Appendix D. Aboriginal Heritage Impact Assessment

Vales Point Solar Project

Sunset Power International (Trading as Delta Electricity)

Aboriginal Heritage Impact Assessment

IA155900_03 | Final

13 December 2017

Vales Point Solar Project

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Contents

Executive Summary

Jacobs Group (Australia) Pty Ltd has been tasked with providing a planning proposal in accordance with the Department of Planning and Infrastructure Guidelines (October 2012) in support of Sunset Power International Pty Ltd trading as Delta Electricity (Delta) who are seeking to develop a large scale solar photovoltaic generation facility and associated infrastructure in the local government areas (LGA) of Lake Macquarie and the Central Coast (the project). The project would be located within the land holding of the existing Vales Point Power Station and specifically on capped portions of the Vales Point Ash Dam.

The project has a capital investment of greater than $30 million, accordingly the project is deemed a State significant development (SSD) under the State Environmental Planning Policy (State and Regional Development) 2011. As a SSD, an application for the project is required to be submitted under Part 4, Division 4.1 of the NSW Environmental Planning and Assessment Act 1979. The NSW Minister for Planning (or the Minister's delegate) is the consent authority.

The Delta land is located within the Lake Macquarie and Central Coast Councils Local Government Areas, 120 kilometres from the Sydney central business district. The aim of this report is to undertake an assessment of Aboriginal cultural heritage within these lands. It provides a background context, including key legislative requirements for assessing Aboriginal heritage, relevant landscape information, a historical land use summary, a review of previous reporting on or adjacent to the assessment area in respect to Aboriginal cultural heritage and an updated Aboriginal Heritage Information Management System (AHIMS) site register search to inform upon registered sites that may be impacted by the proposal. The assessment also presents a predictive model of potential Aboriginal heritage site types, locations and characteristics within the assessment area. It provides recommendations for management of Aboriginal cultural heritage that will likely be required.

Assessment results

All areas recommended for archaeological field survey were surveyed. One hundred per cent of the study area was able to be accessed for the survey. The assessment area for the 33 kV transmission line contains no evidence of past Aboriginal occupation having been significantly disturbed by prior roadworks, and the construction of a conveyor belt and pipeline easement.

Recommendations

The Project's construction impacts will avoid all AHIMS registered archaeological sites. It is considered unlikely that Aboriginal objects or artefact deposits will be present within the transmission corridor due to significant ground disturbance from prior road construction.

It is therefore recommended that:

- *Standard Management Procedures for Unexpected Heritage Items be applied and implemented.*
- *Heritage induction training for staff and contractors working on the construction phase of the transmission line is unnecessary.*
- *Any further impacts proposed beyond those assessed in this report or beyond the boundary of the assessed areas must be subject to further assessment and consultation with Aboriginal stakeholders, consistent with the process in this report.*

Abbreviations and acronyms

ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHCRP	Aboriginal Cultural Heritage Consultation Requirements for Proponents
AHIMS	Aboriginal heritage information management system
AHIP	Aboriginal heritage impact permit
ASL	Above sea level
Code of Practice	Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW
DECCW	NSW Department of Environment, Climate Change and Water (now the Office of Environment and Heritage)
Delta	Delta Electricity
DLALC	Darkinjung Local Aboriginal Land Council
DP&I	NSW Department of Planning & Infrastructure
DOP	Department of Planning
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
GTLAC	Guringai Tribal Link Aboriginal Corporation
GSV	Ground surface visibility
ha	Hectare/s
Jacobs	Jacobs Group (Australia) Pty Ltd
km	Kilometre/s
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Authority
m	Metre/s
mm	Millimetre/s
NOARM	Navin Officer Archaeological Resources Management
NPW Act	National Parks and Wildlife Act 1974
NPWS	NSW National Parks and Wildlife Service (part of the OEH)
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential archaeological deposit
PAS	Potential archaeological sensitivity
REF	Review of Environmental Factors
SPI	Sunset Power International Pty Ltd
SSD	State significant development
VPAD	Vales Point Ash Dam

1. Introduction

1.1 The Proposal

Sunset Power International Pty Ltd trading as Delta Electricity (Delta) are seeking to develop a large scale solar photovoltaic generation facility and associated infrastructure in the local government areas (LGA) of Lake Macquarie and the Central Coast (the project). The project would be located within the land holding of the existing Vales Point Power Station and specifically on the rehabilitated area of the Vales Point Ash Dam (VPAD) The project is a State significant development (SSD) under the *State Environmental Planning Policy (State and Regional Development) 2011*. As a SSD, an application for the project is required to be submitted under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979*. The NSW Minister for Planning (or the Minister's delegate) is the consent authority.

The project area covers approximately 80 hectares (Ha) of land. Key components of the project are:

- Construction and operation of up to 55 megawatt (MW) capacity solar facility delivering an annual output of approximately 110 gigawatt hours (GWh);
- Installation of approximately 220,000 solar panel modules supported by either steel piles or concrete ballasted footings;
- Installation of ancillary electrical control equipment and switchyard for distribution;
- Connection to the National Electricity Market (NEM) via a short 33 kV transmission line (mainly overhead with some underground cabling) to the Vales Point Zone Substation;
- Approximately 100 full time equivalent (FTE) jobs during a 12 to 18 month construction program; and
- An estimated 30 year design life with ongoing employment for up to five people.

1.2 Locality

The project is to be located on existing rehabilitated areas of the Vales Point Ash Dam (VPAD) associated with the operation of the Vales Point Power Station as shown in Figure 1.1. The Ash Dam extends across the LGA boundary of Lake Macquarie and Central Coast. The project site is entirely within the existing property boundary of the Vales Point Power Station. The proposed project would connect to the existing Ausgrid substation located on the corner of Ruttleys Road and Construction Road to the north of the ash dam site.

The Vales Point coal fired power station and Vales Point Ash Dam (VPAD) are located at the southern end of Lake Macquarie on the NSW Central Coast. The station is owned and operated by Delta and has an installed capacity of 1320 MW. The VPAD consists of a series of operational and closed landfill cells. The closed cells, or ponds, have been capped with soil and rehabilitated with grasses. The rehabilitated area is relatively flat and provides a substantial area for the construction of a utility scale solar field.

The VPAD is located in the southern section of the Vales Point Power Station property. The proposed project will be sited on the rehabilitated areas of the VPAD situated west of the Pacific Highway with a northern boundary at Ruttleys Road. To the east of the site is Mannering Bay which is a natural water body that flows into Lake Macquarie. The southern boundary of the VPAD is Wyee Road, at Doyalson.

Figure 1.1 | Site location

1.3 Scope and Objectives

The purpose of this report is to provide an Aboriginal Cultural Heritage Assessment for the Vales Point Solar Project that addresses the Secretaries Environmental Assessment Requirements for the EIS which includes:

> *The EIS must address the following specific issues:…Heritage - including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community.*

This assessment will identify Aboriginal heritage values relevant to the assessment area which may include:

- Aboriginal cultural values;
- Aboriginal objects and sites;
- Potential archaeological deposit(s) (PADs);
- Areas of potential archaeological sensitivity (PAS); and
- Landscape features that are likely to indicate the presence of Aboriginal objects.

A further objective is to assess other sources of information such as previous archaeological and historical reports relevant to an understanding of the assessment area to identify the appropriate course of action under current heritage legislation.

1.4 Aboriginal Community Consultation

Consultation for the purposes of this report was undertaken with the Darkinjung Local Aboriginal Land Council (DLALC) and the Guringai Tribal Link Aboriginal Corporation (GTLAC). A field visit was undertaken in company with representatives from these organisations on 27 July 2017. A draft of this report was circulated to these organisations for comment on 7 August 2017. Comments were received and incorporated on 31 August 2017 and are attached as Appendix A and Appendix B.

1.5 Report Structure

This Aboriginal Cultural Heritage Desktop Assessment will be used to support the preparation of the Environmental Impact Statement required under part 4.1 of the *Environmental Planning and Assessment Act 1979 (*EP&A Act). The structure of this report is summarised in Table 1.1.

Table 1.1 : Report structure

Section reference	Section heading	Description
Executive summary	Executive summary	Concise summary of this technical paper and the key findings
1	Introduction · The proposal · Locality · Scope and objectives · Report structure · Authorship and acknowledgements	Description of the project relevant to potential impacts on Aboriginal cultural heritage. Provides an overview of the study objectives and structure of technical report.
2	Legislative requirements · Key legislative requirements	Identifies and summarises the key legislation that this desktop assessment must follow and lists the Aboriginal cultural heritage criterion that the project must comply with.
3	The assessment area	Identifies the environmental variables of the assessment area.

Section reference	Section heading	Description
	· Geomorphology, Geology and Hydrology · Historical land use	
4	Aboriginal Heritage · AHIMS search · Aboriginal cultural context · Ethnohistory · Previous archaeological reports · Predictive Modelling · Predicted Site Types and Potential locations · Predicted site characteristics	Presents the results of the desktop assessment of the proposed project areas, incorporating a search of the Aboriginal Heritage Information Management System (AHIMS) for Aboriginal sites and PAD's, ethnographic information and previous assessments. This section includes a presentation of a predictive model for Aboriginal site location.
5	Site Inspection · Method · Results	Outlines the method and results of the field inspection including personnel.
6	· Summary and recommendations	Summary of the main findings of this desktop assessment
7	References	A list of references used in this report

1.6 Authorship and acknowledgements

This report has been prepared by Andy Roberts (Senior Archaeologist, Jacobs) and Chelsea Jones (Project Archaeologist, Jacobs). Mapping was prepared by Anja Larsen (Senior Spatial Consultant, Jacobs). A technical review was undertaken by Jeff Hill (Technical Leader- Aboriginal Cultural Heritage Assessments, Jacobs). Acknowledgement for the participation in this assessment is made to Tracie Howie of the GTLALC and Anthony Freeman and Kye Knight of the DLALC.

2. Legislative requirements

2.1 Key legislative requirements

The protection of Aboriginal cultural heritage in NSW is governed by a set of interrelated local, state and Commonwealth legislation and planning instruments.

2.1.1 Local Environment Plans

The proposal for the Vales Point assessment area explains the intended effect on the local planning instrument being the Lake Macquarie Local Environment Plan (2014) and Central Coast Local Environment Plan (2013) as follows:

In respect to places of Aboriginal heritage significance the consent authority must, before granting consent under this clause to the carrying out of development in a place of Aboriginal heritage significance:

a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place; and

b) notify the local Aboriginal communities (in such way as it thinks appropriate) about the application and take into consideration any response received within 28 days after the notice is sent.

2.1.2 NSW legislation:

- *Environmental Planning and Assessment Act 1979 (EP&A Act)*
- *National Parks and Wildlife Act 1974 (NPW Act)*
- *National Parks and Wildlife Amendment Act 2010*
- *Native Title Act (NSW) 1994*
- *Aboriginal Land Rights Act (NSW) 1983.*

2.1.3 Commonwealth legislation

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*
- *Native Title Act 1993.*

These acts and their relevant sections and associated regulatory documents (for example codes of practice, guidelines, etc.) govern the assessment area. The project is a State significant development assessed under Part 4, Division 4.1 of the (EP&A Act), with the determining authority being the Minister or Minister's delegate. The following paragraph details the most relevant pieces of Aboriginal heritage legislation that affect this planning proposal.

