to the application of long term sea level change. Stone artefact sites are generally located along tributaries of creeks, with the banks of tributaries inland identified as unable to support larger groups.

Axe grinding grooves do not appear to be restricted by predicted geological substrate, with grinding grooves also located within the coastal deposits of the lagoon facies, as well as the Munmorah Conglomerates.

Away from Lake Macquarie the archaeological patterning denotes a prevalence for stone artefact sites. To the north and west of site 5 are numerous stone artefact sites, clustered adjacent to the banks of the major regional water course. This attest to the presence of archaeological sites within buried soil deposits, identifiable through archaeological excavation.

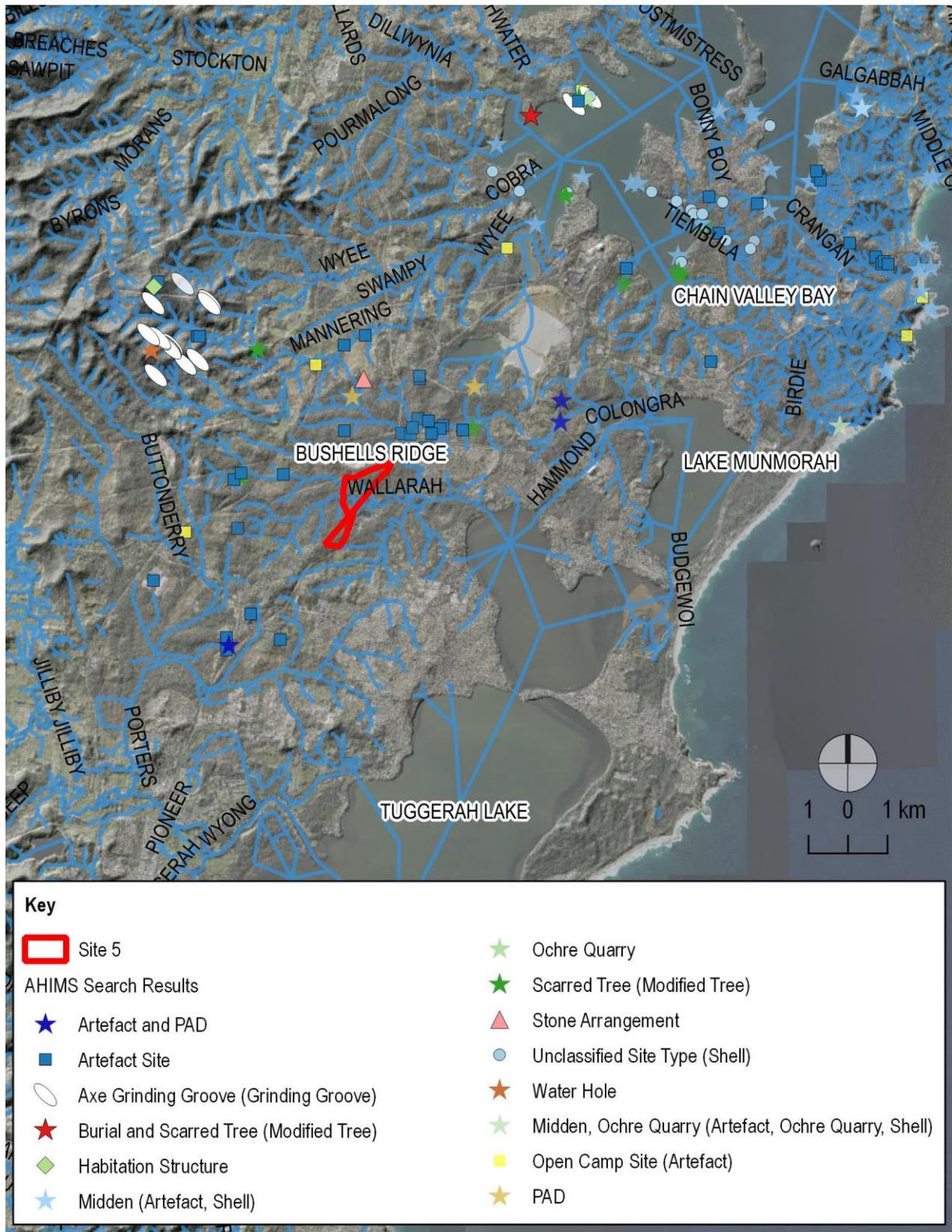


Figure 2.4 AHIMS results. (Source: NSW LPI with GML additions, 2017)

2.2 Landscape Context

This section provides a review of the areas geology, water sources, landforms, and landscape features. These are the base context for Aboriginal site patterning, and underpin the development of the site specific predictive model.

2.2.1 Geology and Geomorphic Activity

Site 5 consists of the early Triassic Tuggerah Formation (Rnu) from the Narrabeen Group (Figure 2.5). This comprises grey to green-grey laminite, red-brown claystone, and siltstone, interbedded with fine- to medium-grained green-grey sandstone. Immediately south of Site 5 is an extensive pocket of quaternary alluvium (Qa). These formations may contain sources of quartz and quartzite which could have been used for stone artefact manufacture.

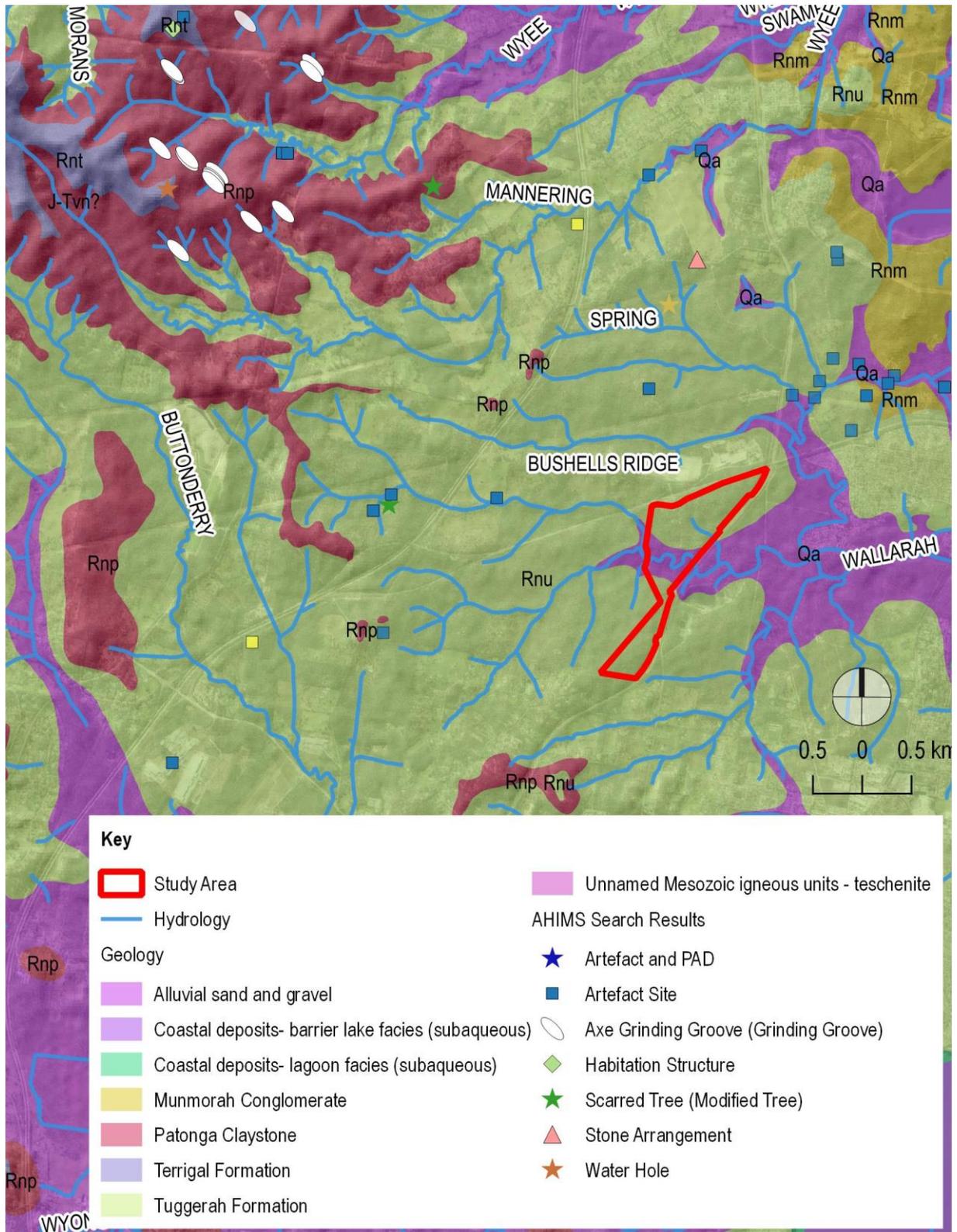


Figure 2.5 Regional geology. (Source: NSW LPI with GML additions, 2017)

2.2.2 Landforms and Landscape Features

Landforms across the study area have a very low relief (8–40m) and a very gently inclined (approximately three per cent) modal terrain slope (Figure 2.6). This has resulted in an erosional landform pattern comprising of gently undulating rises (after Speight 1990).¹⁰

The Wallarah study can be divided into two, using the boundary of Wallarah Creek as the marker of the two halves of the study area. The northern half of the study area is approximately 30m above sea level and slopes down to approximately 10m above sea level in the southern half of the study area. The southern half of the study area contains the end of a ridge which runs southwest to northeast, along part of the Sydney–Newcastle railway (Figure 2.6). The end of this ridgeline is a long broad slope of three per cent down to a third order tributary of Wallarah Creek. Wallarah Creek forms an incised gully within the overall sloping landform. The outcome of the erosional landscape pattern that provides distinct long simple slopes, with a lengthy raised flat landform associated with the main junction between the lower slopes and the open depressions of Wallarah Creek. These factors are likely to have influenced Aboriginal cultural landscape use and thus archaeological site patterning.



Figure 2.6 Landform analysis and hydrology. (Source: NSW LPI with GML additions, 2017)

2.2.3 Soils

At the regional level the soil landscape includes erosional, alluvial and swamp soil landscapes (Figure 2.7).¹¹ Most the region comprises the erosional Gorokan and Doyalson soil landscapes, which have been mapped extending across the slopes, ridges and flats. Alluvial Wyong soils have been recorded in connection with the major watercourses and larger areas of swamp on slope gradients <3% where local relief is <10m. Tacoma swamp soils are also present at the headwaters of some creeks, and often in association with the alluvial soils.

Site 5 is associated with the Gorokan erosional soils, present on landforms away from Wallarah Creek; and Wyong alluvial soils, adjacent to Wallarah Creek (Figure 2.7).

Gorokan erosional soils comprises of two A horizons: gk1 and gk2. Gk1 is dark brown loose loamy sand, with depths of 10–50cm, a pH around 5.0–5.5, with charcoal and ironstone rock fragment inclusions. Gk2 is a yellowish brown strongly pedal clay, with depths of 10–50cm and a pH range between 4.0–5.5. Charcoal fragments are absent and roots are rare. Underneath the A horizon is gk3, which consists of yellowish brown light to medium clay.¹² The depth of Gorokan soil with Aboriginal archaeological potential may be up to 1m.

The Wyong alluvial soils comprise of wy1 top soil A horizons and wy2 B horizon clay. Wy1 is a brownish black pedal loam to silty clay loam, with depths of 10–40cm, a pH around 6.0, and frequent roots but no charcoal or rock fragments. Wy2 is a mottled brownish grey plastic clay, with a pH range between 4.0 and 6.0. Roots are rare and charcoal and rock fragments are absent.¹³ Archaeologically the upper 40cm would hold potential for buried and possibly stratified Aboriginal sites.

The presence of alluvial soils means that Aboriginal sites located on landforms, both suitable for long term Aboriginal habitation, and subject to periodic alluvial flooding, could contain stratified archaeological deposits. Such deposits are unlikely to be visible from a surface inspection, unless recent erosion has exposed deposits. Locations with suitable alluvial soils are likely to include raised terraces, situated near the margins of watercourses and wetland areas. These elevated platforms provided excellent locations for repeat Aboriginal activities. Survey of the study area will thus include an assessment of such locations, noting, if possible, the depth of alluvium and its extent. Archaeological deposits from alluvial contexts are often of high scientific and social value because they provide an ability to understand time-depth accumulation of material and consequentially long term patterns of social and economic regimes. Combined with the possibility to date alluvium by OSL, the research potential of archaeology in alluvial soils is very high.

The depth of soil connected with the erosional landscape is likely to vary depending upon the extent of historical impact and de-vegetation. Erosional soils are unlikely to contain stratified archaeological deposits, but could be contain deposits that have been covered through recent soil colluvial movement.

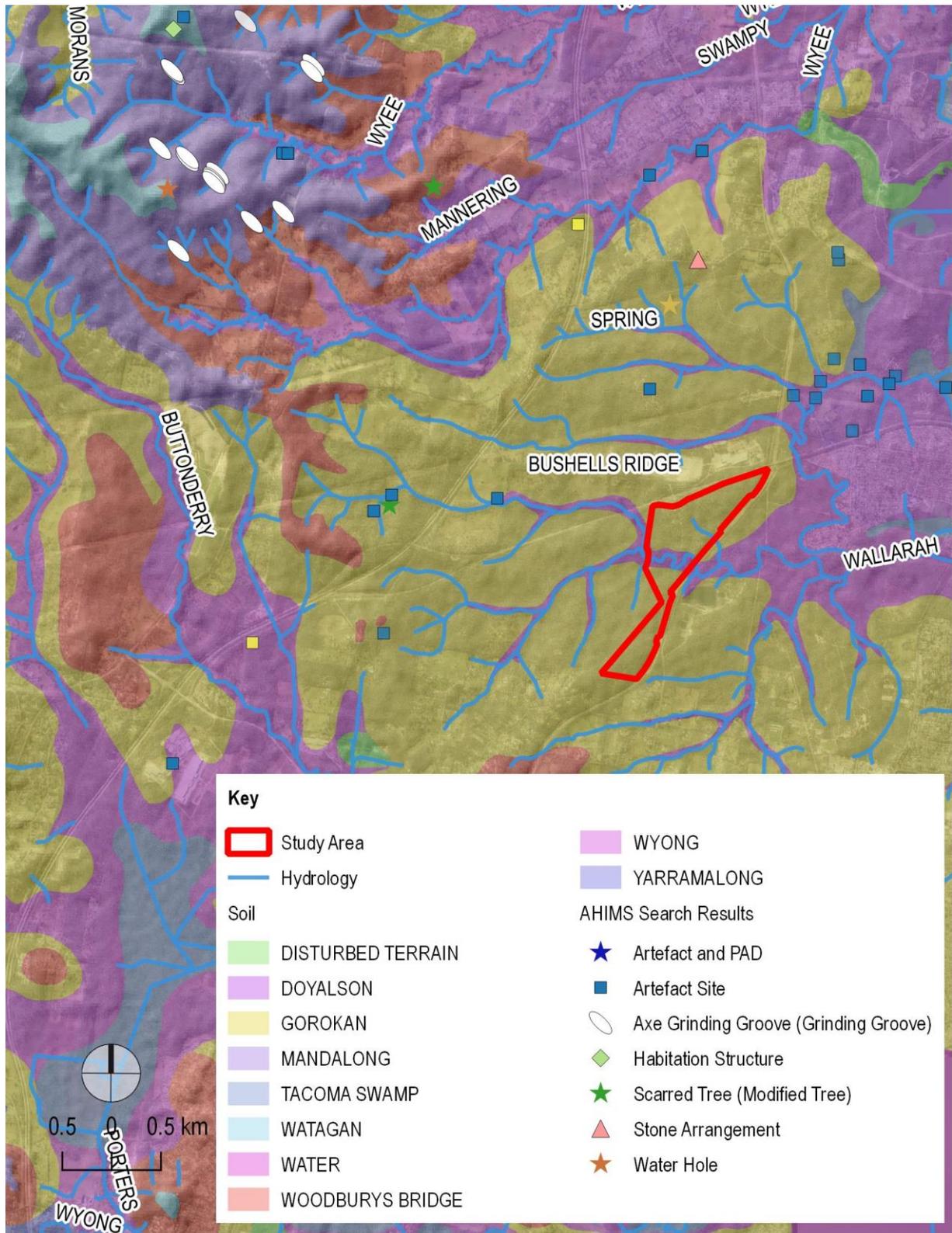


Figure 2.7 Regional soil profiles. (Source: NSW LPI with GML additions, 2017)

2.2.4 Hydrology

The availability of water has significant implications for the range of resources available and the suitability of an area for human occupation. Site 5 is bisected by Wallarah Creek, a fourth order creek. The main trunk of the creek flows through the study area, with the first and second order tributaries located to the west and south flowing in a dendritic pattern (Figure 2.7).

The raised landforms north of Wallarah Creek contain several undefined first order drainage channels, which generally flow downslope. In general, there is limited channel formation and these ephemeral water courses are difficult to define or map. The largest first order channel has been recorded and commences on the centre of the northern part of site 5, flowing southeast, with a confluence outside the study area. There may have been a focus for Aboriginal activities on suitable landforms near this channel.

2.2.5 Mitchell Landscapes

The NSW landscapes, also known as Mitchell landscapes,¹⁴ provide a framework for NSW ecosystems. The GIS mapping¹⁵ associated with the landscapes covers the sites subject to this investigation.

Two Mitchell landscapes are associated with the four sites: SB Wyong, Gcs Gosford–Cooranbong Coastal Slopes and SB Wyong, Sna Sydney–Newcastle Coastal Alluvial Plains.