Aboriginal objects are protected in NSW under the NPW Act. Section 90 of the NPW Act requires an Aboriginal Heritage Impact Permit (AHIP) to impact on an Aboriginal object or Aboriginal place. Significant penalties are in place for harm to Aboriginal objects regardless of whether the harm was committed knowingly or not. Defences against prosecution include having an AHIP, acting in accordance with specified codes of practice associated with the National Parks and Wildlife Regulations 2009 - that is the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment, Climate Change and Water (DECCW) 2010a), *the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (Department of Environment, Climate Change and Water (DECCW) 2010b, or the conduct of certain low impact activities. These Acts and their relevant sections and associated regulatory documents (e.g. codes of practice, guidelines, etc.) that govern the project are described in **Table 2.1**. An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974* is not required for approved State significant development as a result of Section 89J of the EP&A Act.

Table 2.1 : Legislative framework for Aboriginal cultural heritage

Reference	Requirements
EP&A Act	· Framework for environmental planning and assessment in NSW including the requirement for environmental impacts to be considered prior to development approval. · Includes requirements for Aboriginal cultural heritage items and places. · Provides for the making of Local and State level environment planning instruments and development control plans in accordance with the EP&A Act to provide guidance on the level of environmental assessment required. · Establishes authorisations under other legislation as either not applicable, or to be applied consistently, for approved State significant development.
NPW Act	The NPW Act provides for the protection of Aboriginal objects and Aboriginal places. Under the Act (Section (s) 5), an Aboriginal object is defined as: *'any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains'*. An Aboriginal place is defined under this Act as an area that has been declared by the Minister administering the NPW Act as a place of special significance for Aboriginal culture. It may or may not contain physical Aboriginal objects. Under Section 90 of the NPW Act it is an offence to knowingly destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of an Aboriginal object or Aboriginal place, without the prior written consent from the Director-General of the NSW Office of Environment and Heritage (OEH). Penalties apply to the offence of knowingly impacting on an Aboriginal object or Aboriginal place. The largest penalties apply when a person harms an object that they know to be an Aboriginal object (called a 'knowing offence'). However, a 'strict liability' offence still applies whether or not a person knows it is an Aboriginal object or place. In order to obtain written consent, known as an AHIP, an AHIP application must be submitted and approved by the OEH Director-General. In considering whether to issue an Section 90 AHIP, OEH will take into account: · The significance of the Aboriginal object(s) or place(s) subject to the proposed impacts · The effect of the proposed impacts and the mitigation measures proposed. · The alternatives to the proposed impacts. · The conservation outcomes that will be achieved if impact is permitted. · The outcomes of the Aboriginal community consultation regarding the proposed impact and conservation outcomes. While an AHIP is not required for approved State significant development, the same level of consideration is given to impacts to Aboriginal objects and places. Under Section 89A of the NPW Act it is a requirement to notify the OEH Director-General of the location of an Aboriginal object. Identified Aboriginal items and sites are registered with NSW on the AHIMS. Procedures that accompany the *National Parks and Wildlife Amendment Act 2010* include the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* (DECCW 2010b), the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010c), and the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010 (DECCW 2010a).
Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010 **(DECCW 2010b)**	This code of practice (DECCW 2010b) is to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects.. A Due Diligence Code of Practice has been developed to guide proponents on how to ensure a defence to the 'strict liability' offence of harm to an Aboriginal object or place. A proponent would be found not guilty of the offence if it can be proved that the proponent demonstrated due diligence in investigating the likelihood of impact to Aboriginal heritage by the proposed activity. This 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.

Reference	Requirements
	· Determine whether or not their activities are likely to harm Aboriginal objects (if present). · Determine whether an AHIP application is required. Consultation with the Aboriginal community is not a formal requirement of the due diligence process. However, proponents may wish to consider undertaking consultation if it will assist in informing decision-making. If at any point an application is made for an AHIP then the consultation must be undertaken in accordance with the requirements in clause l80C of the National Parks and Wildlife Regulation 2009 (NPW Regulation). Due diligence amounts to taking reasonable and practicable steps to protect Aboriginal objects. The *Due Diligence Code of Practice* (DECCW 2010d) provides one process for satisfying the due diligence requirements of the NPW Act. It is not mandatory to follow this code. An individual or corporation can take other measures, provided that such measures are objectively reasonable and practicable and meet the ordinary meaning of exercising due diligence. Provisions relating to the due diligence system were effective from 1 October 2010.
***Aboriginal Cultural Heritage Consultation Requirements for Proponents (ACHCRP) 2010* (DECCW 2010c)**	This document (DECCW 2010c) establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making for any application for an AHIP. The ACHCRP comprises four stages with associated timeframes which must be adhered to: **Stage 1** — Notification of project proposal and registration of interest (14 days from date letter sent to register as a registered Aboriginal stakeholders). **Stage 2** — Presentation of information about the proposed project. **Stage 3** — Gathering information about cultural significance (28 days for registered Aboriginal stakeholders to provide a review and feedback to consultants regarding the methodology). **Stage 4** — Review of draft cultural heritage assessment report (registered Aboriginal stakeholders have 28 days from sending of the report to make a submissions).
***Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a)**	The Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010a) sets out the detailed requirements for archaeological investigations of Aboriginal objects in NSW for activities that require assessment under Part 4 or Part 5 of the EP&A Act. An AHIP to undertake Sub-surface test excavations is not required if complying with this code, as Sub-surface testings complying with the Code are excluded from the definition of harm to an Aboriginal object. The code sets out in detail: · Minimum qualifications for anyone undertaking archaeological investigation under the Code in NSW. · Assessment steps required to be undertaken for all archaeological investigation. · Assessment steps that may be required to be undertaken to adequately characterise the Aboriginal objects being investigated. This code of practice must be used for investigation that is likely to result in an AHIP application.
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	· Protects Aboriginal cultural property in a wider sense and includes any places, objects and folklore that *'are of particular significance to Aboriginals in accordance with Aboriginal tradition'*. · The Act may apply to contemporary Aboriginal cultural property as well as ancient sites. · The responsible Minister may make a declaration under Section 10 of the Act in situations where state or territory laws do not provide adequate protection of heritage places.
EPBC Act	The EPBC Act includes provisions to protect matters of national environmental significance and Commonwealth land. Lists and registers made under the Act include: · A National Heritage List of places of national heritage significance. · A Commonwealth Heritage List of heritage places owned or managed by the Commonwealth. · Management of the Register of the National Estate. An independent expert body, the Australian Heritage Council, advises the Minister on the listing and protection of heritage places.

Reference	Requirements
Native Title Act 1993	· Recognises and protects native title, and provides that native title cannot be extinguished contrary to the *Native Title Act 1993.* · National Native Title Tribunal is a Commonwealth Government agency set up under this Act and mediates native title claims under the direction of the Federal Court of Australia. · National Native Title Tribunal maintains the following registers: - National Native Title Register. - Register of Native Title Claim. - Unregistered claimant applications. · Register of Aboriginal land use agreements.
Native Title Act (NSW) 1994	The *NSW Native Title Act 1994* was introduced to ensure that the laws of NSW are consistent with the Commonwealth *Native Title Act 1994*. It validates past and intermediate acts which may have been invalidated because of the existence of native title.
Aboriginal Land Rights Act (NSW) 1983	The *Aboriginal Land Rights Act (NSW) 1983* recognises the right Reference Requirements of Aboriginal people in NSW and provides a vehicle for the expression of self-determination and self-governance. The purposes of the Act are: · To provide land rights for Aboriginal persons in NSW. · To provide for representative Local Aboriginal Land Councils (LALCs) in NSW. · To vest land in those LALCs. · To provide for the acquisition of land, and the management of land and other assets and investments, by or for those LALCs and the allocation of funds to and by those LALCs. To provide for the provision of community benefit schemes by or on behalf of those LALCs.

3. The assessment area

3.1 Geomorphology, geology and hydrology of the central coast

Quaternary deposits of alluvium, salt, silt, gravel and clay overlaying Triassic formations of claystone, sandstone and shale of the Narrabeen group characterise the general geology of the area (Sydney 1:250 000 Geological Series Sheets S1 56-5 in 102219). The A horizon of the soil landscape is primarily composed of brown loose loamy sands with yellowish brown clay sands, while the B horizon is characterised yellow brown sandy loams and pedal clay (Matthei, 1995).

Soils of the Wyong landscape are deep (greater than 200 cm thick) yellow brown podzolic soils (Land and Water Conservation, 1993). Soil pH is low and erosion limited to stream bank erosion on higher order drainage lines. Wyong soils typically have the following stratigraphy:

- a brown-black pedal loam A horizon topsoil. Roots are common but charcoal and rock fragments are absent; overlying
- a mottled brownish grey plastic clay B horizon subsoil. It is often waterlogged and anaerobic at depth.

The proposed project area is on what appears to have been a Late Holocene lake shore of the Mannering Bay northern inflow. Lake shore deposits in this location are now buried by overburden from the construction or road, tracks and power station infrastructure.

3.2 Historical land use

Historical overviews of the Central Coast and the early days of settlement by Europeans can be found in the following references; Threlkeld (1826), Blair (1995), Bennett (1968), Needham (1981), Parbury (1986) and Vinnicombe (1980). The following brief historical overview is taken from these works.

In 1770, Captain Cook sailed past the Central Coast of New South Wales and described seeing the smoke of ‘native’ fires along the coast. However, It was not until 1788 that Europeans first visited the region.. Governor Phillip and a party of forty men had entered Broken Bay in this year and encountered numerous men women and children encamped there. His experiences in this area were initially very friendly and congenial yet a year later the visit by his men revealed the true nature of contact between the Aboriginal people and Europeans. Smallpox was pestilent amongst the population and had caused a devastatingly large death toll that caused widespread depopulation of the tribes around the early settlement. Little mention is then made of the Wyong region as the focus of settlement was along the Hawkesbury River to Richmond and Windsor. In 1796 a group of fishermen had traversed the area but no mention was made of Mannering Bay or Lake Munmorah.

There were some reports of conflicts between Aboriginal people and settlers in the early years of settlement in the northern region of Brisbane Water yet these are obscure (Bean, 1827). Certainly stress had been placed upon the people of the Hawkesbury district by the influx of Europeans and at least one incident resulted in the deaths by musket fire of Aboriginal men as early as 1798 (Webb, the Hawkesbury shipbuilder, and his party shot four men whom they accused of treachery, and also later in 1805 was at the centre of another incident where Aboriginal men were killed). Webb who went on to become one of the first settlers in the Brisbane Water area continued to incite conflict in protecting ‘his’ land holdings.

Conversely Bass and Flinders established productive relationships with the local Aboriginal people and in particular a man named Bungary who later greatly assisted Flinders in the circumnavigation of Australia amongst other journeys. *Bungary is an apical ancestor of one of the survey participants for this project Tracey Howie.*

Norah Head is also known as Bungary Norah indicating he may have had his homeland in this place. Incidents amongst the European explorers and Aboriginal people of the study area deteriorated in the following decades. Reverend Threlkeld reported that people from the Tuggerah tribe were resident at his mission/reserve on Lake Macquarie in 1826 and also that much depredation had occurred to Aboriginal people at this time, many of whom had approached him for relative safety (Threlkeld, 1826).

In January 1828, William Cape, one of the first Wyong farmers was surprised by the arrival of approximately 200 (probably Darkinjung) who proceeded to divest him of a large portion of his potato crop. Darkinjung people were known to visit the area seasonally to take advantage of coastal resources. Cape had been known to be aggressive to the Aboriginal people and there were repeated incidents that resulted in the local Magistrate Bean and an armed party pursuing and arresting two men (Swancott, 1955:86). Bean later reported that there were five family groups of Aboriginal people in the district, naming them the Broken Bay, the Narara, Erina, Tuggerah Beach and Wyong totalling about 65 persons in all.

Relations deteriorated at this time and attacks on European settlers became more frequent and organised up to 90 men (R. v Monkey and others: Decisions of the Supreme Court of NSW, 1789-1899). The reasons behind Aboriginal grievances were undoubtedly justified under Aboriginal law. Considering the differences in law, and especially those concerning resource use and property rights, it is not surprising clashes occurred. In 1830 at Dooralong, near Wyong, a farmer ambushed six men who had been 'lurking in the bush'. Three of these men were captured and taken to Brisbane Water, but managed to overpower a local constable and escape. In 1834 magistrate Warner had written to the Governor of the Colony requesting the support of the mounted police, to 'capture the blacks…(although)...we may be obliged to shoot some of them' (Turner and Blighton, 1995). This is known historically as the 'punitive expedition to Wyong'. Twenty Aboriginal people were eventually caught and jailed for some depredations that occurred in the district, some transported to Cockatoo Island and one even hung for rape (Threlkeld, 1826). The witnessing of this sentence by local Aboriginal people must have demoralised those remaining and incidents of violence to settlers then abated. Whatever the misunderstandings and cultural differences that existed between the early settlers and local Aboriginal people, one clear result is left, that the Aboriginal community was dispossessed of their country in subsequent years.

In 1840, G.K. Mann was appointed magistrate of the Gosford district. His brother, who visited him in 1842, made an account of an impending visit that was to be made to the mouth of Wyong Creek and Tuggerah Lake for a 'grand corroborree' that was to be held in their honour. Unfortunately no details of this impending event were recorded and historical accounts of subsequent years from prominent people who had interacted with the local Aborigines reported a decline in numbers brought about by disease. White settlement proceeded to become more intensive and the Aboriginal population dwindled to the point that in the 1840's, few Aboriginal people were known to be living in the district. Many subsequent requests were made to successive Governors for farm titles in the district and today the area is one of the most densely populated on the whole eastern seaboard.

The Central Coast region has been one of the fastest growing areas outside of Sydney. The majority of development has occurred since the late 1960's. Traditional fire regimes had largely disappeared by the arrival of the 19th Century and vegetation communities immediately progressed to 'thicken' the bush to the extent where clearing was required. Various land uses have been employed from the earliest days of settlement including lime burning, timber getting, fishing and later mixed farming and orcharding. After the 1940's the area became popular as a Sydney holiday retreat. Today it is has grown and is now more focussed on community development.

4. Aboriginal Heritage

4.1 Aboriginal heritage Information management system

The Aboriginal Heritage Information System (AHIMS) is a database managed by OEH, regulated under section 90 of the NPW Act. A search of the AHIMS database using the 'extensive search' feature was undertaken on 7 July 2017 using a shapefile of the assessment area, including a 200 m search buffer to identify any registered (known) Aboriginal sites or declared Aboriginal places within or adjacent to the assessment area. It should be noted that the AHIMS database only contains records of Aboriginal sites that have been officially recorded and included on the list, which mainly represents areas of NSW that have been subject to systematic archaeological survey. As such, the AHIMS database may not provide a complete list of all Aboriginal sites within the landscape, and on its own is not an entirely accurate representation of where sites may be found.

The extensive search identified 39 Aboriginal sites within 7.5 kilometres of the assessment area (refer to **Table 4.1** and **Figure 4.1**). None of these were located within 200 metres of the assessment area (refer to **Table 4.2** and **Figure 4.1**).

These findings were further contextualised through a review of historical, archaeological and heritage reports pertaining to the local region. Based on these assessments a predictive model of potential site types and their associated characteristics is proposed (refer to Section 4.3).

The extensive search identified nine Aboriginal sites within the Vales Point assessment area (refer to table 4.1).

Table 4.1 : AHIMS sites within 7.5 kilometres of the Vales Point assessment area

AHIMS ID	Coordinates (AGD Zone 56) - Eastings	Coordinates (AGD Zone 56) - Northings	Site type
45-3-3165	359490	6332490	Grinding Groove
45-7-0339	364943	6329478	Isolated artefact
45-7-0131	366820	6332970	Shell
45-7-0138	366820	6332970	Artefact
45-7-0176	367200	6333300	Artefact
45-7-0178	366800	6330400	Artefact
45-7-0179	365150	6331450	Artefact
45-7-0181	366150	6329600	Shell
45-7-0182	366120	6330950	Shell
45-7-0183	368050	6333200	Grinding Groove
45-7-0189	364950	6331450	Modified Tree (Carved or Scarred)
45-7-0207	361820	6329800	Ochre Quarry
45-7-0079	368450	6330750	Artefact
45-7-0001	361550	6332450	Shell
45-7-0003	363738	6331615	Artefact
45-3-1310	357823	6330130	Artefact
45-3-1553	362540	6330400	Shell
45-3-0334	366730	6330420	Shell

AHIMS ID	Coordinates (AGD Zone 56) - Eastings	Coordinates (AGD Zone 56) - Northings	Site type
14-7-0149	368000	6333300	Shell
45-3-3180	359150	6325075	Artefact
45-7-0227	363680	6333520	Shell
45-7-0228	363720	6333820	Modified Tree (Carved or Scarred)
45-3-3176	359750	6324715	Shell
45-7-0232	360937	6325205	Modified Tree (Carved or Scarred)
45-3-3179	359563	6325450	Shell
45-3-3186	359612	6326462	Shell
45-3-3187	359375	6325050	Shell
45-3-3188	359427	6325219	Shell
45-7-0080	364780	6328890	Artefact
45-7-0244	363560	6333600	Artefact
45-3-3260	360187	6325275	Shell
45-3-3261	359601	6326537	Stone Arrangement: -
45-7-0249	363200	6325900	Shell
45-7-0250	363175	6325350	Artefact
45-7-0251	361000	6326250	Shell
45-3-3335	357900	6326000	Modified Tree (Carved or Scarred)
45-3-3166	359840	6332530	Artefact
45-7-0290	368088	6329979	Artefact
45-7-0190	362398	6331810	Burial and modified tree

Figure 4.1 | Location of AHIMS sites with proximity to study area

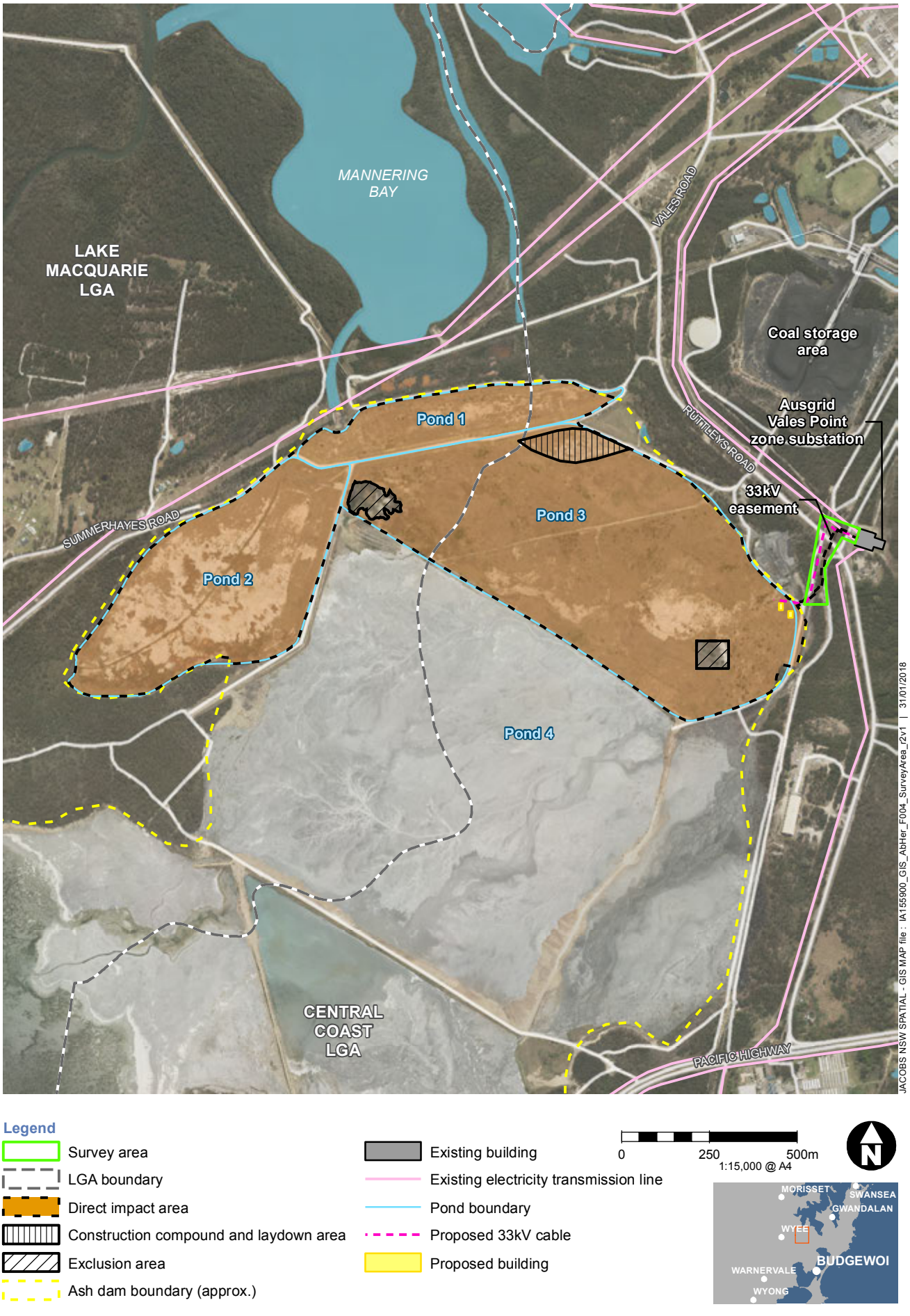

Figure 4.2 | Survey area

4.2 Aboriginal cultural context

Our understanding of prehistoric settlement patterns environmental, cultural and technological change in the east coast region during the prehistoric era have been advanced by the work of a number of researchers (Lampert, 1971; Dyall, 1972; Mulvaney, 1976; Bowdler, 1976; Vinnicombe, 1980; Lourandos, 1983; Hiscock,1992; McDonald, 1994; and, Morwood, 2002). For the east coast, the work of Lampert was the first to establish the presence of people at 20,000 years before the present (BP) (at Burril Lake on the south coast). Further research by Bowdler (1976) and others supported this contention. Indications from these sites are that Aboriginal society at this time had advanced to utilise a wide range of environments.