Gcs Gosford – Cooranbong Coastal Slopes

Coastal fall of the Sydney Basin, rolling hills and sandstone plateau outliers of Triassic Narrabeen sandstones, extensive rock outcrop and low cliffs along ridge margins, general elevation 0 to 75m. Texture-contrast soils on lithic sandstones and shales. Loamy sand alluvium along creeks. Organic sand and mud in lagoons and swamps. Open forest and woodland of smooth-barked apple (Angophora costata), red bloodwood (Corymbia gummifera), brown stringybark (Eucalyptus capitellata), Sydney peppermint (Eucalyptus piperita), spotted gum (Corymbia maculata), bastard mahogany (Eucalyptus carnea), northern grey ironbark (Eucalyptus siderophloia) and grey gum (Eucalyptus punctata) on hills and slopes. Small areas of closed forest with; turpentine (Syncarpia glomulifera), lilly pilly (Acmena smithii), mountain cedar wattle (Acacia elata), coachwood (Ceratopetalum apetalum), sassafras (Doryphora sassafras) and water gum (Tristaniopsis laurina) in gullies under high escarpments Prickly-leaved tea-tree (Melaleuca styphelioides) and other shrubs with swamp mahogany (Eucalyptus robusta), swamp oak (Casuarina glauca), sedges and common reed (Phragmites australis) on swampy creek flats. Coastal heath subject to salt spray on headlands.¹⁶

Sna Sydney – Newcastle Coastal Alluvial Plains SB Wyong

Undulating plains and low rises on Quaternary sand or Permian/Triassic sandstone or shale with swampy valley floors. General elevation 0 to 80m, local relief 20m. Siliceous uniform sands, patches of deep podsol and yellow or brown texture-contrast soils on bedrock. Vegetation varies with soil and drainage. On the sands and podsols coast banksia, Banksia aemula, red bloodwood (Corymbia gummifera) and smooth-barked apple (Angophora costata) are common. On bedrock forest oak (Allocasuarina torulosa), grey gum (Eucalyptus punctata), forest red gum (Eucalyptus tereticornis), and scribbly gum (Eucalyptus haemostoma), with a shrubby understorey are common and the swamps are typically surrounded by broad-leaved paperbark (Melaleuca quinquenervia), coast banksia (Banksia integrifolia), swamp oak (Casuarina glauca) and swamp mahogany (Eucalyptus robusta) with spike rushes (Eleocharis sp.) and tall swamp sedge (Gahnia sp.). Open water supports a variety of aquatic plants including: common reed (Phragmites australis), floating pondweed (Potamogeton tricarlinatus), water primrose (Ludwigia peploides) duckweed (Lemna sp.), water buttons (Cotula coronopifolia) and red azolla (Azolla filiculoides).¹⁷

Site 5 contains the coastal slopes landscape across its centre and west, whereas the eastern third presents the alluvial plains landscape. Mapping of the Mitchell landscape exhibits a difference when contrasted against the pattern of soils and geology.

2.2.6 Land Use History

The pattern of land use and associated impacts has been determined through an inspection of available aerial photographs. Aerials from 1975, 1994, 2005 and 2010 were supplemented with observations made during the study area inspection.

The study area has been subject to very limited impact and land use since European colonisation. The majority of bush and wetland zones present in 2017 appear to be intact and original, there has been no vegetation stripping, regrowth or other impacts connected with land clearance or use.

There are some locations with localised historical impacts, which have resulted in a substantial impact to soil horizons, and consequentially any Aboriginal heritage places and/or sites which may have been present. The identifiable land uses resulting in a larger impact include:

- land clearance for pastoral use in the northwest area, prior to 1975 (Figure 2.8);
- construction of a major road along northern boundary of Site 5, post 1975 (Figure 2.9); and
- multiple unsealed tracks in use since at least 1954 to the present (Figure 2.10 and Figure 2.11). These have eroded soils to the underlying basal clay and have no archaeological potential for intact deposits. The presence of stone artefacts on the tracks would be a factor of erosional and movement of the object from an adjacent context.

Erosion

The pattern of historical land use will have resulted in the following forms of erosion:

- minimal sheet erosion, resulting in siltation of some parts of Wallarah Creek—increased vegetation may mean that archaeological deposits could be buried; and
- high energy water and increased steepness of incline would have increased the nature of erosion, removing potential archaeological deposits in sections of Wallarah Creek.

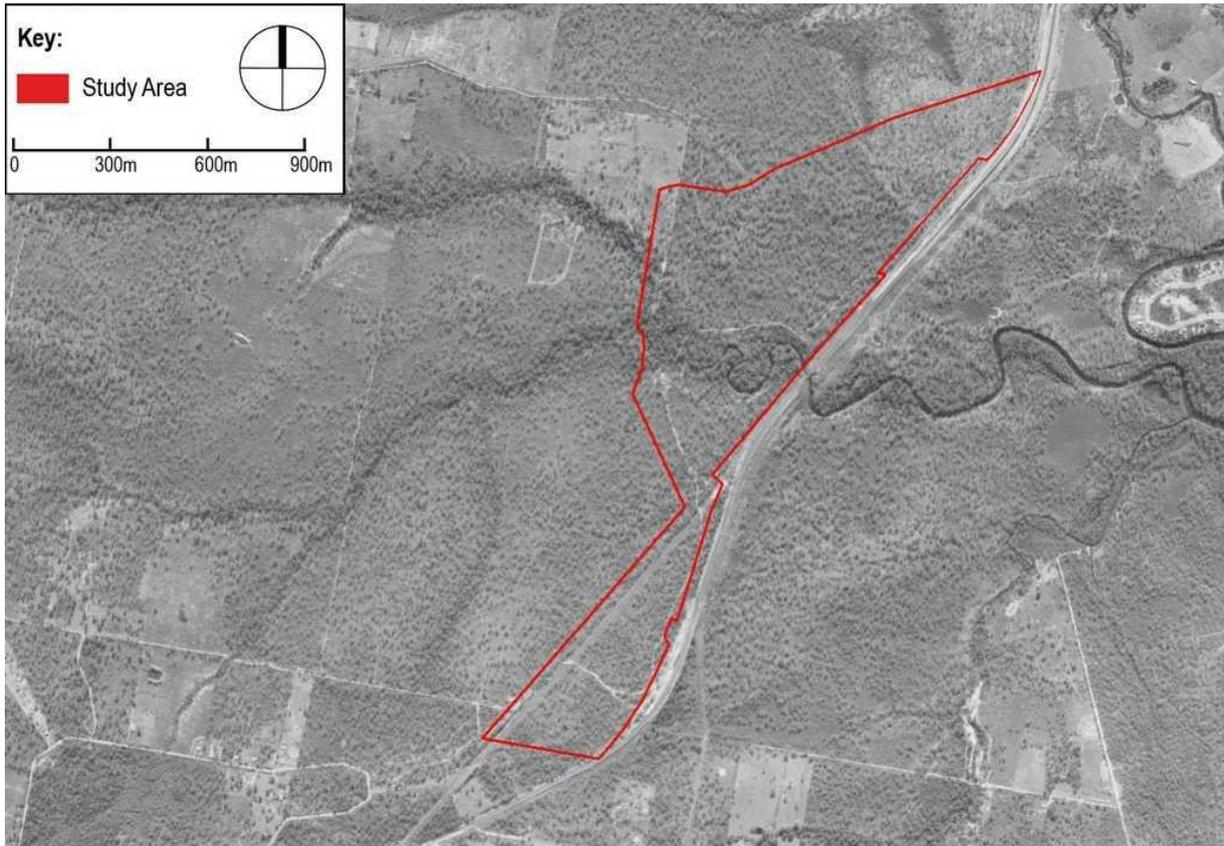


Figure 2.8 1975 aerial. (Source: NSW LPI with GML additions, 2017)

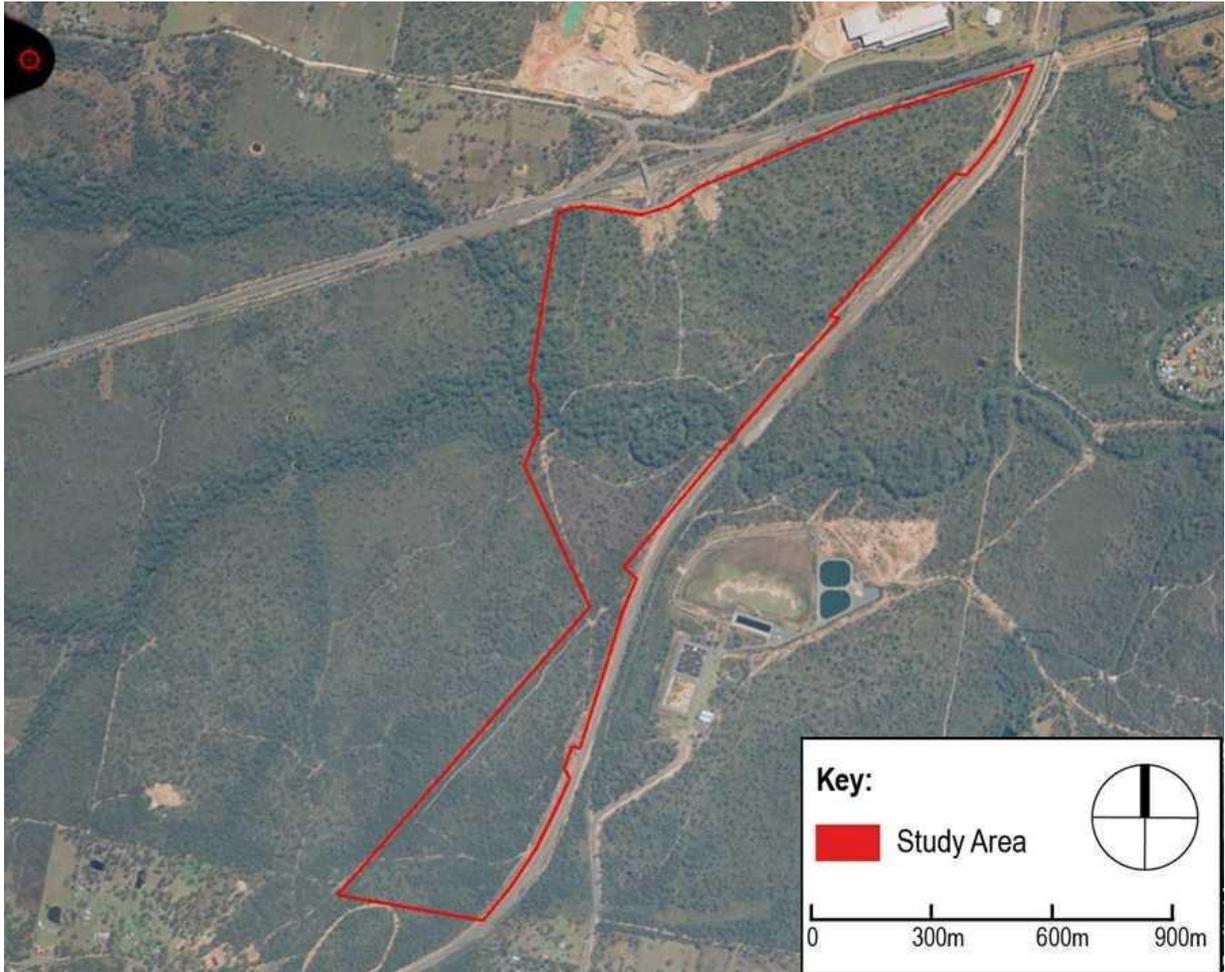


Figure 2.9 1994 aerial. (Source: NSW LPI with GML additions, 2017)

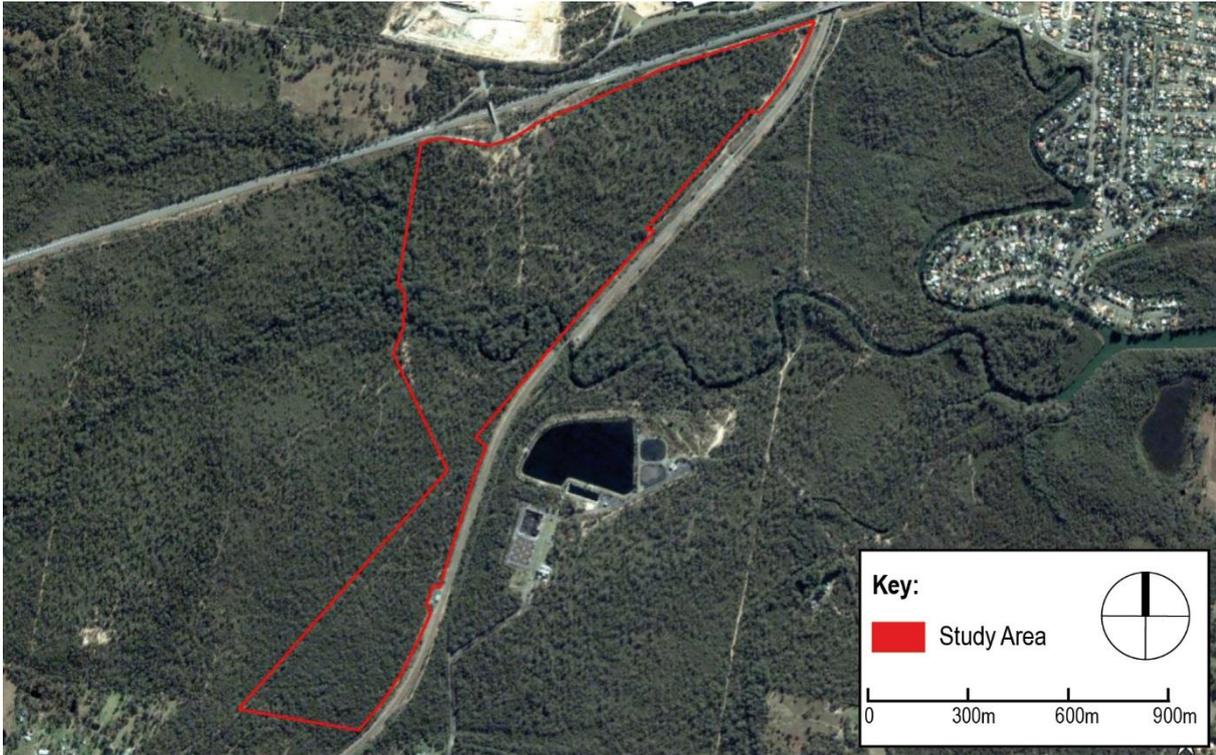


Figure 2.10 2005 aerial. (Source: Google Earth Pro with GML additions, 2017)

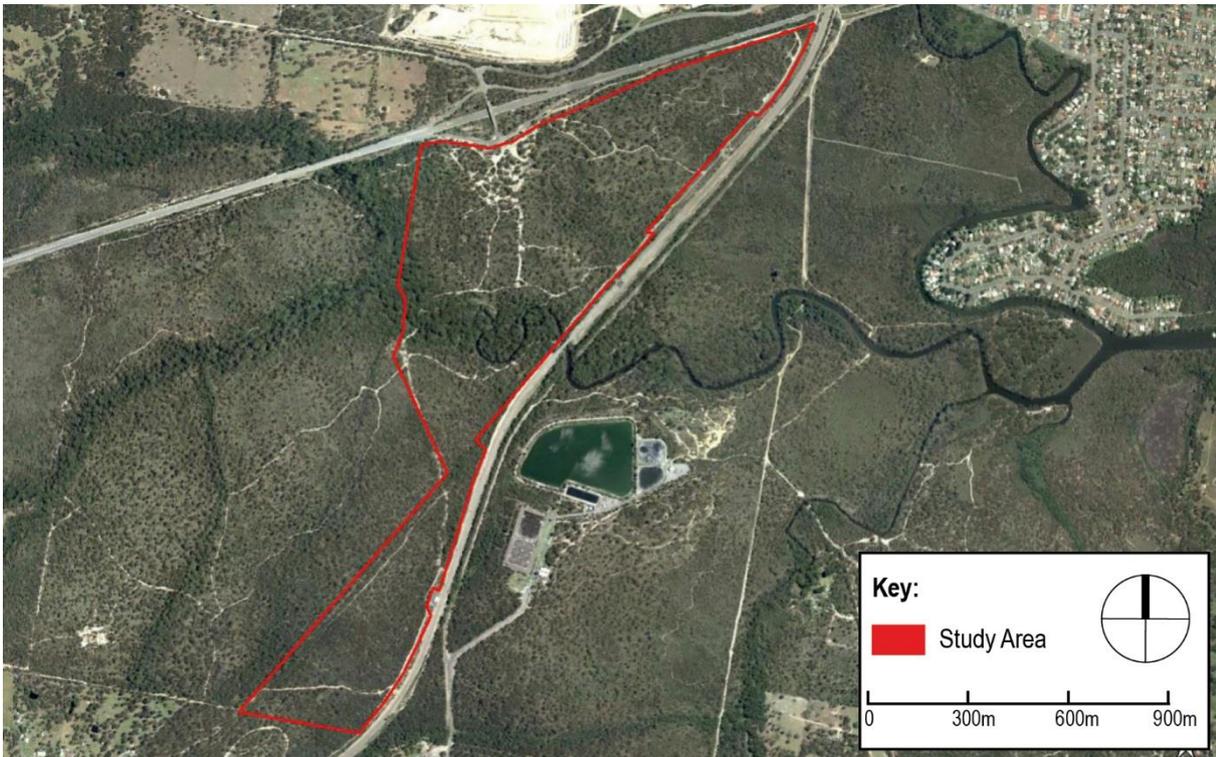


Figure 2.11 2010 aerial. (Source: Google Earth Pro with GML additions, 2017)

2.3 Aboriginal Heritage Predictive Model

Through a process of landscape characterisation and the assessment of site distribution, it is possible to infer locations more likely visited and used by Aboriginal people. Such assessment may be used to interpret long term subsistence and habitation patterns.