Technological evidence from early sites on the east coast indicates that Aboriginal culture utilised resources in forest, lacustrine, coast and hinterland environments. Indigenous technology remained fairly constant and unchanging until the early Holocene period. Populations were significantly more-dense in coastal areas to exploit marine and estuarine abundances yet as coastlines changed and stabilised in the early to mid-Holocene period, human society flourished and adapted in new ways to the social and environmental pressures created by climate change. There was an apparent intensification of population and cultural expression including a technological development after 4,000BP including the arrival of specialised stone implements. This refinement of technology occurred as post-glacial seas encroached upon the territories of coastal Aboriginal groups. These new technologies were observed in an increasing number of sites that first became inhabited during this period. Specialised composite tools such as the 'backed blades first appear after 4,000 BP in many sites (see Hiscock, 1992; and, Lourandos, 1983). Art styles reflect these responses and flourished in this post glacial world.

There remained a remarkable consistency of material culture for a further 2,000 years until more recently when gradual change was observed and tools, such as the backed blades, dropped-out of the tool kit. There was a proportional increase in the use of other tools such as the ground edge axe. Large axe grinding sites reflecting this use are found on flanks of Mount Penang and the Somersby plateau to the south west of the study area.

Simple flakes began to be utilised without the careful preparation techniques employed in previous implement types. However there was also a greater use of bone and shell for tool-making. Wood carving and artefact manufacture also flourished in this time however few of these items are known for the study area. Shell, fish hooks first came into use in this later period. Crescentic, shell fishhooks were widely adopted in this region in the more recent past (Dyall, 1972).

There is overwhelming evidence for a widespread increase of indigenous population and technological change in coastal areas in the last few thousand years (Lourandos 1983, 1994). It is suggested that there was an increase in the use of hook and line fishing in the east coast in response to this population pressure. The dynamic nature of the east coast over the last 20,000 BP greatly complicate theories of local and regional adaptation, however it be said that Aboriginal society in the ethnographic present and prehistoric past had:

- survived a climate change event;
- access to a wide range of environments;
- maintained a coastally orientated economy;
- undergone technological change within the last 5,000 years BP;
- witnessed localised variations in technological templates; and
- developed increasingly specialised technological strategies within the last millennia.

4.2.1 Ethnohistory

Mulvaney (1976) provides material evidence for reciprocal exchange networks operating in the Central Coast area recorded by ethnographic accounts. These networks centred on cultural sites within the landscape. Many hundreds of people were known to gather at these places in the pre and post contact era when conditions were favourable. These gatherings were likely to have included tribes related on kinship lines for shared ceremonial life, adjacent tribes on a basis of mutual benefit and agreement, and between tribes separated from each other by geographic distance (Wheeler, 1910, p 70).

Aboriginal culture is strongly associated to place. As such, Aboriginal people, sites, cultural knowledge, places, customs, beliefs and stories have strong associations to land and these associations transcend time (Umwelt Environmental Consultants, 2011). Retaining important spiritual and cultural values, the area of Lake Macquarie is variously considered the traditional country of the Awabakal and Guringai people. Over 500 archaeological sites and Aboriginal cultural places within the Awabakal traditional lands provide tangible evidence for this important intangible association to place.

Ethnohistorical reports indicate that Aboriginal people practiced a hunter-gatherer subsistence lifestyle. Their diet principally consisted of snakes, lizards, wild ducks and geese, witchetty grubs, wild dogs, bandicoots, pigeons, kangaroos, crayfish, whales, porpoises, fish and cockles (Gunson 1974, p.55 in Orrica Kurri). Mobility patterns between the coast and mountains were largely dictated by the availability of food resources in those respective locations (Umwelt, 2003a). Historic references suggest that the Aboriginal people utilised a variety of ecosystems within the study area, including: the coast, wetlands, lakes and estuaries and also sandstone areas throughout the hinterland.

Accounts indicate that shelters were mainly composed of boughs of trees and sheets of bark from stringy bark or box gum trees, supported by stakes. While most of the Awabakal tool kit is purported to be composed of perishable items, some items such as fishing, hunting and battle spears are described in the literature. Up to two metres in length and composed of hard wood, fishing spears consisted of a long shaft upon which a barb of bone was fixed with resin. Hunting spears and battle spears were generally smaller in size and generally had a hardwood or stone point fixed to the end. Owing to the mixed-subsistence strategy of the Awabakal, their toolkit comprised terrestrial and marine appropriate equipment. Fishing hooks of shell, wood, bone or bird claw were fixed to a length of fishing line composed of the bark of the Kurrajong tree or cabbage palm. Local trees were also used to manufacture drinking vessels, shields and canoes (Gunson, 1974; and, Brayshaw, 1966).

Indigenous sites found throughout the Wyong Shire pertain to the complex cultural life of the regions inhabitants before devastating contact with European culture. Little is known today of the lifestyles of the traditional lives of the Darkinjung and Guringai people following decimation by disease and conflict. Historical overviews of the Central Coast and the early days of settlement by Europeans can be found in the following references Blair (1995), Bennett (1968), Blair (1995), Needham (1981) and Parbury (1986), Vinnicombe (1980). The following brief historical overview is taken from these works.

Fire regimes employed by traditional people typically involved frequent ‘patch burning’ of low to moderate intensity fires timed to make resource based decisions, flush game and improve access through the bush. This practice has had long-term consequences for the type and distribution of vegetation communities throughout Australia. Typically the growth of wetlands and closed forest communities were discouraged by this practice and the spread of grasslands encouraged. It is likely with this type of fire regime in the study area and the impoverished sandy soils it would have supported a mosaic of grassland, heathland and open woodland vegetation communities.

4.2.2 Previous archaeological reports for the locality

The NSW Central Coast contains at least 1,200 known sites of cultural sites many of which have incomplete descriptions and are thought to have significant interrelationships. Stockton (1977) postulated that site density in the coastal zone was of the order of 0.51 sites per kilometre on the coast (which compares to 0.71 sites per kilometre on the south coast). Vinnicombe (1980) predicted a site density of 11.5 per km^2 on the Central Coast around Gosford. This correlates with ethnographic observations of the significantly higher population made possible in this resource rich zone.

The Wyong floodplains are known to contain a relatively large numbers of sites, in particular middens, the remains of middens, open camps sites, artefact scatters, rock shelters of various types, some with art and some with archaeological deposits, grinding grooves, petroglyph engravings, and at least one ceremonial centre. The floodplains have been the focus of a number of research projects and consultancy reports. These will be reviewed briefly below.

4.2.3 Aboriginal heritage within proximity of the Vales Point Ash Dam

One Aboriginal site is reported to be in the Vicinity of the Vales Point Ash Dam and is referred to in the Vales Point Ash Dam Management Plan (Aurecon 2015, p. 69) that identifies Aboriginal cultural heritage values in the vicinity of the site as follows:

> *"Based on a field inspection carried out on the Vales Point Power Station site in 1993, areas of Indigenous Cultural Heritage are known to exist. Although the existing ash dam is a heavily disturbed environment and no excavation works are proposed for the site, the conservation of cultural heritage sites should be incorporated into ongoing management of the ash dam areas. Most of the area surrounding the ash dam is considered to be of Moderate Heritage Significance (See Figure 7 and the Land Management Plan). Based on this, any significant development should be preceded by archaeological sample surveys".*

This site is reported to be located 1.4 kilometres from the current assessment area to the north-west. It is not however registered on the AHIMS system. The Vales Point Ash Dam Management Plan does not consider there to be any remaining cultural heritage significance within the footprint of the ash dam.

Sites referred to in the Vales Point Land Management Plan 1993

A field inspection of the Vales Point buffer lands was undertaken in March 1993 by an archaeologist (Vales Point Land Management Plan, 1993) to monitor the condition of known Aboriginal heritage sites and to re-assess the archaeological sensitivity of the buffer zone. Six sites were identified within the Vales Point buffer; three of these being the sites previously identified by McIntyre in 1987 (refer to Figure 4.2). No records of the location of the additional three sites mentioned within the 1993 land management plan have been located to date. The 1993 land management plan states that findings of the survey determined there was a high probability of other sites occurring within the area surrounding the three mapped sites by MacIntyre. This area is identified as sensitivity A in Figure 4.2. As was the determination of McIntyre in 1987, the remaining areas of the Vales Point buffer zone were identified as having a sensitivity B rating, with the recommendation that any development in these areas be preceded by archaeological survey and assessment.

Navin Officer 1996 : Excavations at the Hole

In 1996 Navin Officer Archaeological Resources Management (NOARM) completed test excavations at the site identified as Site 3 in Figure 4.2. The NOARM report refers to this site as 'the hole', located on the western shore of Mannering Bay (Figure 4.4).

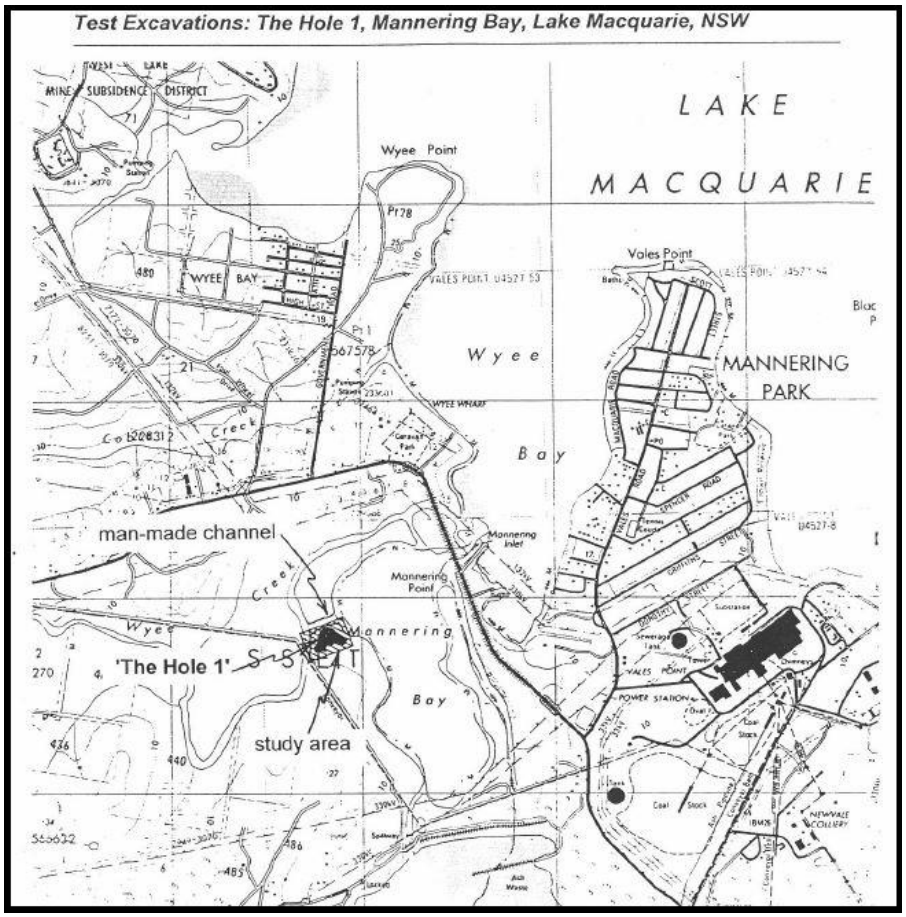

Figure 4.3 : Location of 1996 archaeological test excavations at Vales Point Power Station Aboriginal heritage site referred to as 'The Hole'.