Based upon the landscape context, land use history, regional and local archaeological patterns it is possible to provide a predictive statement for the likely occurrence of Aboriginal sites within the study area.

An overview of the types of Aboriginal sites and/or places and their potential location within the study area's landscape is provided in Table 2.4.

Table 2.4 Types of Aboriginal Sites that may be Located within the Study Area.

Feature	Description and Potential Location
Grinding grooves	<p>Grooves resulting from the grinding of stone axes or other implements are found on flat areas of suitable sandstone. They are often located near waterholes or creek beds as water is necessary in the sharpening process. In areas where suitable outcrops of rock were not available, transportable pieces of sandstone were used.</p> <p>These sites may be associated with rocky outcrops, within or adjacent to creek corridors. More likely to be identified in locations where the second order creek channel rise upslope away from the main swampy areas, in zones with exposed sandstone bedrock.</p> <p>The absence of smaller creeks, with exposed sandstone bedrock platforms, suggests this site type is not particularly likely.</p>
Stone artefacts	<p>Stone artefact concentrations are collections of stone, frequently brought from other areas, which demonstrate evidence for Aboriginal working, use and/or discard of the stone at a single location. Stone artefact concentrations may be associated with any of the below site types.</p> <ul style="list-style-type: none"> • Where such sites are buried by sediment they may not be noticeable unless exposed by erosion or disturbed by modern activities. • These sites may be associated with alluvial deposits, notably with raised alluvial flats adjacent to the larger watercourses. • Stone artefacts may also be identified in low densities in connection with ridgelines, if used as walking routes. • In suitable upland areas, where large flat landforms abut swamps or waterways. <p>This site type is expected to occur, particularly in connection with the break in slope to the north of Wallarah Creek.</p>
Isolated finds	<p>Sites consisting of a single stone artefact, isolated from any other artefacts or archaeological evidence. They are generally indicative of sporadic past Aboriginal use of a location.</p> <p>A distinction should be drawn between isolated finds which are a component of the background distribution of objects and specialised objects such as axes, hammer stones, grinding dishes etc which would have been used repeatedly and may have been carried from place to place.</p> <p>These sites may be associated with areas of erosion, or exposures, and could be found across the study area. The eroded east-west track, north of Wallarah Creek, could be expected to yield isolated finds, in an eroded context.</p>
Scarred trees	<p>Scarred trees bear the marks of bark and wood removal for utilisation as canoes, shields, boomerangs or containers. It is commonly very difficult to confidently distinguish between Aboriginal scars and natural scars or those made by Europeans. Scars may also originate as 'foot-marks', small pockets cut into the bark of a tree enabling the tree to be climbed.</p> <p>Scarred trees could be located across all of site 5, as it has not been subject to vegetation stripping and contains substantial areas with old growth forest.</p>

Feature	Description and Potential Location
Ceremonial sites	<p>These may include stone arrangements, carved trees, ceremonial grounds, associated artefact sites, grinding grooves, burial sites, scarred trees, potholes/water wells, stone arrangements/direction markers, rockshelters and Aboriginal pathways.</p> <p>These sites may be located within the study area, and require consultation with the traditional owners for identification.</p>

2.4 Synopsis of the Environmental and Archaeological Background

A linear east to west juncture between the geological formations Rnu and Qa is present along the southern boundary of Site 5. The geological formations correspond with two different overlying soil landscapes, which in turn support two different ecological communities. The intersection of the two ecological communities can be described as an ecotone, and may have provided both a high biotic quota and a diverse range of plant resources for Aboriginal use.

The extent of alluvium appears to correspond with the change in landform, resulting in a wide distinct elevated flat zone, immediately above the open depression of Wallarah Creek. Desktop modelling indicates that this landform possesses Aboriginal archaeological sensitivity for buried deposits. The absence of historical impacts suggests that all archaeological deposits should retain good levels of integrity and condition.

Landforms adjacent to Wallarah Creek have been subject to some archaeological excavation (for the Wallarah 2 Coal Project, 1.5km to the west). The recovery of lithics confirmed the use of this landform by Aboriginal people, although the limited extent of deposits did not provide significant insight into Aboriginal economic activities.

The higher landforms above the elevated flat present no obvious focus for Aboriginal activities; there are no connecting ridgelines or other obvious focus for activities. The preliminary assessment for Site 5 indicates archaeological deposits are most likely near Wallarah Creek, on its alluvial banks, in association with the ecotone junction between the two vegetation communities.

2.5 Endnotes

- ¹ DECCW, Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, September 2010, pp 20–21.
- ² OzArk Environmental and Heritage Management Pty Ltd on behalf of Wallarah 2 Coal Project, Aboriginal cultural heritage assessment, prepared for Hansen Bailey Pty Ltd, December 2012.
- ³ ERM, Wyong Project—Indigenous Cultural Heritage Assessment—Preliminary Survey of the Bushells Ridge Site, 2001.
- ⁴ OzArk Environmental and Heritage Management Pty Ltd on behalf of Wallarah 2 Coal Project, Aboriginal cultural heritage assessment—addendum, prepared for Hansen Bailey Pty Ltd, December 2012, p 74.
- ⁵ OzArk Environmental and Heritage Management Pty Ltd on behalf of Wallarah 2 Coal Project, Aboriginal cultural heritage assessment—addendum, prepared for Hansen Bailey Pty Ltd, December 2012, p 68.
- ⁶ OzArk Environmental and Heritage Management Pty Ltd on behalf of Wallarah 2 Coal Project, Aboriginal cultural heritage assessment—addendum, prepared for Hansen Bailey Pty Ltd, December 2012, p 81.
- ⁷ OzArk Environmental and Heritage Management Pty Ltd on behalf of Wallarah 2 Coal Project, Aboriginal cultural heritage assessment—addendum, prepared for Hansen Bailey Pty Ltd, December 2012, p 82.
- ⁸ Heritage Concepts Pty Ltd, 'Technical Paper 2 Aboriginal Archaeological Assessment and Statement of Heritage Impact, Proposed Gas Turbine Facility, Munmorah Power Station' in Munmorah Gas Turbine Facility Environmental Assessment Volume 2.
- ⁹ Umwelt Pty Ltd, Lake Macquarie Aboriginal Heritage Study 1a/1b Survey and Sustainable Management of Aboriginal Cultural Heritage in the Lake Macquarie Local Government Area, Lake Macquarie Aboriginal Heritage Management Strategy, 2011, p 39.
- ¹⁰ Speight, JG 1990, 'Landforms', in McDonald, RC et al, Australian Soil and Land Survey Field Handbook, Inkata Press, Melbourne, p 26.

- 11 Murphy, CL and Tille, PJ 1993, Soils Landscapes of the Gosford–Lake Macquarie 1:100 000 Sheet Map, Department of Conservation and Land Management.
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3.0 Aboriginal Ethnohistory

This section provides an ethnohistory and overview of the blanket returns historical records. The ethnohistory (Section 3.1) has been written by Sharon Hodgetts (Darkinjung LALC). The remaining sections have been produced by GML.

3.1 Aboriginal Cultural Heritage, Values and Significance

Section 3.1 has been provided by the Darkinjung LALC and is subject to copyright.¹

Aboriginal people have inhabited Australia between 50,000 and 60,000 years; evidence for this can be found from material dated from Malakunanja and Nauwalabila rock shelters in the Northern Territory.² Further evidence for human occupation is displayed through the skeletal remains of Mungo 3 discovered at Lake Mungo, New South Wales. These remains have been dated to be between 28,000 and 32,000 years old.³ In the Sydney region some early occupation dates come from a rock shelter near the Nepean River of around 14,000 years BP.

Aboriginal people's occupation of the Central Coast shown through archaeology, Aboriginal cultural heritage, material and spiritual places provides the local Aboriginal community with a sense of connection to the land, the people and culture. These materials and places present tangible evidence of the past and are utilised by contemporary Aboriginal people as part of their cultural practices in the present and as a result these should be maintained and conserved.

The first inhabitants of the Central Coast region were members of the Darkinjung (Darginung, Darginyung) language group. Several researches and publications show tribal or language group boundaries within similar areas, but exact boundaries are unlikely.⁴ Boundaries are a European concept and there was likely a zone between language groups which was shared and utilised by neighbouring groups. Aboriginal Dreaming stories, law and obligations can extend into neighbouring clan groups and right across Australia.

Stone artefacts in the Upper Mangrove Creek area of the Central Coast have been dated between 10,000 to 12,000 years old.⁵ These provide some reliable evidence of Aboriginal people's occupation of the region. Upper Mangrove Creek is situated within the northwest of the Central Coast.

European exploration of the Central Coast area began soon after the arrival of the First Fleet in 1788. Settlement of the Hawkesbury River began about 1794 and in 1820 the area between the Hawkesbury and the Hunter Rivers become available for settlement.⁶ As a result of colonisation and settlement many Aboriginal people died or suffered from introduced disease or were dispossessed of their traditional homelands and moved to missions or reserves, forced to live in fringe camps or move into their neighbours' areas which increased the pressure on water, food and other resources.

Evidence for Aboriginal habitation includes middens, which consist of shell, bone, charcoal, tools and sometimes burials. A midden is likely to contain only a selection of shellfish species available in the local environment. It may contain a high proportion of individuals of an edible size, stone artefact, charcoal from camp fires, pumice, coral, faunal bone and importantly human burials.⁷ Shell middens are also important scientifically; they can be dated, and they provide precious information about Aboriginal use of the environment and changes in behaviour over time. Other evidence includes fish traps and stone arrangements, deposits in sandstone shelters, including artefact, charcoal, shell and bone remains, rock engravings and pigment art. Additional forms of Aboriginal cultural evidence can consist of abraded channels, grooves and grinding stones, axe grinding grooves, scarred and carved trees, water holes,

quarry sites, open sites or camp sites, stone artefact scatters, graves, earth mounds, walking trails along trading routes, mythological and ceremonial sites. In some cases landscape modification can provide evidence of Aboriginal people's occupation.

For many of the Aboriginal groups in NSW including the Darkinyung, Baiame is one of the main Creators in the Dreaming.⁸ Daramulan (often depicted with one leg) is the son of Baiame and his emu-wife. Daramulan is associated with ceremonies (usually men's). Ceremonial sites with engraved or pigment art of anthropomorphic like figures which represent Baiame or Daramulan are considered to have very high cultural heritage significance.

The landscape surrounding an Aboriginal place or site can be seen in a spiritual sense and is very important to Aboriginal people. The landscape can be an extension of a site, or the landforms and features within the landscape can be the site and related to ancestor beings. Aboriginal sites can also be connected through sight lines to other sites or places of significance. These features are all part of the cultural landscape.

Some sites are associated with song lines and tracks; their purpose and associated stories connect these sites with other sites across Darkinyung Country and should not be viewed in isolation of each other. Considering this, changing the context of an Aboriginal site by landscape degradation compromises the spiritual and cultural connection that Aboriginal people have to the land and/or the site. In many cases landscape destruction can be considered destruction of an Aboriginal site and the Darkinyung cultural landscape.

Recent research of certain areas of the Central Coast has revealed an intricate network of Aboriginal cultural heritage sites, connected by Aboriginal walking trails and routes which have been utilised over hundreds and in some cases thousands of years. These tracks were utilised to access seasonal resources, carry out trade, teaching and ceremonies. These sites are connected and form part of a complex Aboriginal cultural landscape. The significance of many of these sites and the significance of the connection they have to each other and the landscape has been highlighted as very important for Aboriginal people both culturally and spiritually.

The Darkinyung people were fishers, hunters and gatherers of plants and animals of the land, rivers, estuaries and sea. These places, including the hills, valleys, creeks, wetlands, lakes and coastline, provided food, medicines, and raw material for tools, weapons, shelter and decoration. These environments and landforms also provided the basis for spiritual and cultural life and are of value and significance to the local Aboriginal community. Certain environments can be considered to have a higher Aboriginal cultural heritage potential because of their ecology and landform and the associated flora, fauna and other resources needed for everyday life.

The proposed development site lies in an area with a high Aboriginal cultural heritage value. This is because of the surrounding mountains, lakes, creeks, coastline and associated woodland and wetland habitats. These environments and ecological zones provided the local Aboriginal population with many food and other natural resources.

Therefore, considering the long Aboriginal occupation of Australia and the Central Coast it could be predicted that most areas, particularly those with minimal disturbance, have the potential to produce Aboriginal cultural heritage material or places.

Aboriginal sites are connected to each other within the landscape; a number of places and sites hold spiritual and cultural importance to the local Aboriginal community through their physical link to ancestors and the past. This connection attaches the community to land and traditions, and strengthens bonds

within the Aboriginal community. Safeguards need to be put in place to protect the spiritual and environmental integrity of a site and the cultural landscape. These Aboriginal materials, places and landscapes have value and significance to the local Aboriginal community and need to be protected.

With reference to nomenclature, Darkinyung is the language while Darkinjung is the Land Council.

3.2 Archival Research—Blanket Returns

From 1814 the government 'blanket returns' created a record of Aboriginal people living in an area.

Traditionally, animal skin cloaks were the main form of insulation from the elements for Aboriginal people from much of the cooler, southern parts of the Australian continent. The cloaks were made from either kangaroo, wallaby or possum skins with some being fashioned from up to 80 pelts, taking over 12 months to acquire and make.

In 1814, Governor Macquarie initiated the official distribution of blankets to Aboriginal people. He hoped the adoption of blankets would encourage civilised habits and cooperation with the settlers.

Over time Aboriginal people came to depend on the issue of blankets and rations from Government. Especially since their traditional lands were being taken up by white settlers and preventing them from pursuing traditional food-gathering and hunting as well as their usual cultural practices.

To account for expenditure on Aborigines, Government officials created what are called 'Blanket lists', that detailed people's English name, Native Name, Probable Age, Number of wives, Children, Tribe, and District of Usual Resort.

Police were also required to report annually on the conditions of the Aboriginal people in their districts. Some of these were quite detailed returns or censuses on individuals and communities.

Although these records marked the westernisation of Indigenous culture they now provide one of the most valuable and reliable bases for family and community history research. For many Aboriginal family historians, the blanket list or return is literally the end of the line in terms of the written evidence.⁹

The following section provides an overview of the Aboriginal people 'counted' within the Brisbane Water district, based mainly on Colonial Secretary correspondence. While it is never specified in the historical records, the Brisbane Water district spanned from the Broken Bay area in the south to Tuggerah Beach in the north.

3.2.1 Methodology

Two days were spent at the State Records NSW (SRNSW), sifting through the Colonial Secretary correspondence for references to Aboriginal people in the Brisbane Water district. Most of the information found is related to the Brisbane Water blanket returns. Copies of the relevant returns were made and transcribed.

The blanket returns for Brisbane Water provided limited information for an individual and only records dating between 1827 and 1841 were found in the SRNSW during this visit. The information included in the blanket returns were:

- English name;
- Aboriginal name;
- probable age;
- number of 'Wivies';

- number of children—split into male or female;
- designation of Tribe; and
- place or district of resort.

The information has been compiled into a table according to name (alphabetically). While there are several different spellings of the English and Aboriginal names, if the name, age and other details are similar, they have been listed as the same individual over the years. As the records are nearly 100 years old, some of the documents have been damaged, faded and the script can also be difficult to read—best attempts have been made to accurately transcribe the English and Aboriginal names with all variations included in chronological order.

The names of local Aboriginal women were also recorded in 1833, 1834 and 1836. It is uncertain whether women were present for the other blanket returns or their names were omitted from the records.

More specific information regarding group and place of resort were provided in the earlier counts (1833 and 1834), while in 1837 and 1838, blanket return attendees were all described as being part of the 'Walkeloa Tribe'. However, based on the previous years' records, it is likely that the attendees originated from various local groups but they were no longer differentiated in the records.

3.2.2 Outcomes of SRNSW Historical Document Review

According to Willoughby Bean, the first police magistrate of Brisbane Water, in 1827 there were five Aboriginal 'tribes' within district (Table 3.1):

- Mial Tribe or Broken Bay Tribe;
- Tuggerah Beach Tribe;
- Wyong Tribe;
- Narara Tribe; and
- Erina Tribe.¹⁰

Bean estimated that there were 15 people (each) within the Broken Bay Tribe, Tuggerah Beach Tribe and Wyong Tribe and 10 people each within the remaining two groups—65 people altogether. No names or separate numbers of men, women and children were provided.

In the same year, the Newcastle police magistrate recorded 70 men, 60 women and 70 children—200 people altogether—from the 'Tuggerah Beach Tribe' within the Newcastle district. Lancelot Edward Threlkeld, an English missionary based at Lake Macquarie, provided a brief description of the Tuggerah Beach Tribe to the Colonial Secretary in 1828:

*The Tuggerah Beach Tribe have not all arrived. They are occasional visitors, as well as the tribe on the opposite shore. I have not an opportunity of returning a correct number at present but do not conceive they will exceed the numbers of this return.*¹¹

The name of the 'chief' of the Tuggerah Beach Tribe was apparently 'Chugey' (also spelt as 'Chugy' and 'Chughi'). Chugey is mentioned in 1829 by Bean as the 'Chief of the Broken Bay, Narara' as deserving of receiving a rug, although he was not present when they were being distributed. Another local 'chief' mentioned by Bean was 'Mullet, King of the Wyong'.¹² Neither Chugey or Mullet are recorded on the Brisbane Water blanket returns but may be recorded on the Newcastle district blanket returns.