A total of 137 artefacts were recorded at this site. Ninety five artefacts were located on the surface and 42 were recovered from test pits. Artefacts occurred over a large area, probably in excess of 2 hectares. The artefact assemblage at 'the hole' belongs to the Australian Small Tool Tradition which includes backed blade and microblade manufacture. This tool technology dates to within the last 5000 years (NOARM, 1996).

Construction of the artificial channel between Mannering Bay and Wyee Creek and disposal of spoil generated from this activity caused major site disturbance. Any artefacts originally within the channel have been displaced with the spoil and artefacts located in the spoil disposal areas would be buried to a depth of at least 1 m (NOARM, 1996). The site was assessed as having moderate scientific significance in a local context and low to moderate significance in a regional context (The Lake Macquarie region).

4.2.4 Other cultural heritage studies undertaken in the local region

The Wyong floodplains are known to contain a relatively large numbers of sites, in particular middens, the remains of middens, open camps sites, artefact scatters, rock shelters of various types, some with art and some with archaeological deposits, grinding grooves, petroglyph engravings, and at least one ceremonial centre. The floodplains have been the focus of a number of research projects and consultancy reports. These will be reviewed briefly below.

McIntyre 1987

In 1987, an archaeological study of the Vales Point and Munmorah/Colongra buffer lands was undertaken by the Electricity Commission of NSW archaeologist (McIntyre, 1987). At the time, no archaeological sites within Delta buffer lands had been recorded on the National Parks and Wildlife register (now recorded with the OEH). The 1987 study was preliminary in nature, with the aim of identifying areas of sensitivity, in context with regional

studies which were also being conducted by Wyong Shire Council at the time (Dallas et al., 1987). Three Aboriginal sites were identified within the Vales Point buffer during the survey however McIntyre's report was at a level that would enable broad conclusions to be drawn about the sensitivity of the different areas of the buffer (Vales Point Land Management Plan, 1989).

McIntyre's field investigations determined that some areas of the buffer lands were archaeologically sensitive and her report provided recommendations for restricted land use practices to ensure conservation of potential Aboriginal heritage deposits. Three levels for ranking sensitivity were provided:

- High archaeological sensitivity (Area A) – recommended as being reserved as areas of scientific potential.
- Moderate archaeological sensitivity (Area B) – areas less sensitive than areas A, but recommended as requiring archaeological investigation prior to undertaking any development.
- Low archaeological sensitivity – no land use restrictions recommended.

The following two maps (Figures 4.2 and 4.3) show the archaeological sensitivity in Areas A & B as determined by McIntyre.

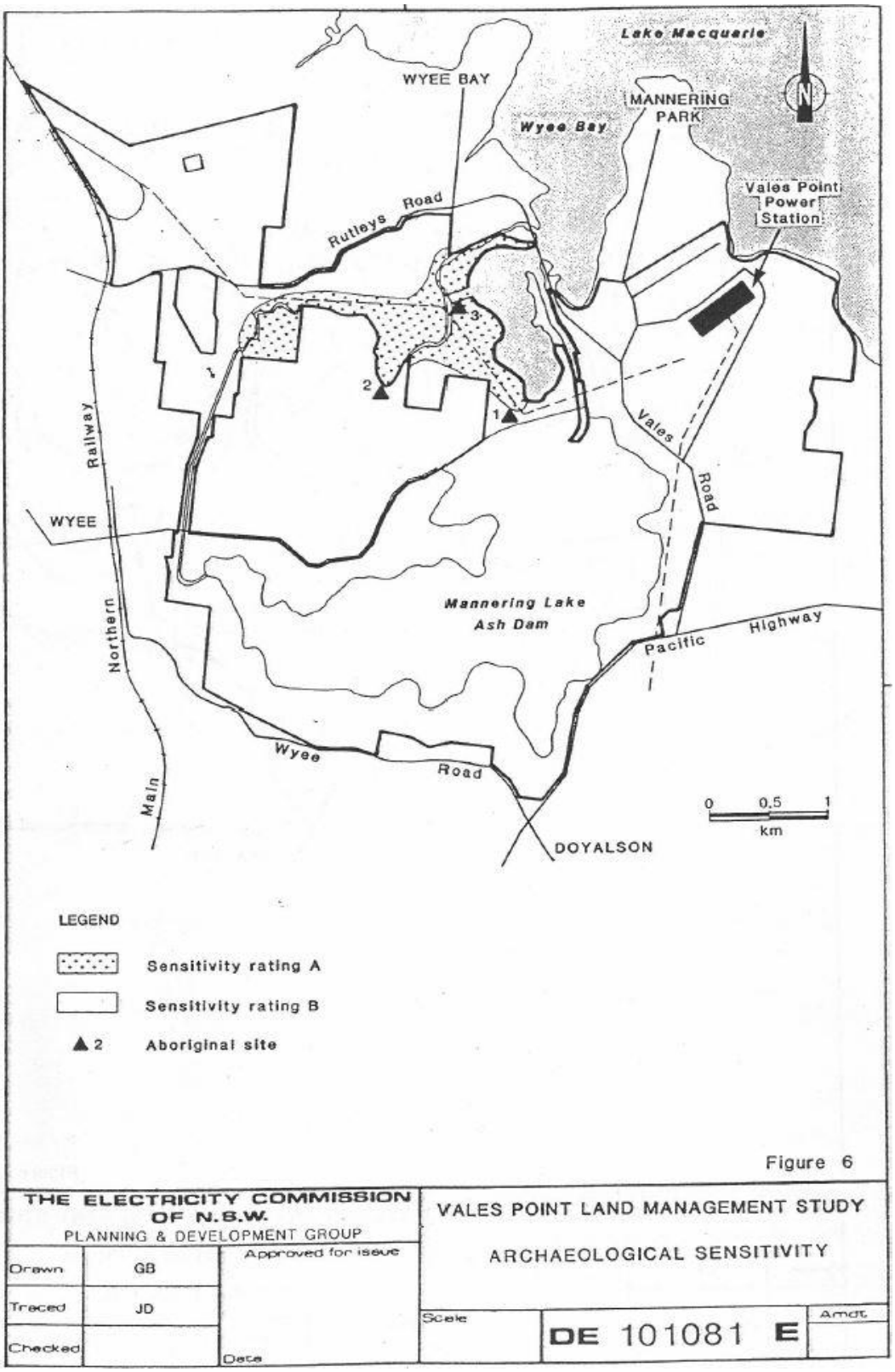

Figure 4.4 : Sites Identified in 1993 Vales Point Land Management Study: Areas of archaeological sensitivity as determined by McIntyre in 1987. Source: Vales Point Power Station Land Management Plan June 1989, The Electricity Commission of NSW

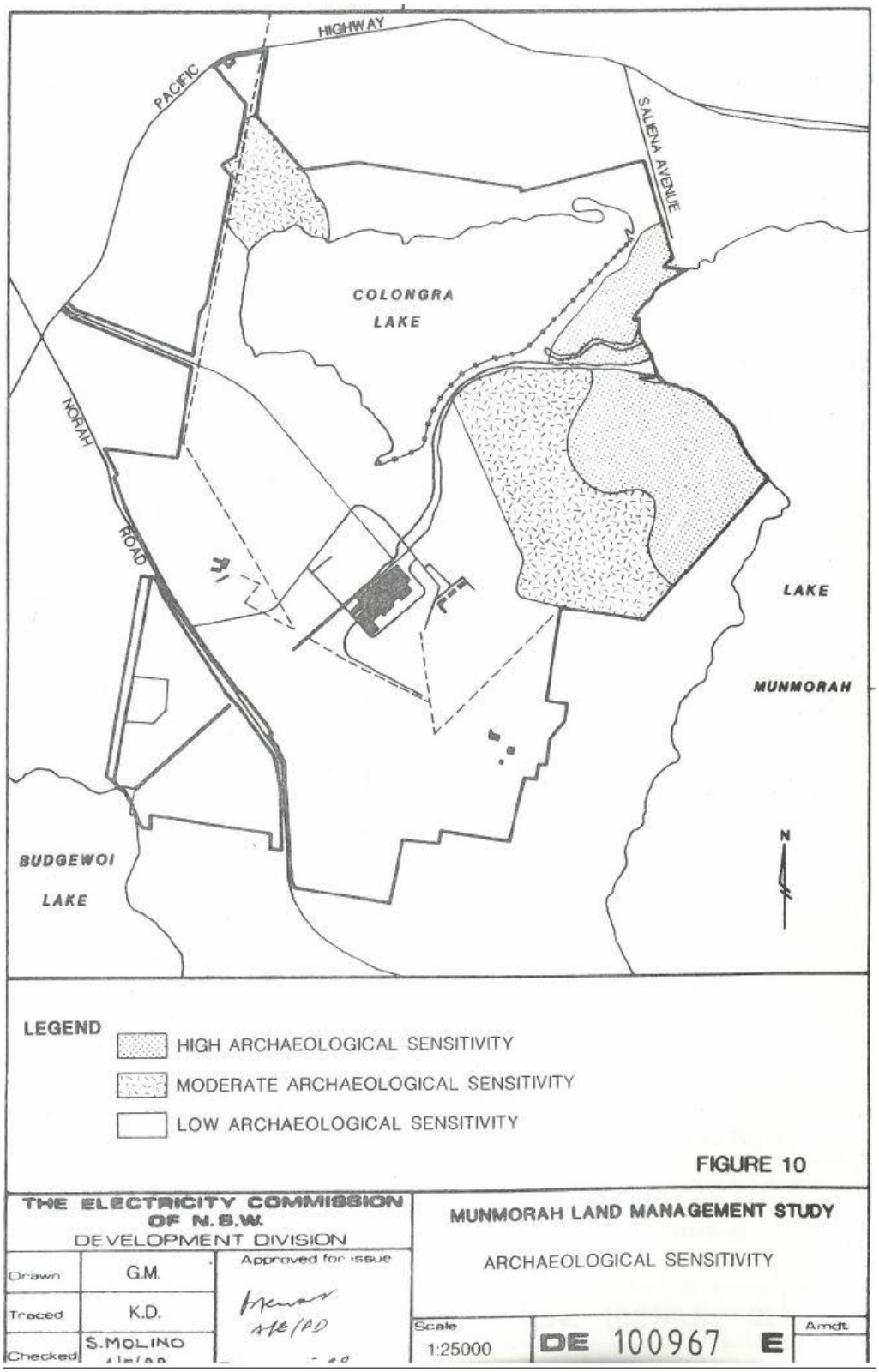

Figure 4.5 : Figure from McIntyre 1987 showing areas of archaeological sensitivity as determined by McIntyre in 1987. Source: Munmorah Power Station Land Management Study October 1987, The Electricity Commission of NSW

Vinnicombe 1980

Vinnicombe was commissioned by the NPWS service in the late 1970's to survey 1560 square kilometres of land in the Gosford and Wyong shires. She attempted to cover the major land unit types including open coastline, riverine estuarine and inland sclerophyll forest. Vinnicombe recorded over 700 sites and found in general prehistoric land use to be centred on access to coastal resources and major creek lines. Occupation sites were generally north-east facing rock shelters with relatively low altitudes whereas the entire ecosystem had been exploited for its various characteristics. Grinding sites (that would have manufactured Narrabeen Shales into ground edge axes) were often found at the headwaters of streams.

Insite Heritage Pty Ltd 2007b & 2007b

As part of their ongoing management of the archaeological assessment for the St John of God site on Morriset Peninsula, Insite Heritage Pty Ltd undertook excavation of a series of trenches at the site to ascertain the Aboriginal heritage importance of the site before impending rezoning development may proceed. From the series of 8 trenches excavated, 88 flaked stone artefacts were recovered from two locations. Four primary types of artefacts were identified during this analysis, they included: flakes, retouched flakes, cores and flaked pieces. These were composed from a variety of different materials, including chert, quartzite, silcrete and volcanic materials.

Parsons Brinckerhoff Australia Pty Ltd 2011

This report outlined the proposal for capping and rehabilitation of the existing Vales Point Ash Dam. The study reiterated the finds of the Aurecon Australia report and further recognised the Wyee channel (extending north from Wyee Dam and under Summerhayes Road) as items of non-indigenous heritage significance (Parsons Brinckerhoff Australia Pty Ltd, 2011).

McDonald (1985/1986)

McDonald was commissioned by NPWS in 1984 to undertake an analysis of rock art sites found within the Sydney Basin with a view to producing a preliminary analysis of the art styles in both rock shelters and open sites (petroglyphs) for management purposes. She undertook both desktop reviews of the NPWS database of 4,000 sites in the Basin as well as field-work in the Hawkesbury, Colo, Mangrove and Carpetree River catchments as well as Mount Yengo National Park and Howes Valley. Her research pointed to the location of the majority of open engraving sites being found on the plateaus and hillslopes whereas rock shelter sites were located on hillslopes within a few hundred metres from water.

Attenbrow (1987)

This comprehensive study was based on the storage area of the Mangrove Creek Dam. She found 59 sites in the sampling of major ecological units and concluded that ridges between catchment areas contained a high density of sites (no doubt marking cultural highways between catchments), including a high density of shelters and grinding groove sites. Open sites were common on valley floors in subsidiary catchments as were the ridge tops above them. A basal date of 11,000BP was obtained at Logger's shelter.

Dallas et al. (1987)

Dallas et al., undertook a Planning Study for the Wyong Shire Council in 1987 based on a desktop analysis and sampling of ecological units within the Shire. This analysis was to provide the Council with a frame of reference and management guidelines for the incorporation of cultural heritage matters into the planning framework. The study reviewed a number of existing reports, consulted with the indigenous community and investigated sites. It provided the Council with a resource inventory of known sites, assessed their sensitivities and concluded with suggested management principles and strategies. While this study is an important starting point for contemporary planning and analysis it was " limited, incomplete and selective" and had located only 103 of the sites in the Shire. It did however attempt to predict the likely site type location patterns as follows:

Open middens - occur on sand, alluvium and sandstone, often at the junction of valley bottom and hill slope. They are in protected positions near water.

Open Camp sites - are difficult to locate (subsurface) except for eroded or partly disturbed exposures. They occur on sufficiently dry, level terrain and are often found close to potable water.

Rock shelters - are located in exposed Hawkesbury sandstone above valley floors or below ridge tops with a preference for northerly or north westerly aspects.

Art sites - tend to occur in large shelters immediately below ridge tops.

Grinding grooves - are found on Hawkesbury sandstone in creek beds, at the top of valleys, above or along watercourses and also around rock pools or ridge tops near aquifers.

Engravings - the majority of such sites are found on ridge and plateau areas of Hawkesbury sandstone or occasionally at sea level on Narrabeen sandstone (Dallas 1987).

Sites were widely distributed throughout these areas but greater concentrations were observed in Hawkesbury sandstone than in any other environmental zone. High site density appears to be more clearly expressed along the coastal margins, becoming fewer the further one moves inland (Dallas et.al.1987.58). Today this review remains an important starting point for further cultural heritage studies.

Bonhomme (1994)

Bonhomme undertook a study of middens in Gosford, Wyong and the Great Lakes Shires to find out more about the distribution, survival and range of midden sites in the study area. Project objectives also included the establishment of a management strategy for the surviving sites, particularly in the face of increased development, creating a schedule of sites that require protection, developing guidelines for Local Government for the recording of Aboriginal sites as part of the EIA process and to determine protocols for intervention with Councils and LALCs.

As a result of the survey, it was identified that middens in this region were predominantly located in foreshore reserve land. They were subject to several impacts from, for example, road and other constructions and infrastructure installation and maintenance among other activities. The shell species contained in lake and estuarine middens did not vary greatly and species were strongly dependant on localised conditions. For example, *Anadara trapezia* survives in a wide range of water conditions and dominates middens in Broken Bay, Lake Macquarie and Wallis Lake. However, they do not survive in areas of lower water salinity. Other species also are unable to cope in these conditions, so no shell midden sites were found in the margins of Tuggerah or Budgewoi Lakes.

Kinhill Engineers (1995)

Kinhill Engineers (1995) undertook an archaeological survey of the McPherson's State Forest to the west of the study area. While this study did not look at lowlands, most open artefact scatters were located on ridgetops indicating the casual use of these features as routes to resource areas. Further research for State Forests was undertaken in the McPherson, Olney and Ourimbah State Forests to compliment this initial work by Silcox (1995a, 1995b and 1996). The primary outcomes of this research verified Vinnicombe's proposal that grinding sites were located in the Hawkesbury sandstone in its plateau reaches and along ridgetops where the stone is harder and more conducive to grinding shales and igneous rocks. Again, rock shelters, sometimes with art, could be located on hillslopes within reach of water and with north-easterly aspects.

Heritage Concepts Pty Ltd (2005)

Heritage Concepts Pty Ltd was commissioned by Parsons Brinkerhoff on behalf of Delta Electricity to conduct an archaeological assessment of Aboriginal cultural heritage values for the proposed gas-fired power generation facility at Colongra Power Station. Three isolated artefacts and two artefact scatters were also recorded during this research.

McCardle Cultural Heritage (2005)

McCardle Cultural Heritage produced an archaeological desktop review for Sydney Gas entitled the Wyong Regional Archaeological Report. This report attempted to review all previous cultural heritage studies to

determine the extent of archaeological investigations in the area, to identify archaeological patterns and to develop a regional predictive archaeological model based on the desktop analysis. The analysis provides useful and instructive preliminary data. Her research was undertaken primarily to inform Sydney Gas on the potential for sites to be located on valley floors of interest to the client. She concluded that the valley floors and associated alluvial deposits may be under-represented in terms of site location for reasons based on the alluvial and colluvial context as well as the likelihood that systematic surveys are yet to be undertaken in these areas.

4.3 Predictive modelling

4.3.1 Predicted site types and potential locations

A search of the Aboriginal Heritage Information Management System was undertaken on 7 July and recovered data on 39 sites found within a 7.5km radius of the assessment area. Owing to limited sandstone outcropping within the local area, sites typically found in the local region and reported by other researchers (i.e. Dallas, 1987) are not present in the study area. These include rock shelters with art and occupation deposits and engraving sites. The local site distribution is however typical of coastal sites found within the region. The most common site types found in these coastal lowlands are artefact scatters followed by shell middens. A relatively large number of modified trees were also found within the local area. A grinding groove site, ochre quarry and burial site are also recorded for the locality (refer to Figure 4.5).

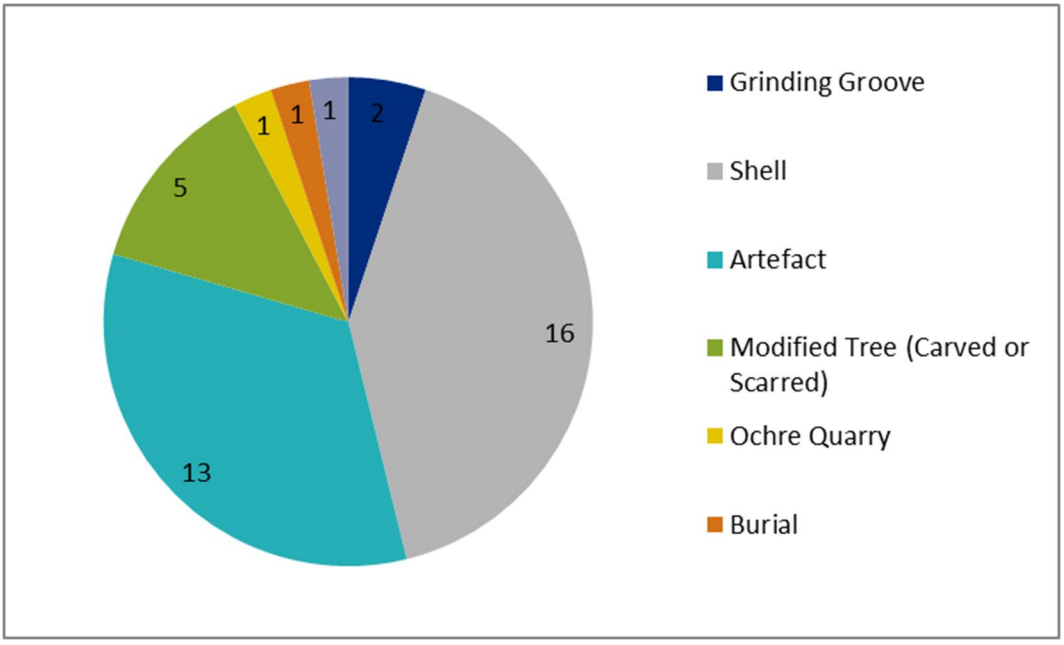

Figure 4.6 : Sites types found within 7.5 km of the study area

Based on the sites found in prior surveys of the region described above, it was expected that the survey location had a low to moderate potential to contain archaeological features such as:

- open camp sites;
- artefact scatters on sufficiently dry, level terrain;
- shell middens on palaeochannels and lake shore in protected positions near water; and
- scarred trees which are likely to occur on old growth trees and in association with other archaeological areas of Aboriginal occupation (e.g. open camp sites).