In 1833, the first official blanket return was undertaken in the Brisbane Water District and 58 people were counted—40 men, 16 women and two boys. The attendees are recorded to be from the Tuggerah Beach Tribe, Wyong Tribe and generally from the Brisbane Water District. In 1834, 66 people were counted—45 men, 13 women, five boys and three girls. The 1834 attendees were recorded to be Tuggerah Beach, Wyong, Brisbane Water District and also from Mangrove. In 1836, 75 people were counted—40 men, 28 women, five boys and two girls. The 1836 were recorded to be Tuggerah Beach, Wyong, Brisbane Water District and Mangrove. There were also two men from Lake Macquarie and eight men from South(?) Island.

From 1837, the different ‘tribes’ of attendees were no longer recorded. In 1837, 64 people were counted—42 men, 12 women, seven boys and three girls. In 1838, 55 people were counted—34 men, 12 women, six boys and three girls. In 1839, 58 people were counted—35 men, 12 women, seven boys and three girls. In 1840, 60 people were counted—35 men, 12 women, nine boys and four girls. In 1841, 58 people were counted—31 men, 13 women, nine boys and five girls.

The 1827–1841 counts of Aboriginal people within the Brisbane Water District do not exceed 75 people during this period. Based on other studies that have reviewed blanket returns, and consultation with the Aboriginal community, questions have been raised on whether the attendance at blanket returns was actually representative of the local population. Constructs of power and resistance suggest that the blanket returns were used by Europeans to count and as a form of control over the local Aboriginal population. A form of Aboriginal resistance against the European acquisition of traditional Aboriginal lands may have seen certain individuals deliberately avoid the blanket returns, thereby refusing to be counted. Whilst such theories are difficult to confirm, the blanket returns should not be viewed as a final or total count of Aboriginal people in an area during the early to mid-nineteenth century.

Locations mentioned in the blanket returns include Brisbane Water, Tuggerah Beach and Wyong. These locations are between 10km and 33km south west of the study area, and adjacent to identified travelling routes. The inhabitants of these areas would have had knowledge of the study area, and travelled to and from the area. Identified people in the blanket returns provide a possible bridge between the pre-1788 understanding of Aboriginal life and today’s known modern connections and provide the basis for construction of social family histories and long term connection to Country.

3.2.3 Future Direction

Based on above information, there is potential for additional research as it only covers a short time period and the Brisbane Water district. For further information regarding the Brisbane Water Aboriginal people, it is recommended that:

- Consultation should be undertaken with the contemporary Darkinjung community for further information regarding the Brisbane Water district Aboriginal people, examining questions such as who were the five tribes identified by Bean and their correlation to the Darkinjung; whether the contemporary community can identify the recorded people in the blanket counts; nineteenth-century and twentieth-century movement/migration of the Darkinjung for research leads; discussion on theories of power and resistance; and provision of other examples of resistance that would not have been recorded within European documentation.
- More detailed research of the Brisbane Water district Aboriginal people via primary and secondary sources should be undertaken. A potential starting point would be the works of Associate Professor Nerida Blair who compiled *Darkinjung: Lands, Waters Peoples and Culture* (2000),¹³ and *Darkinjung: Our Voices, Our Place* (2003),¹⁴ as well as the University of Western Sydney’s ‘A

history of Aboriginal Sydney' website,¹⁵ which contains stories of some the recorded Brisbane Water district Aboriginal people.

- The blanket counts for Newcastle and Lake Macquarie should also be reviewed for Brisbane Water district Aboriginal people as they have been identified further north.
- The papers and reports of LE Threlkeld should be reviewed. Threlkeld oversaw two missions, Reid's Mistake and Ebenezer Mission, at Lake Macquarie and was known to have made detailed observations of the local Aboriginal groups. It is also likely that Aboriginal people from the Brisbane Water district would have visited his missions, and may have been involved in his agricultural endeavours surrounding Lake Macquarie.

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Table 3.1 Results of the SRNSW Historical Document Review.

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Abrahams	Bialloby(?) (1834)	20	1	1/1	Wyong (1833)	Wyong	Brisbane Water	Brisbane Water					
	Ologee (1836)	33		-1	Walkeloa (1837)								
	Oslague (1837)	35	1	-2	Brisbane Water (1839/40)								
	Oolage (1838/39)	35	1	-2									
	Oologah (1840)	35	1	-2									
	Olagah (1841)	37	1	-2									
Abrahams	Wollogy (1837) Woology (1838)	19			Walkeloa			Brisbane Water	Brisbane Water				
Andrew	Woorbul (1837/39)	28	1		Walkeloa				Brisbane Water		Brisbane Water	Brisbane Water	Brisbane Water
		25	1										
	Waarball (1841)	25	1	1									
	28	1											
Bangemah	Bannangorah	65 65			Brisbane Water (1840/41)						Brisbane Water	Brisbane Water	
Belcher (1837) Bilchor (1838)	Gelton (1837) Gilor (1838) Gitta (1839/40/41)	35			Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water
		36											
		35											
		39											
Bianna	Wilhier	61						Brisbane Water					

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Bice Earle	Bungwall	50		1/-			Brisbane Water						
Biddy (F)					Brisbane Water (1833)	Brisbane Water (absent)							
Bilbow (F)					Wyong (1833)	Wyong							
Bilchen	Bilchen (1834) Kitto (1836)	30 28			Brisbane Water (1833) Mangrove (1834)	Brisbane Water (absent)	Brisbane Water	Brisbane Water					
Billie Boy (B)		8-10			Brisbane Water (1833)	Brisbane Water/ Wyong							
Billy Boy	Brambra	10 12			Walkeloa (1837/38)				Brisbane Water	Brisbane Water			
Bingle					Wyong (1833)	Wyong	Wyong						
Blazer	Blazer (1834) Kykiloin (1836)	30 35			Brisbane Water		Wyong	Brisbane Water					
Blazer	Golwanga (1837) Golwangea (1838) Golwange (1839)	44 44 40 41	1		Walkeloa (1837/38) Brisbane Water (1839)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Bogu					Brisbane Water (1833)	Brisbane Water (absent)							
Booby	Corinda (?) (1834)	50			Wyong		Wyong						
Booker	Confine	17			Brisbane Water			Brisbane Water					
Boorahpaddy	Witoni (1836)	25			Brisbane Water (1833)	Brisbane Water (absent)		South(?) Island					
Bouker	Coonyara (1837) Coongarra (1838)	13 15	1		Walkeloa (1837/38)				Brisbane Water	Brisbane Water			
Breenan					Brisbane Water	Brisbane Water/ Wyong							
Brown	Jeringe (1837/38/39) Jeunge (1841)	20 25 25 25 26			Walkeloa (1837/38) Brisbane Water (1839/40)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	
Brunman	Bruangora	42			Walkeloa (1837)				Brisbane Water				
Brunman	Wuonbruin	42	1		Brisbane Water						Brisbane Water		

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Bumble	Guldy	40			Mangrove			Brisbane Water					
Bungamah	Olumucl	70			Brisbane Water (1836)			Brisbane Water					
Bungema	Wunbroin (1837)	60			Walkeloa (1837)				Brisbane Water		Brisbane Water	Brisbane Water	Brisbane Water
Bumman (1841)	Bunangora (1839)	60											
	Bunnengorah (1841)	61											
		62											
Bush John		31			Mangrove			Brisbane Water					
Bush Tom	Bulla (1837)	40			Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
	Bulboa (1838)	41											
	Bulba (1839)	40											
	Babberah (1841)	43											
Charley Myrtle	Wuttongamuce	46						South(?) Island					
Cocky (1837)	Walgy (1837/39/40)	40	1		Walkeloa				Brisbane Water		Brisbane Water	Brisbane Water	Brisbane Water
Crocky (1839)	Wallgy (1841)	40		1/-									
		41		1/-									
		42		1/-									
Connor	Ponibujuy	61			Brisbane Water			Brisbane Water					
Connor	Bangaraboong	61	1		Brisbane Water								Brisbane Water

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Crocky (1838)	Waughy (1838)	18			Walkeloa					Brisbane Water			
Cunday	Cunday (1834)	50	1		Brisbane Water		Brisbane Water						
Curker (F)		60			Brisbane Water			Brisbane Water					
Diannah (F) Dinnah (1836)	Mowrigo	19 (1836)			Brisbane Water	Brisbane Water (absent)	Brisbane Water	Brisbane Water					
Dick	Jellumberg	11			Walkeloa				Brisbane Water				
Donnell	Granner	18			Lake Macquarie			Brisbane Water					
Double Belly	Pitka (1834)	50			Brisbane Water		Brisbane Water						
Dougliby (F)	Churingice	62			Brisbane Water			Brisbane Water					
Flathead	Warrabura (1836)	32		-/1	Brisbane Water (1833) Tuggerah Beach (1836)	Brisbane Water (absent)		Brisbane Water					
Flathead	Woolga (1837/38) Woolgarbou (1839)	58 58 60 61		-/1 -/1 -/1 -/1	Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
	Waalgarboo (1841)	61		-/1									
Frazer					Wyong (1833)	Wyong							
Freeman	Furnell (1834)	25			Wyong (1833)	Wyong	Wyong						
Gonky	Waldy	32			Mangrove			Brisbane Water					
Harry					Brisbane Water (1833)	Brisbane Water (absent)	Brisbane Water						
Hobbie					Wyong (1833)	Wyong	Wyong						
Hobbie Holbe (1837) Hobby (1838/39/41)	Caulow (1837/38) Caubow (1839) Carbon (1841)	15 16 18 23	1		Wyong (1833) Walkeloa (1837/38) Brisbane Water (1839)	Wyong	Wyong		Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
Holwuor (?)					Brisbane Water		Brisbane Water						
Hopping Joe		22			Brisbane Water (1833)	Brisbane Water/ Wyong	Brisbane Water						
Hughy	Murry	49			Brisbane Water			Brisbane Water					

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Jack	Onobria Wayee (1837 & 1838)	35 38 39			Walkeloa (1837/8)			Brisbane Water	Brisbane Water	Brisbane Water			
Jack Brown	Wallong (1834)	25			Brisbane Water (1833)	Brisbane Water/ Tuggerah (absent)	Brisbane						
Jack Jones Jacky Jones (1834)		30 (1834)	1		Brisbane Water (1833)	Brisbane Water	Tuggerah						
Jack (?) Rot	Yaelamee (1834)	25	1		Wyong		Brisbane Water						
Jacky Jacky		50			Walkeloa (1837)				Brisbane Water	Brisbane Water			
Jackey Jackey	Olyghy (1831) Olyhy (1841)	70 70 72			Brisbane Water (1839/40)						Brisbane Water	Brisbane Water	Brisbane Water
Jago Jajo (1839)	Jago (1834) Boral (1836) Bogstail (1837) Boxhaall (1838) Bogstaaile (1839) Boogstaalea (1840)	30 28 25 26 26 27 28	1 1 1 1 1	 2/- 1/2 1/3 1/-	Brisbane Water (1833/34/36/39) Walkeloa (1837/38)	Brisbane Water (absent)	Brisbane Water	Brisbane Water					

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
	Bogogshaile (1841)												
James Crankey		50			Walkeloa				Brisbane Water				
Jemmy	Pidgeman	30 31 32 34	1 1 1 1	2- 2- 2- 2-	Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
Jewfish	Yarumimby (1836) Wassbah (1837)	56 60			Brisbane Water (1833) Walkeloa (1837)	Tuggerah Beach		Brisbane Water	Brisbane Water				
Joblice		25			Brisbane Water		Brisbane Water						
Jory Dick	Puyon	25			South(?) Island			South(?) Island					
Jurrene		50			Mangrove			Brisbane Water					
Keeson		8-10			Brisbane Water (1833)	Brisbane Water/ Wyang							
Kangaroo Jack	Jerimber(?) (1836) Money (1837/39/40)	61 60 60 62			Brisbane Water (1836/39/40) Walkeloa (1837)			Brisbane Water	Brisbane Water		Brisbane Water	Brisbane Water	

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Kangaroo Jack	Money (1838)	28			Walkeloa (1838)					Brisbane Water			
King Abraham	Cillogy (1834)	30	1	-/2	Erina		Brisbane Water						
King Churgy					Brisbane Water (1833)	Brisbane Water (absent)							
King John					Brisbane Water (1833)	Brisbane Water (absent)							
Kitty (F)					Wyong (1833)	Wyong							
Lawn Jumun	Aller-wiy	31			Brisbane Water			Brisbane Water					
Leg-o-my	Pondo	19			South(?) Island			South(?) Island					
Little Abrahams	Moolua	26			South(?) Island			South(?) Island					
Little Brown	Massbear	21			Brisbane Water			Brisbane Water					
Little Dick					Brisbane Water (1833)	Brisbane Water/ Tuggerah (absent)	Brisbane Water						
Little Frumin	Bora-bunca	29			South(?) Island			South(?) Island					

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Little Jack	Yurinadune	35	1		Brisbane Water			Brisbane Water					
Little Jack Jack (1840/41)	Wendajah (1837) Wendago (1838) Waaiaoh (1839) Waaigah (1840/41)	26 25 28 28	1 1		Walkeloa (1837/38) Brisbane Water				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	
Little Jack	Kendarah (1839) Kenyah (1840/41)	19 25 26	1 1 1		Brisbane Water						Brisbane Water	Brisbane Water	Brisbane Water
Little Quart Pot	Ballygonan	11			Walkeloa (1837)				Brisbane Water				
Long Dick	Boyo (1834) Boio (1837/38/39) Boiah (1841)	20 20 21 23	1		Brisbane Water (1833) Mangrove (1834) Walkeloa (1837/38)	Brisbane Water/ Tuggerah (absent)	Brisbane Water		Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
Long Kitt	Orinya (1834)	30 (1834)			Brisbane Water (1833) Wyong (1834)	Brisbane Water (absent)	Wyong						

GML Heritage

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Major	Omith (1836)	28			Brisbane Water	Brisbane Water (absent)	Brisbane Water	Brisbane Water					
Major	Wanachbargo (1837/39) Wanaisklung (1838) Woabachlage (1840)	35 36 25 27			Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	
Maria (F)					Brisbane Water	Brisbane Water							
Mary Anne (F)	Dulway (1834)	50			Brisbane Water (1833)	Brisbane Water	Brisbane Water						
Mary Markiliarte (F)	Boochar	51			Wyong			Brisbane Water					
Molly Morgan	Wooloongoong (1837/38/39/40/41)	20 21 22 22	1 1 1		Walkehoa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water
Monkey	Bulbury (1837/38) Budbury (1839) Buddbery (1840)	32 33 32 34			Walkeloa (1837/38) Brisbane Water (1839/40)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Moon Island	Ologee (1836) Ology (1837)	70 70			Lake Macquarie (1836) Walkeloa (1837/38)			Brisbane Water	Brisbane Water	Brisbane Water			
Mr Molly Morgan	Mumger (1836)	25 (1834) 33 (1836)	1		Brisbane Water (1833)	Brisbane Water (absent)	Brisbane Water	Brisbane Water					
Mrs Barry (F)					Brisbane Water	Brisbane Water (absent)							
Mrs Butterwarring (F)					Brisbane Water	Brisbane Water (absent)							
Mrs Furman	Furmaina (?) (1834)	25			Brisbane Water		Brisbane Water						
Mr Gill	Brabbora (1837/38) Brabber (1839/41)	16 19 26 25 28			Walkeloa (1837/38) Brisbane Water (1839/40)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water
Mrs Pattey	Pattey (1834)	20			Brisbane Water		Brisbane Water						
Mutthe (?)	Jerry Gong (1834)	30	1	1/-	Brisbane Water		Brisbane Water						
Murkalong	Murkalong	50	1		Brisbane Water		Brisbane Water						

GML Heritage

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Naney (F) Naney Barsson (1836)	Boolyhan (1836)	22 (1836)		-/1 (1836)	Brisbane Water District (1833) Wyong (1836)	Wyong		Brisbane Water					
Nanny Terrowta (F)					Wyong (1833)	Wyong							
Ned	Waronora (1837/38) Werowah (1839/41)	20 21 20 24 23			Walkeloa (1837/38) Brisbane Water (1839/40/41)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water
Nimbo	Cudgeybull (1837/38/39)	33 36 38 41	1 1 1 1		Walkeloa (1837/38) Brisbane Water (1839)				Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
Nolmun		41			Mangrove			Brisbane Water					
Numbo	Numbo (1834) Butyoure (1836)	25 (1834) 27 (1836)			Wyong (1833)	Wyong		Brisbane Water					
Old Abrahams					Brisbane Water (1833)	Brisbane Water/ Tuggerah Beach (absent)							

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Old Bannock					Brisbane (1833)	Brisbane Water/ Tuggerah Beach (absent)							
Old Bill Old Billy (1834)	Biffar (1834)	40	1		Brisbane Water (1833)	Tuggerah Beach	Brisbane Water						
Old Bungawace					Brisbane Water	Brisbane Water/ Tuggerah Beach (absent)							
Old Connor Connor (1839/40)	Bongalong (1837/38/39)	61 61 61 60	1 1 1		Brisbane Water (1833/39) Walkeloa (1837/38)	Brisbane Water/ Tuggerah Beach (absent)			Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	
Old Daddy	Woveeah (1839) Woorah (1840) Woocbah (1841)	67 69 69		1/- 1/-	Brisbane Water						Brisbane Water	Brisbane Water	Brisbane Water
Old Governor					Brisbane Water	Brisbane Water (absent)							
Old Granny (F)					Brisbane Water (1833)	Brisbane Water (absent)	Brisbane Water						