Given the density of sites within the local area and the proximity to coastal, alluvial and lacustrine resources it is likely that site distribution was centred upon these productive resource zones.

4.3.2 Predicted site characteristics

As suggested by previous research in the region a number of site characteristics can be predicted for the above site types:

- Sites will be concentrated around the exploitation of coastal resources;
- Middens will contain a range of edible shell species including *Anadara, Volegalea, Telescopium and Crassostrea;*
- Open camp sites will contain a range of artefact types including, flakes, ground edge axes, scrapers, blades, microblades, cores and flaked pieces typical of the late Holocene archaeological record;
- Stone artefacts will be made from a variety of lithics including chert, quartzite, silcrete and volcanics; and
- In coastal, alluvial and lacustrine contexts there will likely be a significant depth to archaeological deposits in certain circumstances.

5. Site Inspection

5.1 Aims

For Aboriginal cultural heritage, the aim of the field survey was to assess the Proposal area and identify any archaeological objects, or areas with the potential to contain archaeological objects (PADs). On-site consultation with nominated site officers of the Darkinjung LALC and Guringai Tribal Link Aboriginal Corporation enabled the development of management recommendations.

5.2 Timing and Personnel

A field survey was undertaken on 27 July 2017 with nominated site officers from the DLALC and GTLAC. Details of fieldwork activities and the participation of nominated site officers are provided in **Table 5.1**.

Table 5.1 : Field survey timing and personnel

Date	Jacobs personnel	Delta Electricity personnel	Aboriginal stakeholder involvement
27 July 2017	Andy Roberts	Anthony Callen	Tracey Howie (Guringai Tribal Link Aboriginal Corporation), Anthony Freemen and Kye Knight (Darkinjung LALC)

5.3 Methodology

The methodology for the field survey consisted of:

- Pedestrian survey with nominated site officers was undertaken for as much as the Proposal area, access tracks as practicable. In many areas, access and visibility were severely limited by long grass or other vegetation;
- Survey was conducted with minimal space (2-5 m) between each participant;
- Scrutiny of landforms of high potential archaeological sensitivity (based on predictive modelling and detailed in **Section 4.3.1**), areas of higher visibility, and exposures of the ground surface;
- The following details were recorded for each surveyed area:
  - Landform;
  - Ground surface exposure and nature of exposure;
  - Visibility as a result of vegetation;
  - Degree of disturbance; and
  - Nature of current and historical land use.

5.4 Constraints

The archaeological surveys faced several constraints due to disturbed landforms and thick vegetation growth. The study area is characterised by high levels of disturbance from road and conveyor system construction, maintenance and erosion. These activities have reduced over ninety per cent of the archaeological sensitivity of the landscape within the study area.

Ground surface visibility varied from low to moderate throughout the surveyed areas (between 0-50 per cent). Ground surface visibility was good to excellent however this proved to be comprised largely of imported fill. Generally surveyed areas exhibited significant disturbance and little if any remnant ground surface remained to be examined.

5.5 Results

All areas recommended for archaeological field survey were surveyed. One hundred per cent of the study area was able to be accessed for the survey. The results of the survey are summarised below in **Table 5.2**.

Table 5.2 : Archaeological survey results summary

Survey area	Total area in hectares	Survey coverage ha (%) (%)	Visibility	Exposure	Estimate of effective coverage in hectares (%)	Field survey results (AHIMS ID)
Easement for 33 kV transmission line	**1.5687ha**	1.5687 (100)	90%	90%	1.41183 (90)	No Aboriginal cultural heritage identified.

The assessment area exhibits significant disturbance from conveyor belt and road construction. Soils are disturbed and also contain imported fill brought in for road construction.

Figure 5.1 : View to south of assessment area exhibiting significant disturbance from conveyor belt and road construction

Figure 5.2 : Road construction has brought in imported fill.

Figure 5.3 : View of the north of assessment area. Conveyor belt construction is accompanied by significant ground disturbance.

6. Conclusions and Recommendations

The assessment area for the 33 kV transmission line contains no evidence of past Aboriginal occupation having been significantly disturbed by prior roadworks, and the construction of a conveyor belt.

The Project's construction impacts will avoid all AHIMS registered archaeological sites. It is considered unlikely that Aboriginal objects or artefact deposits will be present within the transmission corridor due to significant ground disturbance from prior road construction.

It is therefore recommended that:

- Standard Management Procedures for Unexpected Heritage Items be applied and implemented;
- Heritage induction training for staff and contractors working on the construction phase of the transmission line is unnecessary; and
- Any further impacts proposed beyond those assessed in this report or beyond the boundary of the assessed areas must be subject to further assessment and consultation with Aboriginal stakeholders, consistent with the process in this report.

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Appendix A. Guringai Tribal Link Aboriginal Corporation Memorandum

Guringai Tribal Link
Aboriginal Corporation
ABN 18 351 198 069. ICN 4270
(Traditional Owners of the NSW Central Coast and the Northern Beaches of Sydney)

PO Box 4061,
Wyongah NSW 2259
Phone:(02) 4396 8743
Fax:(02) 4396 9525
Mobile: 0404 182 049
Email: tracey@guringai.com.au

29th August, 2017

Letter of Participation

Guringai Tribal Link Aboriginal Corporation (GTLAC) participated in an Aboriginal Cultural Heritage Due Diligence Assessment with Jacobs Australia - Andrew Roberts, for Delta Electricity (Delta), Vales Point Power Station Vales Point, NSW on 27/07/17.

Delta are proposing to erect solar energy producing panels within rehabilitated ash dam areas, south-west of Dudley Ruttlys Road, Mannering Park and the existing power station.

No Aboriginal sites were identified within the study area at the time of this survey.

Should any Aboriginal sites/objects be located during the processes of any proposed works, work must cease in that area and the Office of Environment and Heritage (OEH) & GTLAC are to be notified immediately.

Should any skeletal remains be unearth during any works or associated activities, all work must cease immediately within that vicinity and the NSW Police, OEH, NSW Coroner's Office and GTLAC are to be contacted.

Statutory Considerations.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984. (Commonwealth)

The Aboriginal and Torres Strait Islander Heritage and Protection Act 1984 (Cwlth) was enacted at a Federal level to preserve and protect areas (particularly sacred sites) and objects of particular significance to Aboriginal Australians from damage or desecration. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (Sections 9 and 10).

This can include the prevention of development.

As well as providing protection to areas, it can also protect objects by Declaration, in particular Aboriginal skeletal remains (Section 12). Although this is a Federal Act, it can be invoked on a State level if the State is unwilling or unable to provide protection for such sites or objects.

National Parks and Wildlife Act. 1974. (NSW)

The National Parks and Wildlife Act 1974 (NPW Act) provides blanket protection for Aboriginal objects (material evidence of Indigenous occupation) and Aboriginal Places (areas of Cultural significance to the Aboriginal community) across NSW.

An Aboriginal object is defined as;

any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

An Aboriginal place is defined as;

any place declared to be an Aboriginal place by the Minister for the Office of Environment and Heritage (OEH), under Section 84 of the Act.

It is an offence to disturb Aboriginal objects or places without a permit authorised by the Director-General of the OEH. In addition, anyone who discovers an Aboriginal object is obliged to report the discovery to OEH. Section 90(1) of the National Parks and Wildlife Act, 1974 states that it is an offence to destroy, deface or damage, or cause or permit destruction or defacement of or damage to, an Aboriginal object or Aboriginal place without first obtaining the consent of the Director General of the Office of Environment and Heritage.

Respectfully yours,

Tracey-lee Howie
Director
(contacts above)

Appendix B. Darkinjung Local Aboriginal Land Council Report

Aboriginal Cultural Heritage Assessment Report

Local Aboriginal Land Council
DARKINJUNG

Vales Point Solar Project
Mannering Park / Wyee

Report to
Jacobs Group

July 2017

Darkinjung Local Aboriginal Land Council
PO Box 401
Wyong NSW 2259
Tel 02 - 43512930
Email: darkinjung@dlalc.org.au

Author: Anthony Freeman

Aboriginal Cultural Heritage Assessment Report

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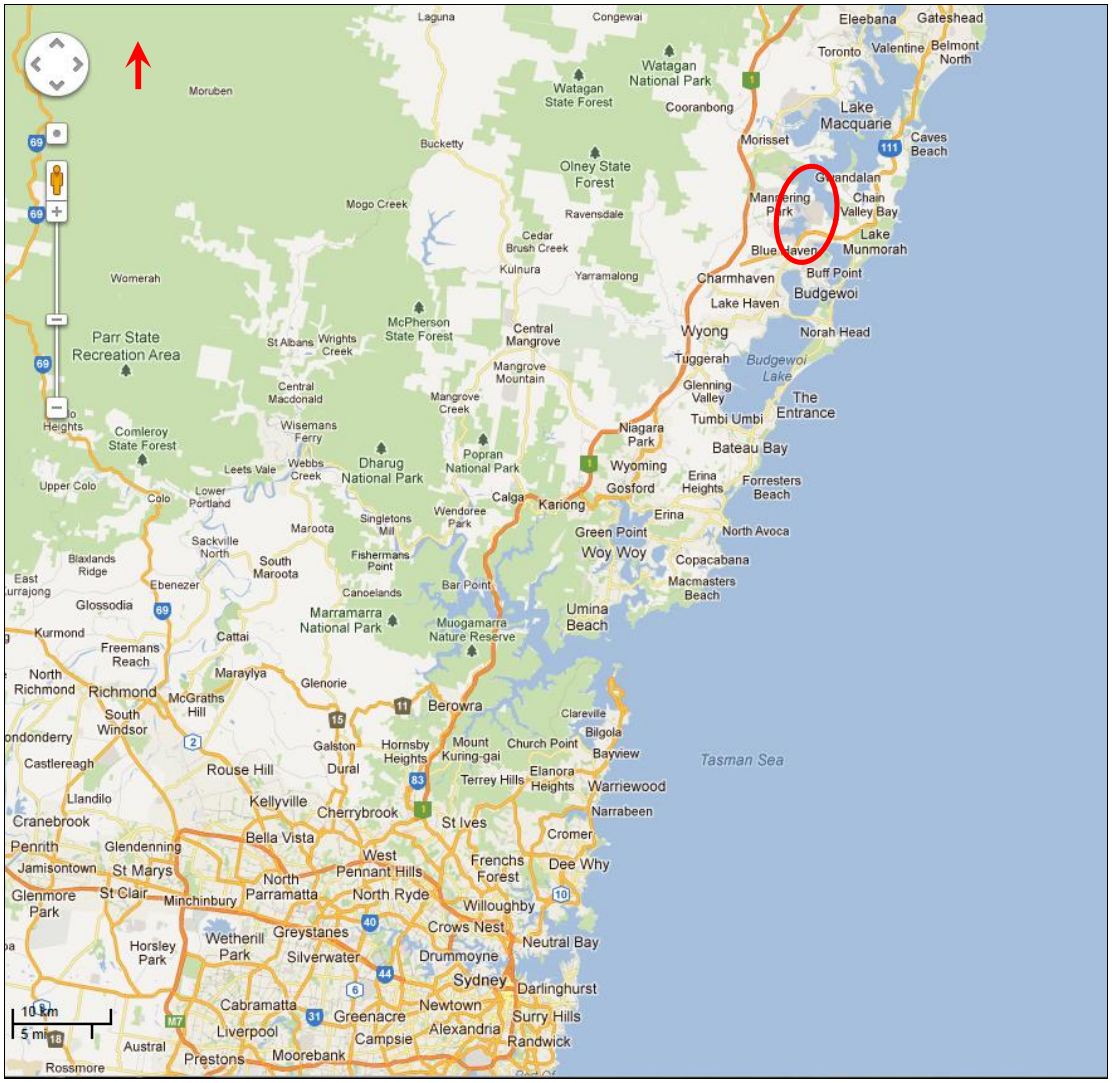

Figure 1: Map shows the location of Mannering Park and Wyee within the Central Coast region, as indicated by the red circle.