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Old Howey					Brisbane Water	Brisbane Water/ Tuggerah Beach (absent)							
Old Hughy	Catulini(?) (1836) Tuckan (1837) Tookah (1838)	66 70			Walkeloa (1837/38)			Brisbane Water	Brisbane Water	Brisbane Water			
Old Joby	Gumalong	60 62 60 62 63			Walkeloa (1837/38) Brisbane Water (1839/40)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water
				-1									
Old John	Bajoree (1834)	60	1	2/-	Wyong		Wyong						
Old Junker	Behamice (1834)	60	1		Brisbane Water		Brisbane Water						
Old Mary (F)	Mulba (1836)	61		2/-	Brisbane Water (1833 & 1836)	Brisbane Water		Brisbane Water					
Old Mrs Furrow (F)					Brisbane Water (1833)	Brisbane Water/ Tuggerah Beach (absent)							

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Old Ned	Joby (1836)	22	1		Brisbane Water (1833)	Brisbane Water/ Tuggerah Beach (absent)		Brisbane Water					
Old Piggy (F) Old Pig (1834)	Jugrina (1834)	60			Brisbane Water (1833)	Brisbane Water/ Tuggerah Beach (absent)	Brisbane Water						
Old Tom Jones					Brisbane Water (1833)	Brisbane Water	Brisbane Water						
Old Townen Old Town (1834)					Brisbane Water (1833)	Tuggerah Beach	Brisbane Water						
Paddy	Dippar (1836)	25			South(?) Island			South(?) Island					
Paddy	Cockalong	20			Wyong	Brisbane Water/ Wyong	Wyong						
Pears	Wellabin	80			Walkeloa				Brisbane Water				
Piggy (F)					Wyong (1833)	Wyong							
Puckhamall	Bungy (1834)	40			Brisbane Water		Brisbane Water						

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
Puckhamall	Benjamine (1836)	70			Brisbane Water			Brisbane Water					
Quart Pot	Morinjun (?) (1836)	27	2		Brisbane Water (1833)	Brisbane Water/ Tuggerah Beach		Brisbane Water					
Quart Pot	Bubbyah (1837/39)	19	1		Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water
	Bubbaja (1838)	21	1		Brisbane Water (1839/40)								
	Bugibah (1840)	22	1										
	Bubbigah (1841)	23	1										
Roba (1837/39)	Bunya (1837)	35			Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	
	Bunyah (1838)	36			Brisbane Water (1839/40)								
Robah (1838)	Bungova (1839)	36											
		35											
Roow					Brisbane Water	Brisbane Water							
Rover	Pindyour (1836)	33			Brisbane Water			Brisbane Water					
Tirro (F)	Orinaburd	56			Brisbane Water			Brisbane Water					
Tom Jones (1837)	Orunina (1837)	35	1		Walkeloa (1837/38)		Brisbane Water		Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
	Orinnah (1838)	44	1										
	Tommy Jones (1838)	45	1										

English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
	Owimah (1839) Orwamah (1841)	41 43	1 1		Brisbane Water (1839)								
Tom Jones	Kendarah	19 21			Brisbane Water						Brisbane Water		Brisbane Water
Tommy (1837) Old Tommy (1838/39)	Waigoah (1837) Waigoo (1838) Waigoah (1841)	50 50 51 54	1 1	1/- 1/- 1/- 1/-	Walkeloa (1837/38)				Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
Tommy Tommy Young Tommy (1841)	Oligaigo (1839) Olyayo (1841)	39 41	1 1		Brisbane Water						Brisbane Water		Brisbane Water
Wallace	Woollomy	23			Lake Macquarie			Brisbane Water					
Whipunaup	Waruba (1837/38/39)	25 26 25 25			Walkeloa (1837/38) Brisbane Water (1839)				Brisbane Water	Brisbane Water	Brisbane Water	Brisbane Water	
Wup-um-up	Pupola	29			South(?) Island			South(?) Island					
Young Alwey					Brisbane Water	Brisbane Water/ Tuggerah Beach							

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English Name	Aboriginal Name	Probable Age	No of 'Wives'	Child M/F	Designation of Tribe	1833 (Place or District of Resort)	1834 (Place or District of Resort)	1836 (Place or District of Resort)	1837 (Place or District of Resort)	1838 (Place or District of Resort)	1839 (Place or District of Resort)	1840* (Place or District of Resort)	1841 (Place or District of Resort)
						(absent)							
Young Brown					Brisbane Water	Brisbane Water/ Tuggerah (absent)	Brisbane Water						
Young Hughy	Bolenbuen (1837) Bolnboan (1838) Bovenboven (1839) Boovenbooven (1841)	33 36 35 37	1 1 1 1		Walkeloa (1837/38) Brisbane Water (1839)				Brisbane Water	Brisbane Water	Brisbane Water		Brisbane Water
Young Tom					Brisbane Water	Brisbane Water District (absent)							
						M – 40 W – 16 B – 2 G – 0	M – 45 W – 13 B – 5 G – 3	M – 40 W – 28 B – 5 - 9 G – 2 - 4	M – 42 W – 12 B – 7 G – 3	M – 34 W – 12 B – 6 G – 3	M – 35 W – 12 B – 7 G – 3	M – 35 W – 12 B – 9 G – 4	M – 31 W – 13 B – 9 G – 5

3.3 Endnotes

¹ Intellectual Property

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² Mulvaney, J and Johan, K 1999, *Prehistory of Australia*, Allen and Unwin, p 141.

³ Morwood, MJ 2002, *Visions from the Past The Archaeology of Australian Aboriginal Art*, Allen and Unwin, p 12.

⁴ Attenbrow, V 2002, *Sydney's Aboriginal Past*, UNSW Press, p 153.

⁵ Attenbrow, V 2002, *Sydney's Aboriginal Past*, UNSW Press, p 153.

⁶ NSW National Parks and Wildlife Service, *Brisbane Water National Park Plan Of Management*, 1992, p 19.

⁷ Byrne, D 1997, *National Parks and Wildlife Service Standards Manual: Aboriginal Cultural Heritage Standards and Guidelines Kit*, NSW National Parks and Wildlife Service, p 5.

⁸ Wikipedia, 'Baiaime', viewed 24 May 2017 <en.wikipedia.org/wiki/Baiame>.

⁹ State Library of NSW, 'Blanket Lists', viewed 24 May 2017

<http://www2.sl.nsw.gov.au/archive/discover_collections/history_nation/indigenous/blanket/blanket.html>.

¹⁰ Bean, W, 16 April 1827, Colonial Secretary's Correspondence, letter 27/3713.

¹¹ Threkheld, LE, 21 May 1828, Colonial Secretary's Correspondence, letter 28/4804.

¹² Bean, W, September 1829, Colonial Secretary's Correspondence.

¹³ Blair, N 2000, *Darkinjung History: Lands, Waters, Peoples and Culture*, Umulliko, Centre for Indigenous Higher Education, University of Newcastle, Newcastle.

¹⁴ Umulliko Indigenous Higher Education Research Centre, 2003, *Darkinjung: Our Voices, Our Place*, University of Newcastle. Faculty of Education and Arts, School of Aboriginal Studies, Callaghan, NSW.

¹⁵ University of Western Sydney, *A History of Aboriginal Sydney, 2010–2015*, viewed 9 May 2017

<<http://www.historyofaboriginalsydney.edu.au/>>.

4.0 New Heritage Investigations

4.1 Methods of Investigation

Further to the investigations relating to background environmental and archaeological aspects (Sections 2 and 3), the heritage investigations have undertaken new work into potential Aboriginal connections to Country. These new investigations have focused on three primary avenues:

- a physical inspection—informal archaeological survey to investigate the physical characteristics of the study area;
- Aboriginal community consultation—to discuss the nature, form, aesthetic, social and potential scientific (archaeological) aspects of the study area; and
- archival research—to begin an investigation into records held by state repositories, with the aim of identifying Aboriginal heritage connection (presented in Section 3).

The aim of these new heritage investigations is to provide an integrated approach to the identification of Aboriginal cultural heritage values in the wider cultural landscape.

4.1.1 Field Methods

The site inspection involved a team of four individuals, in a walkover inspection. Full coverage inspections were not undertaken. Instead the aim of the field methods were to:

- identify landforms/landscape features which indicate the presence of Aboriginal objects or cultural values;
- identify areas of disturbed land; and
- allow the opportunity for Aboriginal representatives to identify areas of cultural sensitivity.

4.1.2 Physical Inspection

The first aim of an archaeological inspection is to identify all visible evidence of past Aboriginal occupation within the study area. The second aim is to determine zones that will have buried, subsurface archaeological deposits. Combining these two together will allow the creation of an Archaeological Sensitivity Plan that highlights where Aboriginal evidence could be located across the study area. In addition, consideration should be given to locations within the study area that do not contain physical evidence from Aboriginal occupation, but would have been significant to Aboriginal use of the landscape, eg walking tracks, ceremonial areas, Dreaming trails etc. These should also be recorded, mapped and considered within the framework of assessment and management for Aboriginal heritage.

It must be noted that practically all archaeological inspection or survey is limited by a number of factors such as ground surface visibility and access restrictions, and tempered by environmental factors during the period of survey. These influences will affect the outcome of any survey, and introduce biases into the results.

The study area was inspected by the study team and Sharon Hodgetts (DLALC) and Tracey Howie (GTAL) on 21 February 2017. The inspection did not aim to provide full coverage; instead, transects were targeted for each main landform within the study area. The inspection aimed to assess the

landforms and areas of archaeological potential, inspecting all soil exposures and zones with low vegetation that contained tracks and paths. Sampling included all landforms that will potentially be impacted by the proposed project. The survey was also an opportunity to collect information about the known cultural values of the area with the consultation with the Aboriginal representatives.

The sampling strategy employed during the survey included:

- Inspection observed areas of both the proposed development sites and some of the Darkinjung proposed offset lands to understand the relationship between the development footprint and the immediate geomorphological and cultural landscape.
- A full coverage survey was not undertaken due to the size of the area, as this is not a formal requirement of the due diligence process, and to focus investigations on sampling all landforms within the coastal alluvial landscapes and coastal slopes/hinterland, to identify predicted sites within these landforms and landscapes. It also assisted in identifying the full range of cultural values associated with different ecotones of the study areas.

When heritage sites were identified, they were recorded by the survey team for content, GPS location and digitally photographed. Notes were made of soil conditions, evidence of disturbance and possible extent of sites.

4.2 Results of the Wallarah Inspection

The Site 5 inspection comprises transects of 2.8km within the study area (Figure 4.1). The inspection was undertaken on 21 February by GML representatives Ms Jodi Cameron and Dr Tim Owen, Ms Sharon Hodgetts (DLALC) and Ms Tracey Howie (GTAL).

The inspection identified one Aboriginal anthropological and archaeological site and a large elevated flat landform with archaeological and cultural sensitivity was also identified. This landform was also associated with a local walking route. A deeply incised fire trail extends through the zone with archaeological sensitivity and provided an indication for soil profiles and depths. Despite the extent of erosion, no Aboriginal lithics were observed during survey along the fire trail. Observations of subsurface soil profiles either side of the fire trail was not possible as little disturbance was present.

The northeast of Site 5 was not inspected, but has been assessed based on regional predictive modelling to hold some archaeological sensitivity (Location C).

An overview of the survey outcomes and the archaeological and cultural sensitivity are provided in One area with extensive disturbance was noted in the central north of Site 5 (Figure 4.3). This area is unlikely to retain intact archaeological deposits.

Table 4.1 and Figure 4.2. One area with extensive disturbance was noted in the central north of Site 5 (Figure 4.3). This area is unlikely to retain intact archaeological deposits.

Table 4.1 Recorded Locations of Aboriginal Cultural Heritage Observations.

Location and Name	Description and Traditional Resources	Archaeological Sensitivity	Views (Local or Regional) and Travelling Routes (Section 4.2.3)	Possible Aboriginal Landscape Use
<p>Location A</p> <p>Western extent of the archaeologically sensitive area</p> <p>Restricted Aboriginal cultural site</p> <p>Aesthetic value</p>	<p>A restricted Aboriginal cultural site (AHIMS # TBA).</p> <p>Steep sloping landform (approximately 15%) with very shallow soil overlying fractured shale bedrock. Frequent surface gravels.</p> <p>Described by Aboriginal Representatives as within a beautiful area.</p> <p>The area also includes a flat open landform with mature vegetation, with archaeological sensitivity.</p>	<p>Yes—potential for stratified subsurface archaeological deposits within flat landform identified to the north of the steep slope.</p> <p>Wyong Alluvial soils, to a depth of 400mm.</p>	<p>Adjacent to the local travelling route.</p>	<p>Yes—restricted information, which is presented on the AHIMS card.</p> <p>Associated with a local Aboriginal walking route.</p> <p>Possible location used for repeated habitation activities, including camping.</p>
<p>Location B</p> <p>Eastern extent of the archaeologically sensitive area</p>	<p>Level-flat landform overlooking creek with frequent old-growth trees.</p>	<p>Yes—subsurface archaeological sensitivity.</p> <p>Gorokan soils may be up to 600mm. Possibly some alluvial soils over the erosional (or vice versa).</p>	<p>Local travelling route passes through the area with archaeological sensitivity.</p>	<p>Possible location used for repeated habitation activities, including camping.</p>
<p>Location C</p>	<p>Principally a flat, located on the simple sloping landform, associated with the ridgeline.</p>	<p>Yes—subsurface archaeological sensitivity.</p>	<p>Associated with the regional travelling route.</p>	<p>Possible location used for repeated habitation activities, including camping.</p>

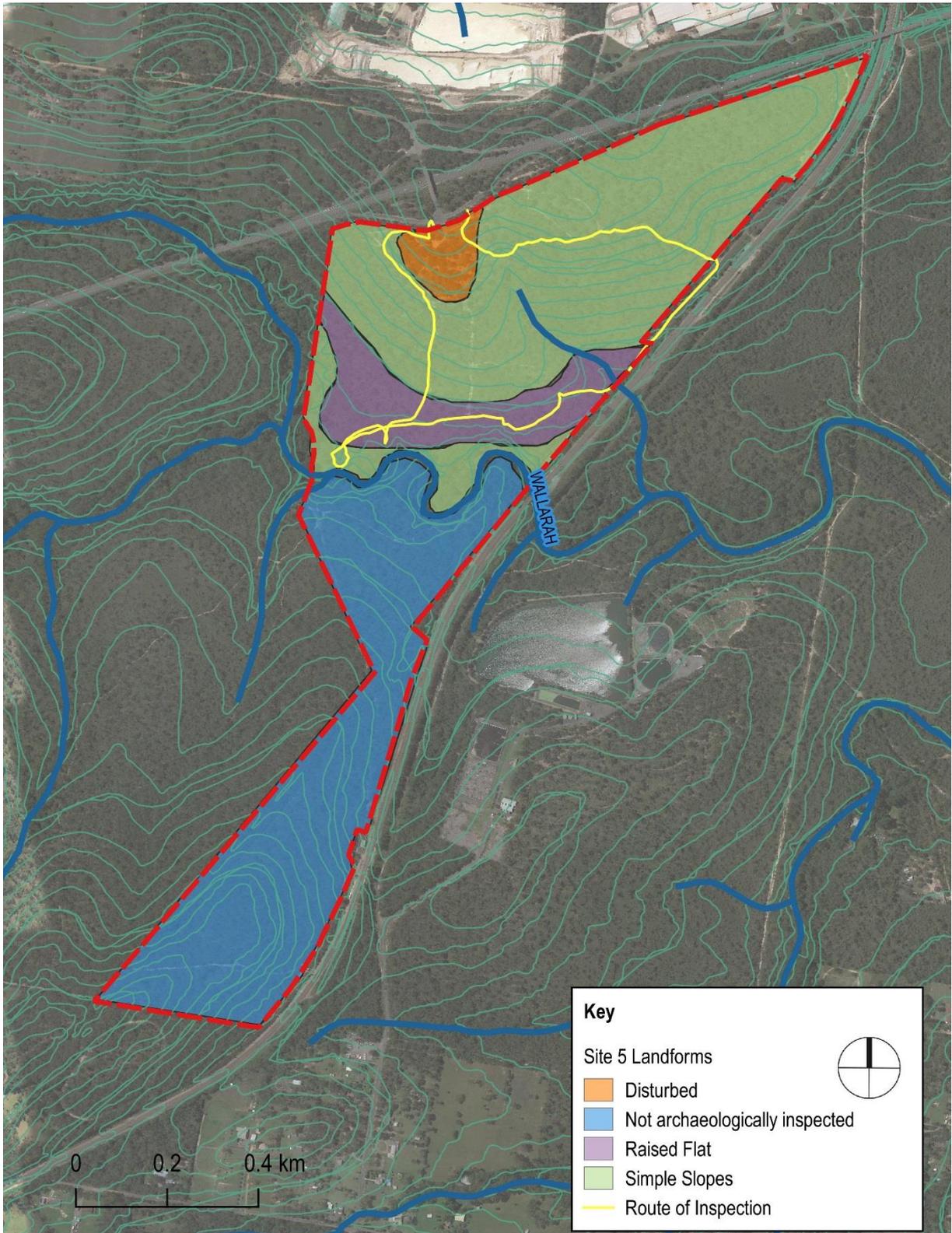


Figure 4.1 Detailed landform assessment from site inspection. (Source: GML Heritage 2017)

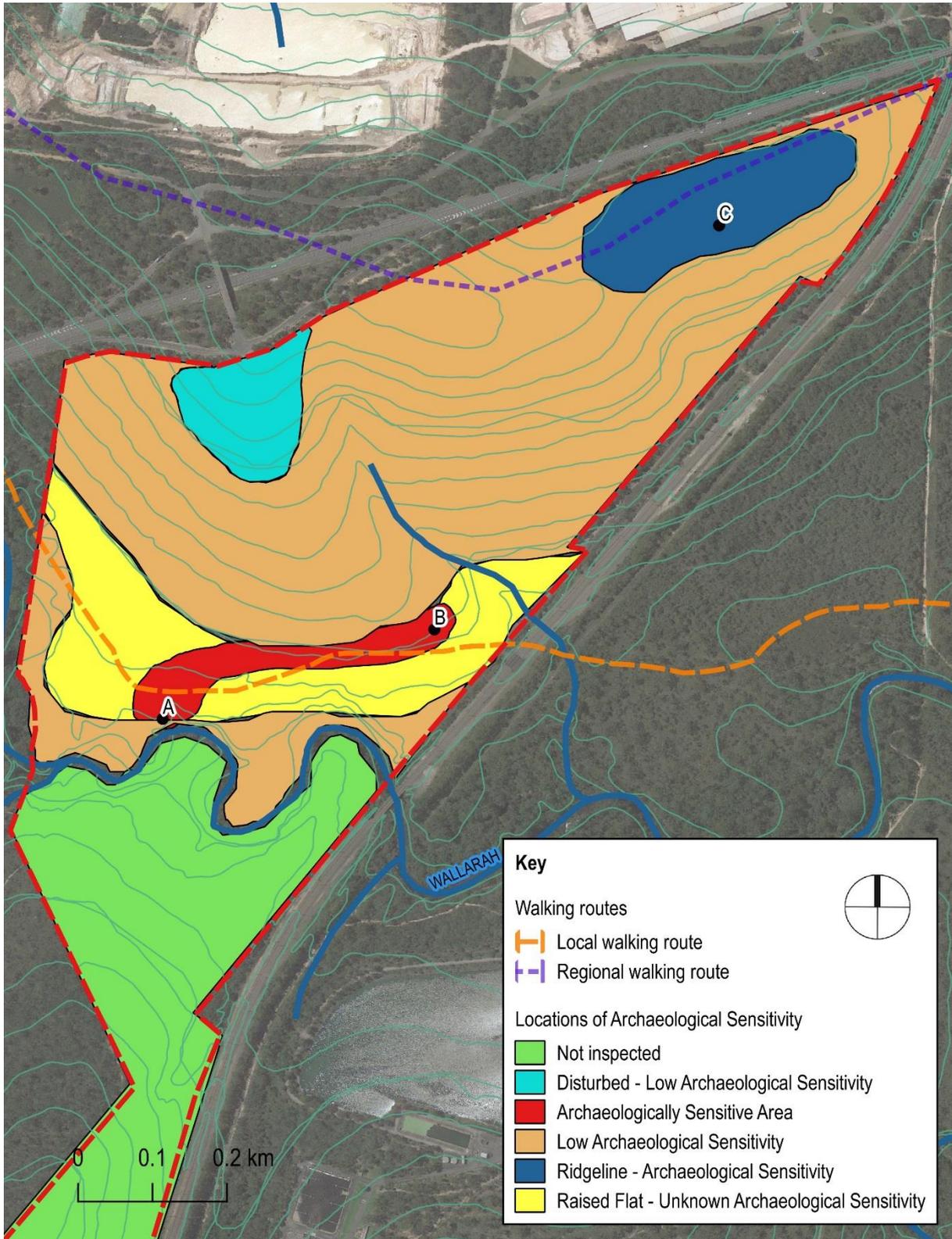


Figure 4.2 Locations and area of Aboriginal archaeological sensitivity, as described in Table 4.1. (Source: Google Earth with GML additions 2017)

4.2.1 The Aesthetic Landscape

This section also provides a context for the aesthetic values associated with the study area. The Burra Charter defines aesthetic value as:

...aspects of sensory perception for which criteria may include consideration of the form, scale, colour, texture and material of the fabric [interpreted as evidence of Aboriginal occupation]; the smells and sounds associated with the place and its use.

- *Does the place have special compositional or uncommonly attractive qualities involving combinations of colour, textures, spaces, massing, detail, movement, unity, sounds, scents?*
- *Is the place distinctive within the setting or a prominent visual landmark?*
- *Does the place have qualities which are inspirational or which evoke strong feelings or special meanings?*
- *Is the place symbolic for its aesthetic qualities: for example, does it inspire artistic or cultural response, is it represented in art, photography, literature, folk art, folk lore, mythology or other imagery or cultural arts?*
- *Does the place display particular aesthetic characteristics of an identified style or fashion?*
- *Does the place show a high degree of creative or technical achievement?*

The Burra Charter also acknowledges that aesthetic value is not limited to a ‘western’ perception of aesthetics.¹ Where offered, specific aesthetic input from Aboriginal representatives has been incorporated into the archaeological and ‘western’ academic aesthetic assessment.

All living surfaces have a texture that is defined according to the ecology, geology, soils and environment present, so that a marked difference exists between beaches, woods, hills, floodplains, etc. Evans states that the usual quantities measured by academics, used to describe land surfaces, should also be embraced to provide a social context for interpretations:

The experience of texture beneath our feet at the qualities and scales is rarely acknowledged as a medium of social agency... It is at the surface that we are in constant, immediate and close physical contact with the land, so it is inconceivable that there is no relevance in this beyond that of sheer materiality or function. Land-surface textures can be used in the business of manipulating social express. Texture helps a person think.²

This section considers the aesthetic and texture of the landscape at two levels: a regional perspective as part of the context of the valleys of the Budgewoi Lake catchment; and the local context—looking to and from the study area, as a component of the Wallarah Creek valley.

Location A

During the site visit, an item was identified as culturally significant (Location A, Figure 4.2). Location A was recorded as a significant item and has since been registered on AHIMS as a restricted site (AHIMS TBA). The Aboriginal representatives stated Location A is ‘very important and should be left undisturbed’ (Sharon Hodgetts and Tracy Howie, pers comm, 21 February 2017). Location A is not detailed further due to cultural sensitivity.

Landforms

Dominating elements associated with landforms across the region include: Budgewoi Lake to the east; the Colongra wetlands to the northeast; and the hinterland to the west of the study area.

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The interaction of the different landform topographies contribute to the aesthetics of the alluvial valley of Wallarah Creek within the study area. The interconnectedness between landforms creates a naturally enclosed and protected location. A regional travelling route in the north follows an east–west oriented spur which descends to the higher orders of Spring Creek. An area of flat landform is present on this route and has been described as Location C. A local travelling route along the southwest–northeast flat landform extends parallel with Wallarah Creek, within the southern half of Site 5.

An expansive raised flat landform is positioned either side of the local travelling route. This landscape feature possesses value in terms of representing areas Aboriginal people are likely to have repeatedly used, possibly for camping or stone artefact manufacture (both culminating in an archaeological signature), and other traditional or cultural activities which do not have a physical signature (Figure 4.4 and Figure 4.5).

Identified Locations A and B were noted for their importance in relation to Aboriginal use of this area. Location B provides an example of a location that may have been a focus for Aboriginal long term activities (described further below). Landforms to the south of Wallarah Creek are likely to possess similar levels of archaeological potential.



Figure 4.3 Disturbed location of cleared vegetation. A lower flat of the east–west ridgeline leading towards Spring Creek. Northern section of Site 5, a high point of the study area. View downslope along eroded track. (Source: GML 2017)



Figure 4.4 Location B—flat landform along the fire track with very mature vegetation upslope from the restricted Aboriginal cultural site. (Source: GML 2017)



Figure 4.5 Location B—flat landform at the top of a slope rising from the creek. The road defines the southern boundary of the landform from the slope to the flat landform. (Source: GML 2017)

Context Relative to Travelling Routes

Site 5 is associated with two travelling routes. The regional route was described in the context of the motorway link road. An examination of local topography perhaps suggests this regional route may have followed the spur line descending east, and thus intersected Site 5. A local walking route was identified on the northern banks of Wallarah Creek, connected with the elevated flat landform, and the route of the extant fire trail (Figure 4.2). The local walking route is therefore directly associated with Locations A, B and the area of archaeological sensitivity. The regional travelling route is associated with Location C which also holds archaeological sensitivity.

Aboriginal movement through Site 5 is likely connected to both local tradition (notably associated with Location A), and potential habitation across the flat landform. The movement of people through this area would have taken them to the western foreshores of Budgewoi Lake, with abundant food resources. However, use of Site 5 should not just be attributed to population movement, as there are aspects of Aboriginal culture associated with Site 5 itself. As such, further investigations into the long term Aboriginal use and connection with the northern landforms of Site 5 may provide significant insight into long term Aboriginal social and economic use of the wider area.

4.2.2 Areas of Archaeological Sensitivity

The inspected portions of Site 5 have generally not been impacted or disturbed by historical activities. The exceptions are the fire trails and the northern section of site 5, where the Motorway Link Road intersects with Tooheys Road. These areas have been highly disturbed and hold low to no archaeological potential. There are multiple dirt bike tracks in these areas and evidence of grading, with the addition of blue metal gravels to the area (Figure 4.3, Figure 4.6 and Figure 4.7).

In general, the study area can be described as having a low level of archaeological sensitivity for subsurface archaeological deposits. The sloping landforms could contain evidence for spatially undefined Aboriginal activities, with deposits that represent random manufacture, discard or loss of stone artefacts. Whilst trees along the survey route were inspected, it should be noted that any old growth trees within Site 5 could bear evidence for Aboriginal modification (scars).

There are two well defined flat landforms with a higher level of archaeological sensitivity (Table 4.1, Figure 4.2). These are described as the southern and northern areas with archaeological sensitivity.

The southern area with archaeological sensitivity is the raised flat, situated north of Wallarah Creek, at the top of the open depression, extending between Locations A and B (Figure 4.4 and Figure 4.5). This flat contains a combination of both erosional (Gorokan) and alluvial (Wyong) soil landscapes, with the A horizon soils observed with up to 600mm of A1 and A2, above basal clay. The width of the raised flat landform was between 50m to 80m and very suitable for Aboriginal habitation, given the proximity to permanent fresh water and two ecological communities, as well as being located on a local walking route and sheltered nature. Location B, at the eastern end of the flat, is positioned adjacent to the ephemeral first order creek and would thus indicate a primary location to commence further investigations into the nature of archaeological deposits on this landform.

The associated landform outside the southern area with archaeological sensitivity has been described as having unknown sensitivity. Based on regional predictive modelling the whole flat landform may or may not contain an archaeological signature. This would need to be validated through test excavation.

The northern area with archaeological sensitivity is located on the regional walking route. This route descends the primary ridgeline to Spring Creek. At Location C the landform broadens, flattens and

provides a suitable landscape context, which could have been used for Aboriginal habitation. Therefore, the flat landform has been described as holding archaeological sensitivity. The potential for subsurface archaeological deposits is difficult to predict as the flat landform is further away from water sources. However, in the context of the regional cultural landscape there are few elevated flat areas suitable for longer term habitation.

These locations and the archaeological sensitivity identified within them are commensurate with the locations of previously recorded AHIMS sites, and previous archaeological studies, due to their location in proximity to first and second order creeks, on flat landforms, which may have afforded suitable locations for long term Aboriginal occupation or possibly specialised use, such as retooling prior to hunting.



Figure 4.6 Fire trail within site 5. Looking east towards the railway embankment. Evidence of disturbances and grading are clear. (Source: GML 2017)



Figure 4.7 Fire trail within site 5. Looking east towards Location B. Disturbance caused by the trail is clearly visible. (Source: GML 2017)

4.2.3 Aboriginal Community Consultation

During the site inspection, the two representatives from DLALC and GTAL respectively provided comment on aspects of tangible and intangible Aboriginal heritage. Their input is recorded below:

- The Aboriginal site (Location A) was identified as very important, and could not be commented on further. It was identified as a site which needs to be registered on AHIMS and protected from any development (Ms Tracey Howie and Ms Sharon Hodgetts).
- This area is very beautiful (Ms Sharon Hodgetts).
- The land needs to be properly taken care of (Ms Tracey Howie). Further discussion based around controlled cultural burning.
- The area with archaeological sensitivity and particularly Location B could have been used for camping (Ms Tracey Howie/Ms Sharon Hodgetts).

4.3 Regional Cultural Landscape

This background assessment compiles, analyses and synthesises previous information and relevant contextual information to gain an initial understanding of the cultural landscape. The characterisation of landscape has been combined with regional AHIMS data so that some understanding of Aboriginal economic and social use of the regional landscape is presented.

The aesthetic approach has considered the location of the study area within the coastal hinterland landscape profile, describing the setting and context relative to known and potential travelling routes, and other resources. The approach is also designed to account for the intangible aspects that could have influenced Aboriginal use of the study area and its landscape location, such as Aboriginal people's movement across the landscape. The difference in habitation between the coast and the coastal hinterland adjacent to the fertile alluvial may have meant that traversing the landscape and identifying locations for habitation was important.

Aboriginal community consultation has identified one significant site and a significant area, which are included in the aesthetic assessment. Location A was interpreted as culturally significant and should not be harmed in any way during development. The Aboriginal representatives confirmed that landforms were used in specific ways by Aboriginal people, namely travelling routes, both regional and local. Archival research connects some of the understanding of Aboriginal people post 1788; however, no specific historic connection has yet been identified for the study area. The site also has loose intangible associations with the name 'Gorokan'—describing the dawn.

Site 5 provides locations close to perennial water sources suitable for Aboriginal habitation. Aboriginal land use of Site 5 may have been connected by local and regional travelling routes to the coastal hinterland; these were possibly located within trade routes for the movement of stone material. Aboriginal people may have traversed the landforms, particularly spurs, to and from Budgewoi Lake, Tuggerah Lake, and the other coastal locations. The area may have been rich in resources, and the people may have taken advantage of the regional views. There could also be specific uses for locations inside Site 5, where a focus may have been near Location A.

4.4 Endnotes

- ¹ Australia ICOMOS, 'Understanding and assessing cultural significance', in *The Burra Charter Practice Notes*, 2013, pp 1–12 (p 3).
- ² Evans, J 2003, *Environmental archaeology and the social order*, Routledge, London/New York, p 45.

5.0 Key Management Principles

5.1 Ecologically Sustainable Development

This section provides a description of the proposed rezoning for residential development, and Aboriginal cultural heritage values which have the potential to be harmed by the project as it is currently proposed.

5.1.1 Preamble

An objective of the NPW Act is the 'conservation of objects places and features ... of cultural value within the landscape, including ... places, objects and features of significance to Aboriginal people ...' (s.2A(1(b)(i))).

The publication *Operational Policy: Protecting Aboriginal Cultural Heritage*¹ provides guidance to proponents in terms of Ecologically Sustainable Development (ESD). The following discussion provides an overview of ESD and its application to the current project.

Avoiding or Reducing Impact to Aboriginal Sites

DECC [OEH] needs to balance the sometimes competing tensions between development activities and environment protection when we make decisions. Although the NPW Act gives a high level of protection to known Aboriginal objects [and since the NPW Amendment Regulation 2010 all unknown Aboriginal sites], recent court decisions have reinforced that Part 6 gives the Director General (DG) express powers to consent to the damage, destruction or defacement of Aboriginal objects by development activities. The powers in Part 6 are not inconsistent with the objects of the Act or a requirement to give effect to ESD.²

The OEH has three policies that provide guidance with respect to avoiding or reducing impact to Aboriginal sites:

Policy 20

Impacts to significant Aboriginal objects and places should always be avoided wherever possible. We [the OEH] will promote the development (or amendment) of proposals to avoid impacts and therefore avoid the need for s.90 AHIPs.

Policy 21

Where impacts to Aboriginal objects and places cannot be avoided, we will require the proponent or AHIP applicant to develop (or amend) proposals so as to reduce the extent and severity of impacts to significant Aboriginal objects and places through the use of reasonable and feasible measures. Any measures proposed should be negotiated between the proponent or AHIP applicant and the Aboriginal community.

Policy 22

Once all avoidance, minimisation and mitigation options have been adequately explored, we may also consider the appropriateness of any proposed actions having potential Aboriginal cultural heritage benefit. Any actions proposed should be negotiated between the proponent or AHIP applicant and the Aboriginal community.

5.1.2 Principles of Ecologically Sustainable Development

Ecologically Sustainable Development has been defined in Section 6 of the *Protection of the Environment Administration Act 1991* (NSW). This requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. In regard to Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.³

Intergenerational Equity

Intergenerational equity is the principle whereby the present generation should ensure the health, diversity and productivity of the environment for the benefit of future generations.

In terms of Aboriginal heritage, intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and places remain in a region (for example, because of impacts under previous AHIPs), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.

Information about the integrity, rarity or representativeness of the Aboriginal objects and places proposed to be impacted, and how they illustrate the occupation and use of land by Aboriginal people across the region, will be relevant to the consideration of intergenerational equity and the understanding of the cumulative impacts of a proposal.

Where there is uncertainty, the precautionary principle should also be followed.⁴

The Precautionary Principle

The precautionary principle states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

In applying the precautionary principle, decisions should be guided by:

a careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment

an assessment of the risk-weighted consequences of various options.

The precautionary principle is relevant to DECC's consideration of potential impacts to Aboriginal cultural heritage where:

the proposal involves a risk of serious or irreversible damage to Aboriginal objects or places or to the value of those objects or places, and

there is uncertainty about the Aboriginal cultural heritage values or scientific or archaeological values, including in relation to the integrity, rarity or representativeness of the Aboriginal objects or places proposed to be impacted.

Where this is the case, a precautionary approach should be taken and all cost-effective measures implemented to prevent or reduce damage to the objects/place.⁵

With respect to the above OEH policies (Policy 20–22) and ESD, the following sections detail specifications for conservation, potential impact, and possible reductions to impact on the identified Aboriginal sites and values in the current study area. DLALC has demonstrated its commitment to ESD by undertaking due diligence to the Aboriginal cultural heritage values of the study area.

5.2 Proposed Future Land Use

Following the process of land rezoning, DLALC proposes to undertake residential development within parts of Site 5. The prepared Concept Masterplan (CM) for residential subdivision is currently being assessed for impact to Aboriginal heritage values and subject to modification, with the aim of reducing heritage impacts. Currently, under the *Wyong Local Environmental Plan 2013*, Site 5—Wallaharah is zoned as:

- RU6—Transition; and
- E2—Environmental Management.

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The proposed development will comprise a range of land uses, including residential subdivisions, manufactured home estates and conservation corridors. Two zones are proposed, as shown in the Concept Masterplan:

- IN1—General Industrial; and
- E2—Environmental Conservation.

The Site 5 Concept Masterplan (Figure 5.1) includes one large conservation area, on the south side of the study area across Wallarah Creek. The planned subdivision area is located on the northern side of Wallarah Creek.

WYONG - WYEE DEVELOPMENT CORRIDOR

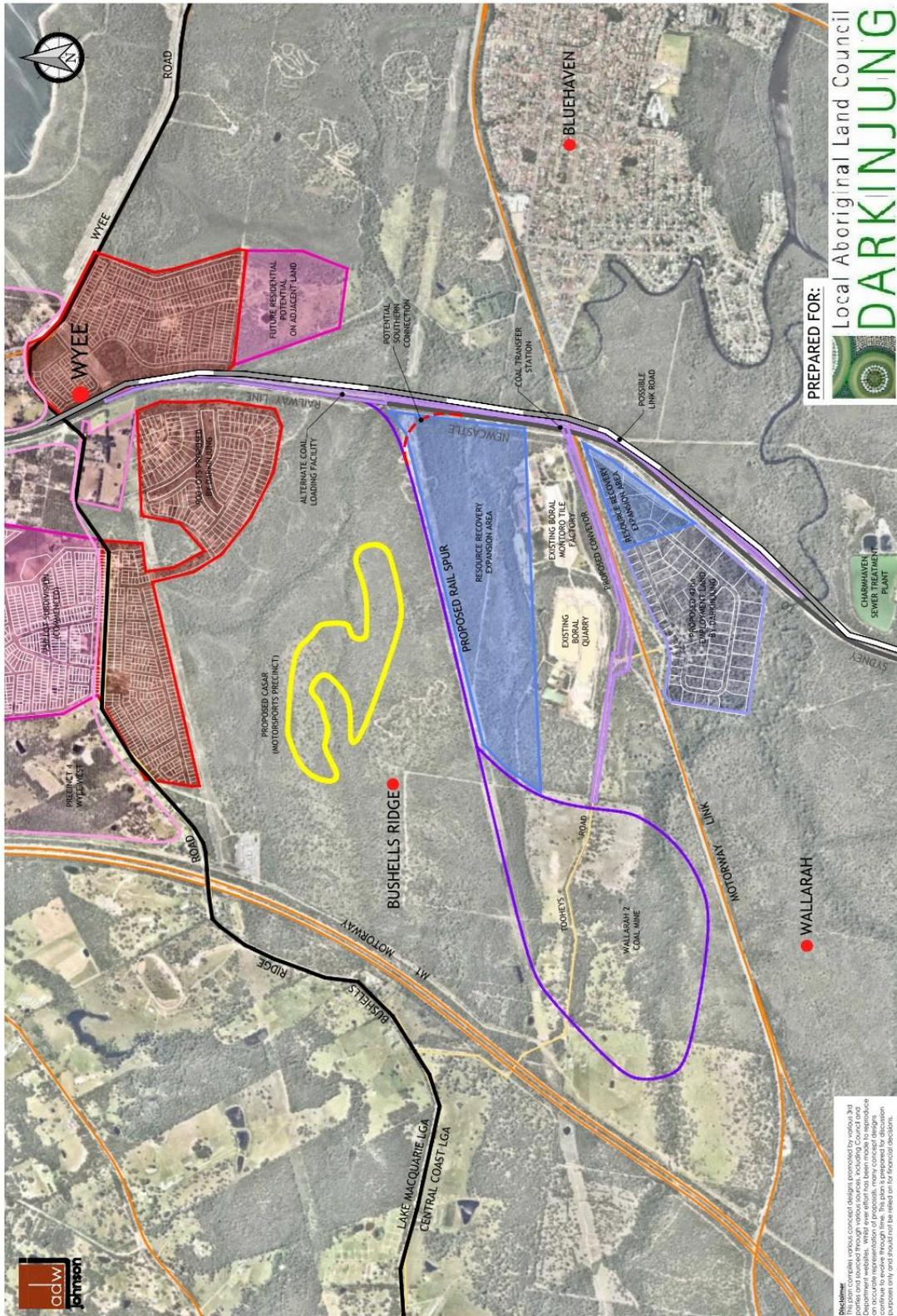


Figure 5.1 Concept masterplan—residential subdivision. (Source: ADW Johnson, 2016)

5.2.1 Comments on the Concept Masterplan

Contrasting the proposed Concept Masterplan against the identified Aboriginal heritage aspects (Figure 5.2) shows the development area cross through the zone of archaeological sensitivity, local and regional walking routes. The layout maintains a buffer from Location A, which is of high cultural value. The interface and access requirements near Location A would need to be carefully managed.

Four strategies have been developed in collaboration with the DLALC to guide the future management of Aboriginal heritage within Site 5.

5.2.2 Identification of Impacts

The Concept Masterplan is being reviewed at its draft stage at the point of rezoning; this impact assessment focused on a range of potential impacts which would likely result from this type of development, including:

- earthworks associated with cutting and levelling of the site;
- excavation for house foundations;
- excavation for services (sewerage, water supply, communications, power supply and drainage);
- construction of roadways;
- increased incidental use of localised walking tracks;
- changes to the appearance of land's forms and setting within the study area, and thus changes to the aesthetic values and view corridors within and across the study area;
- the removal of potential archaeological deposits; and
- retention of archaeological deposits within the conservation corridors.

5.3 Potential Conservation and Impact to Aboriginal Heritage

Impacts and conservation for all known Aboriginal sites, places, landscapes and values and areas of archaeological potential are detailed in Descriptions of harm for OEH guidelines under the Code of Archaeological Practice, as used in an AHIP application.

Table 5.1⁶ and shown in Figure 5.2. Descriptions of harm for OEH guidelines under the Code of Archaeological Practice, as used in an AHIP application.

Table 5.1 Potential Conservation and Impact to Aboriginal Heritage.

Location and Name	Type of Harm	Degree of Harm	Consequence of Harm
General study area, low level of archaeological sensitivity	Direct and indirect	None to total	No loss to total loss
Areas of archaeological sensitivity, including Location B (and the area with unknown sensitivity associated with the raised flat landform) and Location C	Primarily direct	Partial to total	Partial to total loss of value
Location A—the restricted Aboriginal cultural site	Indirect	None to partial	No loss to partial loss
Local walking route	Direct and indirect	None to total	No loss to total loss

Location and Name	Type of Harm	Degree of Harm	Consequence of Harm
Regional walking route	Direct and indirect	None to total	No loss to total loss
Aesthetic value of setting and place	Direct and indirect	None to total	No loss to total loss

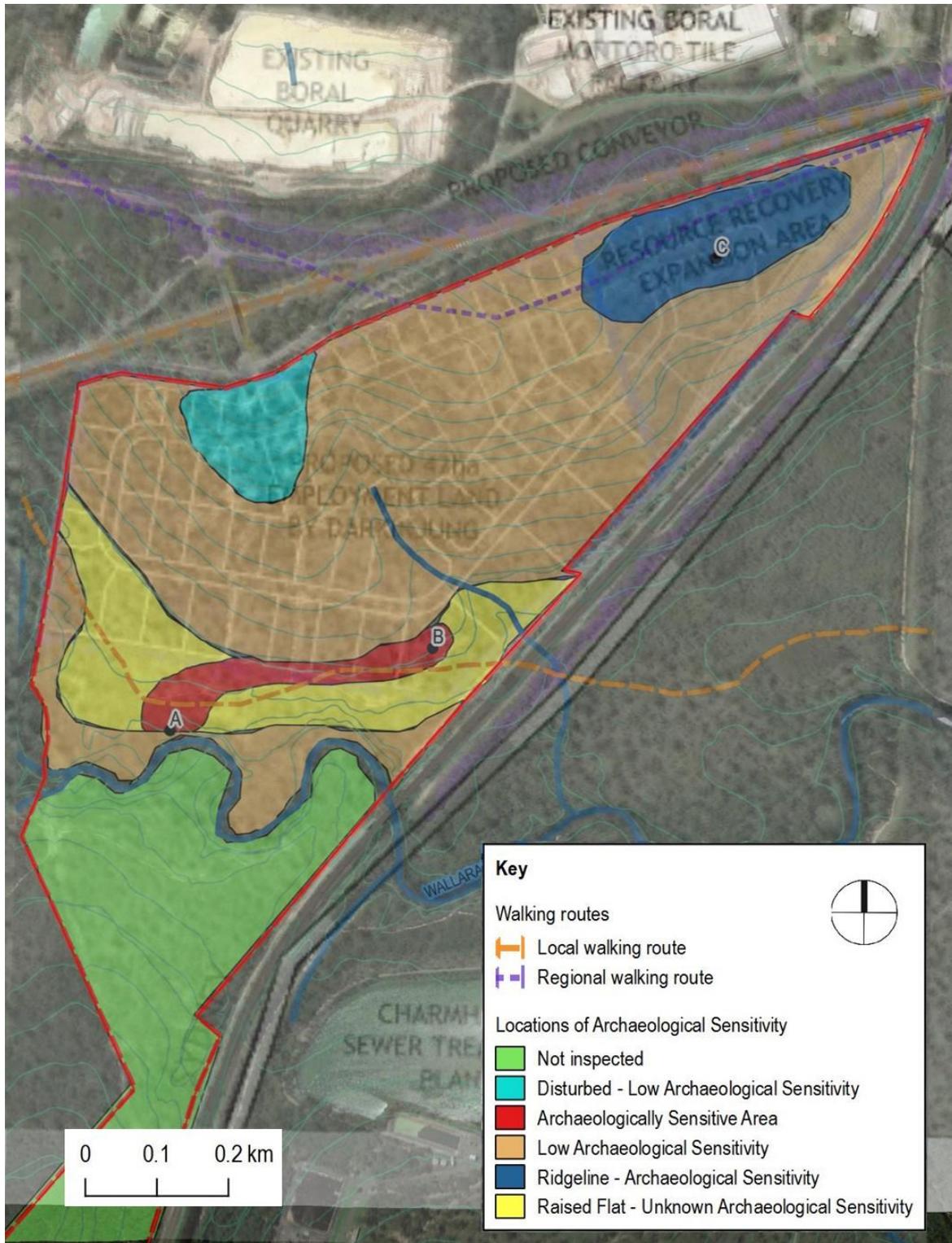


Figure 5.2 Indicative layout plan overlays identified Aboriginal cultural heritage items. (Source: ADW Johnson with GML additions, 2017)

5.3.1 Recommended Aboriginal Heritage Management

Four strategies have been developed in collaboration with the DLALC to guide future management of Aboriginal heritage within Site 5.

5.3.2 Strategy 1—Future Land Use Planning

This report has provided GIS mapping of locations with potential Aboriginal heritage value. These can be used by DLALC, ADW Johnson, Wyong Council and the DPE to inform the land rezoning process. Correlation between these mapped sites and values can be used to develop an ILP for residential areas and conservation zones. Conservation zones within Site 5 will need to take into consideration the integration of bushfire trails/breaks surrounding the identified Aboriginal cultural site—this is because this cultural site is a type which is particularly vulnerable to any potential bushfire within the riparian corridor.

The alignment of streets and roads should account for the Aboriginal walking routes, and the proposed layouts could be modified to reflect the traditional routes across Country. This might result in a different lot layout along the southern boundary of the proposed development area.

The inclusion of Aboriginal heritage sites and potential values should be recorded and demonstrated through future assessment and application for any AHIP associated with this land.

5.3.3 Strategy 2—Further Heritage Assessment

To better understand the place of this land within the wider Aboriginal cultural landscape, further investigation of the archaeological, anthropological, historical and social connections should occur.

Within the context of the wider cultural landscape, the Aboriginal social values of the study area have only just begun to be explored. The development of social values can take time as Aboriginal community members need time to discuss places and associated practices; thus, the social values may increase in extent and importance as further studies are undertaken.⁷ This is specifically relevant within the context of the site at Location A.

Site 5 contains two large raised flat landforms with archaeological sensitivity for intact Aboriginal deposits. The nature and extent of the archaeological deposit is difficult to predict because no similar archaeological work has been undertaken locally. A zone has been designated with archaeological sensitivity, extending between Locations A and B. A second zone has been designated with archaeological sensitivity associated with Location C. On the basis of regional predictive modelling these are the likely areas with archaeological deposits. Depending on long term Aboriginal use, the extent of archaeological deposit may extend beyond the mapped area. As such, the landform outside one area with archaeological sensitivity has been described as having unknown sensitivity.

A combination of geophysical survey followed by test excavation would provide an opportunity to define the specific scientific values connected to the study area. The dual approach of non-intrusive geophysical survey and archaeological test excavation, under the OEH Code of Practice, would provide a context for understanding the impacts of the development footprint. Test excavation could commence near Location B and continue westward towards Location A. Strategic testing could commence at Location C.

The research design underpinning this work should examine themes associated with potential social, traditional and economic activities specific to Site 5, notably connections with the walking route and site at Location A. Test excavation may also be required on some representative sloping landforms near the

ephemeral first order creek. This would validate the prediction of general low levels of archaeological sensitivity across the bulk of Site 5 north. The aims of further archaeological investigations should be:

- to determine the nature and extent of archaeological deposits, notably within the locations with identified archaeological sensitivity *and* that could be subject to future impacts resultant of the proposal (Figure 5.2). This includes the whole archaeologically sensitive area, if subject to impacts through bush land conservation works;
- to confirm those landforms and locations that do not hold an archaeological deposit, and thus do not hold specific scientific value;
- to inform the land rezoning process and identify locations with high value suitable for future conservation;
- to provide sufficient evidence to allow an understanding of this study area within the regional Aboriginal heritage and cultural landscape context; and
- to prepare reports sufficient to allow appropriate land rezoning and provide a mechanism for AHIP application.

These investigations should be combined into a single report which provides a holistic value assessment for the study area. This report can be used for land rezoning and statutory permit acquisition. Currently the lands to the south of Wallarah Creek have not been assessed; should the Concept Masterplan or any impacts be proposed, this would be required, as it is not covered by this assessment.

5.3.4 Strategy 3—Conservation and Interpretation

Conservation of Aboriginal values can be possible through recognition and management of the values associated with the place. Planning for future residential development should aim to highlight the identified aspects of Aboriginal heritage, by including walking routes and view corridors into new urban design.

Development under the concept masterplan presents a pattern of development that imposes on some of the identified Aboriginal heritage aspects of this place. The CM can be further revised following Strategy 1, to further minimise physical impacts. This revision should include avoiding the culturally restricted site within Location A. It is a requirement that a buffer be maintained around this site—this buffer occurs naturally through the dense bush land on the slopes above Location A.

Consideration needs to be given to future intensification of land use, notably bushwalking and public access into the areas south from the proposed development. The extant fire trail is wide and well used, and may be adequate for both future water and rail management. Formalisation of this pathway, including some realignment at its eastern end (as the proposed lot layout covers a part of the fire trail), will need to be considered.

The area south of Wallarah Creek has not been surveyed, and is likely to contain further Aboriginal heritage places and values. Management of this area should be considered, particularly as increased visitation can result in new trails, erosion, rubbish dumping and other impacts.

There are also opportunities for public education and appreciation of the natural setting. This needs to be guided by associated impacts, with consideration of facilities offered at the regional level.

To implement the OEH's policies relating to the precautionary principle, ESD and intergenerational equity,⁸ an understanding of regional cumulative impact to Aboriginal objects and places in the region is required. Future assessment and management documents should demonstrate how the sites, places and potential values identified in this report have been incorporated into new urban design. Should further Aboriginal heritage investigation and study not be possible prior to planning for new urban design, all aspects of Aboriginal heritage identified in this report should be assumed to hold high value and be worthy of retention through land rezoning and future development.

5.3.5 Strategy 4—Possible Impact and AHIP

The process of residential development would result in impact to Aboriginal heritage values, sites and possibly the cultural landscape. It is recommended that an AHIP be sought for the development footprint only, under Section 90 of the NPW Act, with specific management requirements for certain Aboriginal sites. A whole of development (Site 5) AHIP is not necessary, unless specific impact is proposed south of Wallarah Creek. Further, Location A should be excluded from the area of the AHIP; this could be managed by designating the top of bank north of Wallarah Creek as the AHIP boundary.

The Section 90 application would need to be informed by archaeological test excavation results. If undertaken early in the land rezoning process, test excavation may inform a future CM or neighbourhood plan. Subject to OEH agreement, an AHIP could be sought at the point of gazettal of the land rezoning. An AHIP application would need to include a process of continuing Aboriginal community consultation.

5.4 Summary of Aboriginal Heritage Recommendations

This study has provided a landscape based approach to cultural heritage that considers not just the Aboriginal archaeological resources of the region, but also the social and aesthetic resources and characteristics. This approach has culminated in a description of potential archaeological sensitivities, and has begun to define how this land is a component of the wider Central Coast Aboriginal cultural landscape. The approach taken is consistent with the Burra Charter approach, and has included and involved the local Aboriginal community in continuing consultation and management of their cultural heritage sites, places and values.

The investigation has identified several new aspects of Aboriginal heritage, set within the wider Aboriginal cultural landscape Figure 5.2. The following recommendations are made based on these findings:

1. The restricted Aboriginal cultural site requires further Aboriginal community consultation surrounding culturally appropriate protocols for its heritage management within a residential development context. This is necessary due to the indirect impacts identified within this report—this may form a component of the ACHAR when the project requires an AHIP. The area described as Location A should be set aside from future development plans (noting this is currently the case) and not included within any future AHIP.
2. Aboriginal community consultation should be undertaken, including specific discussion of potential social values, and should follow OEH guidelines. It is important to recognise that the Aboriginal community's heritage values change over time and as further study is undertaken additional values may be forthcoming.⁹
3. Further Aboriginal heritage study should be undertaken in relation to the archaeologically sensitive area and the possible Aboriginal social connections (including contemporary connections), to develop more knowledge relating to the potential values. This would form a component of the

ACHAR, when the project requires an AHIP. Further preliminary survey (similar to this study) could be undertaken for the land south of Wallarah Creek, thus informing the DLALC on potential values in this area.

4. Further scientific study should initially involve non-intrusive geophysical survey and archaeological test excavations—these studies should focus on the landforms identified with archaeological sensitivity *and* that will be impacted by post rezoning activities. Some testing of landforms with no allocated archaeological sensitivity should also be undertaken, to prove an absence of Aboriginal objects.
5. The outcomes of the studies (recommendations 1–4 above) should inform a more detailed Aboriginal heritage values assessment. Mapping of values should guide the new urban design, to include appropriate Aboriginal heritage values into future planning decisions relating to this land.
6. The Concept Masterplan should be examined, and revised if possible, to limit and minimise impacts on those areas identified with Aboriginal heritage and archaeological sensitivity.
7. Consideration should be given to future land use in connection with undeveloped ‘bushland’ areas of Site 5. Residential development could result in substantially increased visitation to these areas which may culminate in unacceptable impacts. Considering future visitation across the whole of the site provides an opportunity to formalise walking tracks and manage public access, whilst providing education and maintaining Aboriginal values, especially intangible values.
8. Prior to any impacts to the soils and landscape, an area based AHIP should be sought under Section 90 of the NPW Act. This should cover the areas subject to impact from development; Location A should be excluded.
9. This report should be forwarded to the OEH for inclusion in the AHIMS register.

5.5 Endnotes

- 1 DECC, *Operational Policy: Protecting Aboriginal Cultural Heritage*, Sydney, 2009
<<http://www.environment.nsw.gov.au/resources/cultureheritage/09122ACHOpPolicy.pdf>>.
- 2 DECC, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, 2009,
<<http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>>, Section 3.8.
- 3 DECC, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, 2009,
<<http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>>, p 26.
- 4 DECC, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, 2009,
<<http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>>, p 26.
- 5 DECC, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, 2009,
<<http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>>, p 26.
- 6 After DECCW, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, September 2010, Requirement 11.
- 7 Australia ICOMOS Inc., ‘Indigenous Cultural Heritage Management’, *Burra Charter Practice Note 2013*, November 2013, Burwood, VIC, p 4, states:
Issue: Cultural significance may change
Assessments of significance need to be responsive to the dynamic nature of Indigenous cultures.
Guidance: Indigenous heritage values can change over time, like the heritage values of all communities. Places of significance to Indigenous people, and the reasons for their cultural significance, may change as Indigenous traditions adapt and evolve, and as Indigenous people are able to reconnect to places that have been denied to them in the past. For example, a place initially assessed as being of spiritual significance may be recognised as a place holding social or scientific value as Indigenous culture changes over

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time. Assessments of cultural significance should be sensitive to such changes, and this may require revision of assessments of significance.

⁸ DECCW, *Operational Policy: Protecting Aboriginal Cultural Heritage*, February 2009, Sydney South.

⁹ Australia ICOMOS Inc., 'Indigenous Cultural Heritage Management', *Burra Charter Practice Note 2013*, November 2013, Burwood, VIC, p 4.

6.0 Appendices

Appendix A

AHIMS search results

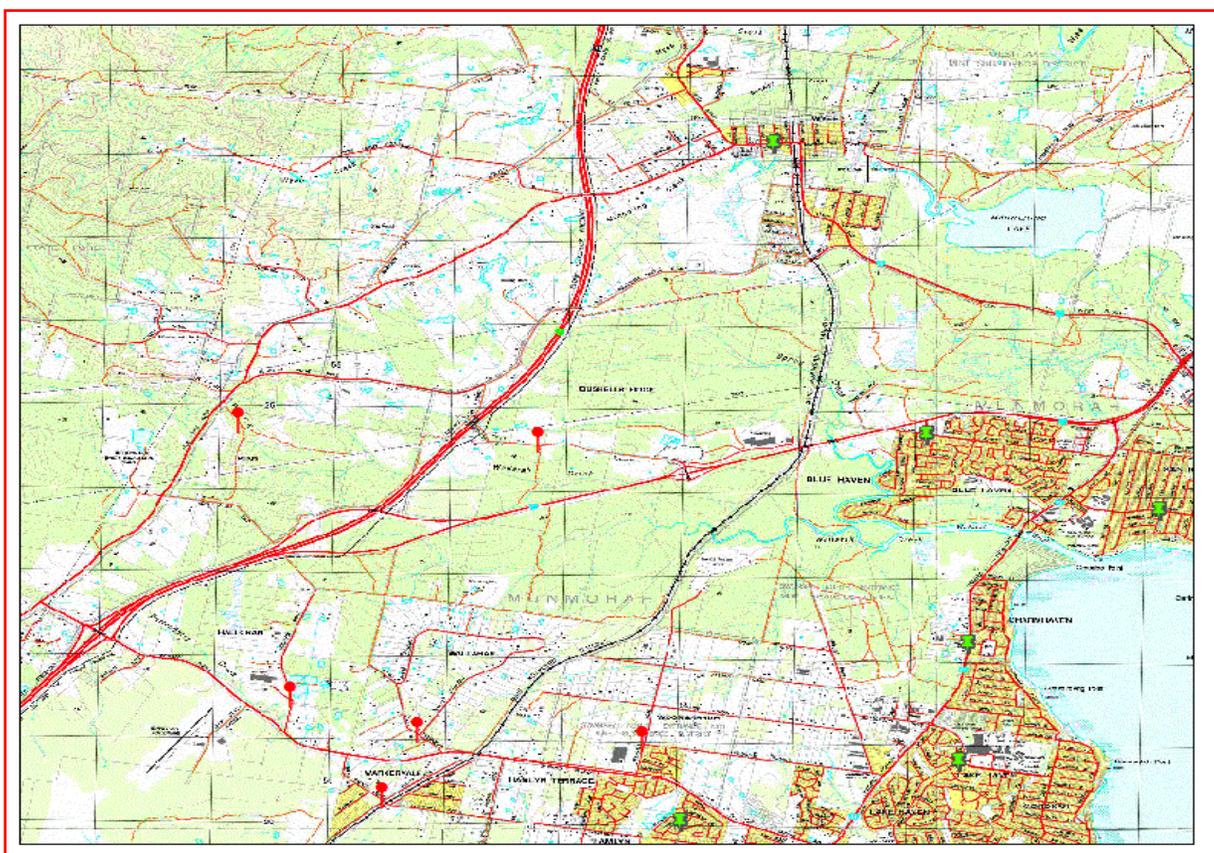
GML Heritage Pty Ltd
Level 6 372 Elizabeth Street
Surry Hills New South Wales 2010
Attention: Jodi Cameron
Email: jodic@gml.com.au

Date: 31 March 2017

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.2409, 151.4321 - Lat, Long To : -33.1736, 151.5067 with a Buffer of 1000 meters, conducted by Jodi Cameron on 31 March 2017.

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 the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(http://www.nsw.gov.au/gazette\)](http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-1311	Pasadena;	AGD	56	356972	6326822	Open site	Valid	Artefact : -	Open Camp Site	100541,10086 3,101093
	Contact									
	Recorders									
45-3-1312	Hue Hue Road;	AGD	56	353671	6322552	Open site	Valid	Artefact : -	Open Camp Site	101093,10264 7
	Contact									
	Recorders									
45-3-1224	Wyeec Creek;	AGD	56	353600	6328900	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	294,101093
	Contact									
	Recorders									
45-3-3180	B14	AGD	56	359150	6325075	Open site	Valid	Artefact : -		100541,10086 3,101093
	Contact									
	Recorders									
45-3-3176	B;1	AGD	56	359750	6324715	Open site	Valid	Artefact : -		100541,10086 3,101093
	Contact									
	Recorders									
45-7-0232	B2	AGD	56	360937	6325205	Open site	Valid	Modified Tree (Carved or Scarred) : -		100541,10086 3,101093
	Contact									
	Recorders									
45-3-3179	B11	AGD	56	359563	6325450	Open site	Valid	Artefact : -		100541,10086 3,101093
	Contact									
	Recorders									
45-3-3186	BR10	AGD	56	359612	6326462	Open site	Valid	Artefact : -		100541,10086 3,101093
	Contact									
	Recorders									
45-3-3187	BR13	AGD	56	359375	6325050	Open site	Valid	Artefact : -		100541,10086 3,101093
	Contact									
	Recorders									
45-3-3188	BR12	AGD	56	359427	6325219	Open site	Valid	Artefact : -		100541,10086 3,101093
	Contact									
	Recorders									
45-3-3259	B7	GDA	56	360227	6325388	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									
45-3-3260	B3, Bushells Ridge	AGD	56	360187	6325275	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									
45-3-3261	B9, Bushells Ridge	AGD	56	359601	6326537	Open site	Valid	Artefact : 2		
	Contact									
	Recorders									
45-3-3262	B4, Bushells Ridge	GDA	56	360008	6325262	Open site	Valid	Artefact : 1		
	Contact									
	Recorders									

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-3263	B8, Bushells Ridge Contact T Russell	GDA	56	359931	6325584	Open site	Valid	Artefact : 1		
45-7-0245	B5, Bushells Ridge Contact T Russell	GDA	56	360800	6325350	Open site	Valid	Artefact : 2		
45-3-3304	Halloran ISO 1 Contact T Russell	AGD	56	355000	6322650	Open site	Valid	Artefact : -		102647
45-7-0251	PAD 3 - Munmorah Contact	AGD	56	361000	6326250	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
45-3-3335	PAD 4 - Munmorah (not a PAD) Contact	AGD	56	357900	6326000	Open site	Not a Site	Potential Archaeological Deposit (PAD) : -		100751,10094 4
45-3-3315	WC-ST1 Contact Searle	GDA	56	355162	6324145	Open site	Valid	Modified Tree (Carved or Scarred) : -		
45-3-3316	WC-IF1 Contact Searle	GDA	56	355002	6324087	Open site	Valid	Artefact : -		
45-3-3317	WC-OS1 Contact	GDA	56	355185	6324252	Open site	Valid	Artefact : -		
45-3-3383	Bluetongue IF3 (Dooralong) Contact Guringai Tribal Link Aborigina	GDA	56	352964	6321510	Open site	Destroyed	Artefact : 1		101321,10264 7
45-3-3415	Lakes G ISO 12 Contact	GDA	56	354815	6320059	Open site	Valid	Artefact : 1		101823
45-3-3419	Lakes G ISO 16 Contact	GDA	56	354817	6319736	Open site	Valid	Artefact : 1		101823
45-3-3420	OWP ISO 17 Contact	GDA	56	356182	6320002	Open site	Valid	Artefact : 1		101823
45-3-3421	OWP ISO 18 Contact	GDA	56	355427	6320658	Open site	Valid	Artefact : 1		101823
45-3-3437	RPS Mandalong South 02 Contact	GDA	56	353075	6329134	Closed site	Valid	Artefact : -		
45-3-3424	Mannering Creek 1 Contact	GDA	56	357799	6327519	Open site	Valid	Artefact : 2		101909

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-3425	Manning Creek 2	GDA	56	358331	6327766	Open site	Valid	Artefact : 1		101909
	Contact	Recorders		Mrs.Angela Besant					Permits	
45-3-3445	Wye 3	GDA	56	358290	6326655	Open site	Valid	Stone Arrangement :		
	Contact Mr.Shane Frost	Recorders		Insite Heritage Pty Ltd,Ms.Elizabeth Wyatt				-	Permits	
45-3-3488	RPS MAND STH CYL03	GDA	56	355610	6327400	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders		RPS - Echuca					Permits	
45-3-3489	RPS CYL04	GDA	56	352959	6328590	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca					Permits	
45-3-3575	RPS MAND STH TBM49	GDA	56	352837	6327793	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca					Permits	
45-3-3463	RPS MAND STH TBM08	GDA	56	352915	6327374	Open site	Valid	Water Hole : 1		
	Contact	Recorders		Ms.Tessa Boer-Mah,RPS Australia East Pty Ltd -Hamilton					Permits	
45-3-3464	RPS MAND STH TBM10	GDA	56	353767	6327042	Open site	Valid	Grinding Groove : 29		
	Contact	Recorders		Ms.Tessa Boer-Mah,RPS Australia East Pty Ltd -Hamilton					Permits	
45-3-3465	RPS MAND STH TBM37	GDA	56	354133	6327740	Open site	Valid	Artefact : 2		
	Contact	Recorders		Ms.Tessa Boer-Mah,RPS Australia East Pty Ltd -Hamilton					Permits	
45-3-3466	RPS MAND STH TBM11	GDA	56	354080	6327742	Open site	Valid	Artefact : 3		
	Contact	Recorders		Ms.Tessa Boer-Mah,RPS Australia East Pty Ltd -Hamilton					Permits	
45-3-3486	RPS MAND STH CYL01	GDA	56	354372	6328578	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca					Permits	
45-3-3487	RPS MAND STH CYL02	GDA	56	354393	6328642	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca					Permits	
45-3-3524	Duplicate of RPS MAND STH TBM10	GDA	56	353767	6327042	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca,RPS - Echuca					Permits	
45-3-3525	Duplicate of RPS MAND STH TBM11	GDA	56	354080	6327742	Open site	Deleted	Artefact : 1		
	Contact	Recorders		RPS - Echuca,RPS - Echuca					Permits	
45-3-3544	Duplicate of RPS MAND STH TBM37	GDA	56	354133	6327740	Open site	Deleted	Artefact : 1		
	Contact	Recorders		RPS - Echuca,RPS - Echuca					Permits	
45-3-3545	RPS MAND STH TBM38	GDA	56	354087	6327145	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca					Permits	
45-3-3549	RPS MAND STH TBM43	GDA	56	353420	6327537	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders		RPS - Echuca					Permits	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-3550	RPS MAND STH TBM44	GDA	56	353389	6327486	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3551	RPS MAND STH TBM45	GDA	56	353387	6327468	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3552	RPS MAND STH TBM46	GDA	56	353379	6327443	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3553	RPS MAND STH TBM47	GDA	56	353023	6326746	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3563	Duplicate of RPS MAND STH TBM45	GDA	56	353387	6327468	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3564	Duplicate of RPS MAND STH TBM46	GDA	56	353379	6327443	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3565	Duplicate of RPS MAND STH TBM47	GDA	56	353023	6326746	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3493	RPS CYL04c	GDA	56	352972	6328558	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	R.R.P. Property Consultants Pty Ltd							Permits
45-3-3494	RPS CYL04b	GDA	56	352958	6328577	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3495	Duplicate of RPS CYL04	GDA	56	352959	6328590	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3496	Duplicate of RPS MAND STH CYL03a	GDA	56	355610	6327400	Open site	Deleted	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3497	Duplicate of RPS MAND STH CYL02a	GDA	56	354393	6328642	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3498	Duplicate of RPS MAND STH CYL01a	GDA	56	354372	6328578	Open site	Deleted	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca,RPS - Echuca							Permits
45-3-3507	RPS MAND STH PS12A	GDA	56	353111	6327672	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3508	RPS MAND STH PS12B	GDA	56	353115	6327699	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	RPS - Echuca							Permits
45-3-3584	Wallarrah Creek Open Site 2	GDA	56	356256	6324218	Open site	Valid	Artefact : 1		
	Contact	Recorders	OzArk Environmental and Heritage Management							Permits

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AHIMS Web Services (AWS)

Extensive search - Site list report

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-3604	RPS MAND STH TBM 25	GDA	56	352973	6329010	Open site	Valid	Habitation Structure : 1		
	<u>Contact</u>									<u>Recorders</u> RPS Australia East Pty Ltd -Hamilton <u>Permits</u>
45-3-3608	Duplicate of RPS MAND STH TBM 49	GDA	56	352837	6327793	Open site	Deleted	Grinding Groove : 1		
	<u>Contact</u>									<u>Recorders</u> RPS Australia East Pty Ltd -Hamilton,RPS - Echuca <u>Permits</u>
45-3-3653	WLR Artefact Scatter	GDA	56	354875	6319848	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>									<u>Recorders</u> Mr.Ashley O'Sullivan <u>Permits</u>
45-3-3674	CASAR Park IF 1	GDA	56	357801	6325333	Open site	Valid	Artefact : -		
	<u>Contact</u>									<u>Recorders</u> Extent Heritage Pty Ltd ,Miss.Laressa Berehowyj <u>Permits</u>

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