Source: Google Maps.

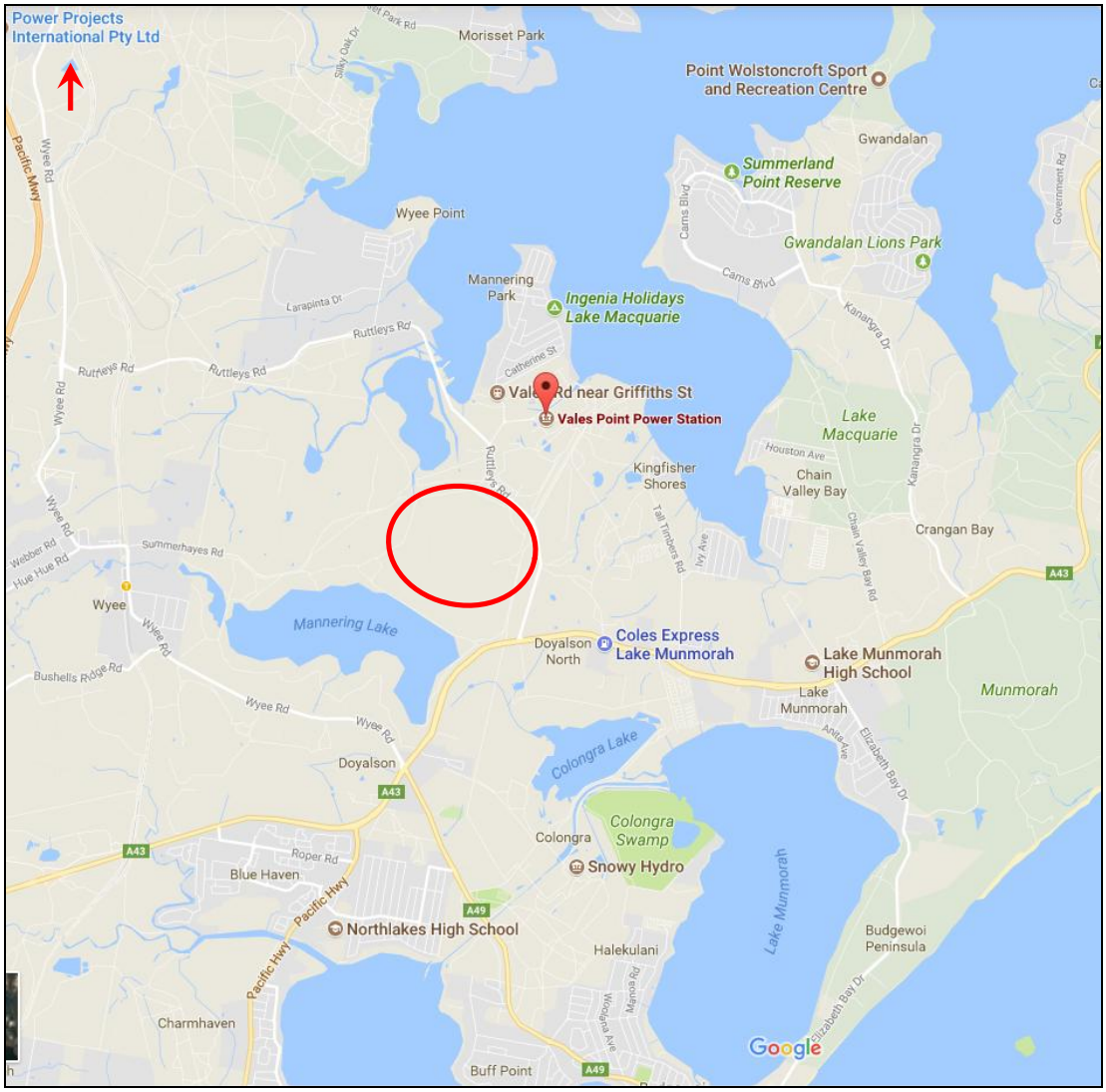

Figure 2: Map shows the approximate location of the assessment site within the red circle

Source: Google maps

1. Introduction

This Report has been prepared as part of an Aboriginal Cultural Heritage Assessment by Darkinjung Local Aboriginal Land Council (DLALC) for Jacobs on behalf of Sunset Power International Pty Ltd, trading as Delta Electricity.

The assessment was undertaken over one day on 27th July 2017.

The aim of the Aboriginal Cultural Heritage Assessment was to inspect an area within a property owned by Delta Electricity, known as the Vales Point Ash Dam which includes part of the following lots, Lot 22 DP 755242, Lot 102 DP 1170291, Lot 1 DP1195160 , Lot 7077 DP 1056107, Lot 29 A DP755242 , Lot 1 DP 1166358, Lot 4 DP 911564, Lot 7497 DP 1165634, Lot 150 DP 755266, Lot 1 DP 28898, Lot 7 DP 915257, Lot 102 DP 1196330 and Lot 12 DP 1091396 for the purpose of the proposed Vales Point Solar Project development

The inspection was to identify any Aboriginal Cultural Heritage, places, or objects, of significance to the Aboriginal community, and for the site's developer to meet the statutory obligations and requirements under the *National Parks and Wildlife Act* (1974) and the *Environmental Protection Act* (1979).

2. Description of the Assessment Area and Development Proposal

The assessment area is situated within the boundaries of the Darkinjung Local Aboriginal Land Council (DLALC). DLALC is located on the Central Coast of New South Wales, its boundaries stretch from Catherine Hill Bay to the Watagan Mountains in the North, Hawkesbury River to the South and Pacific Ocean to the east while the western boundary stretches along Judge Dowling Range from Bucketty to Spencer (Darkinjung Local Aboriginal Land Council).

The assessment site is situated within the suburbs of Mannering Park and Wyee on the NSW Central Coast. Mannering Park and Wyee are bordered by the suburbs of Lake Munmorah and Doyalson within the Central Coast Council and Lake Macquarie Local Government Areas. The area consists principally of industrial and conservation lands.

The project area is located approximately 16 km north-east of Wyong, 2 km south of Lake Macquarie, 3 km north-west of Lake Munmorah and the Tuggerah Lakes System.

The proposed development includes Vales Point Solar Project for the production of electricity. The Vales Point Solar Project is proposed to be situated within the footprint of the rehabilitated area within the Vales Point Ash Dam. The planned development is proposed to cover an area of approximately 100 hectares and situated within the northern area of the ash dam

3. Description of Impact

The development will have a negative impact on existing soil and vegetation of the assessment site and cultural landscape of the area.

Development will have a destructive impact to the rehabilitated area of the former ash dam while the construction and infrastructure associated with the project will require clearing of any existing vegetation and excavation of soil.

The proposed development has the potential to cause negative impacts to any potential Aboriginal sites located within the undisturbed areas of the project site and the neighbouring area.

The proposed development may impact the area through removing and exposing soil and leaf litter and exposing or destroying any potential Aboriginal Cultural Heritage sites or items within the previously undisturbed area of the proposed project. When cleared soil is exposure to the elements (wind and rain), soil erosion can occur in areas that have been recently cleared (Hodgetts. 2017:8).

Potential erosion may also expose Aboriginal Cultural Heritage sites and / or material. Other negative impacts to consider include, vibration from heavy machinery or explosions, potential run-off and silt entering creeks and drainage lines that may have Aboriginal sites and the labour required to access the site, treadage, transportation of materials and tools and damage from machinery used on and to access the site. Other impacts associated with this type of project and disturbance to soil may include alteration to the water and drainage patterns in the area (Hodgetts. 2017:8).

These impacts could occur during the various phases of a project, while after completion impacts are also a threat and can be a result of altered runoff and natural water movement and have the potential to destroy or adversely alter sites if the area is not adequately protected (Hodgetts. 2017:8).

4. Qualifications, Relevant Experience and Community Endorsement

I have completed Certificate ll in Conservation & Land Management and I hold an advanced firefighting certificate through Rural Fire Service. I have worked with Koori Country Fire Stick Aboriginal Corporation conducting cultural burns for both conservation and the protection of Aboriginal cultural heritage sites.

I have gained experience in Aboriginal cultural heritage identification and protection as part of life long cultural practice and through my employment with Darkinjung LALC which includes liaison and collaborating with both Aboriginal and non-Aboriginal representative from such organisation as, NSW Forest Corporation, NSW National Parks and Wildlife Service, NSW Office of Environment and Heritage and professionals such as Archaeologist and Aboriginal elders especially those who are experts in Aboriginal customary law and heritage.

5. Statutory Requirements and Legislation

Aboriginal heritage and places are protected by law under Legislation. Two basic pieces of legislation concerned with Aboriginal Heritage Management are the National Parks and Wildlife Act 1974 (NPW Act) and The Environmental Planning and Assessment Act 1979 (EP&A Act) (Hodgetts. 2017:11).

Section 84 of the National Parks and Wildlife Act (1974) provides protection for 'Aboriginal Places'. The act defines Aboriginal places as 'areas of cultural significance to the Aboriginal Community'. Section 90 of this Act gives protection for all 'Aboriginal Relics'. The act defines Aboriginal relics as 'any material evidence of the Aboriginal occupation of New South Wales'. The Minister will gazette areas as Aboriginal places if satisfied that adequate evidence exists to show that the area was or is of special importance to the Aboriginal community (Hodgetts. 2017:11).

The National Parks and Wildlife Act 1974 (NPW Act) Legislation does not structure any formal mechanisms to make sure that areas with potential to contain Aboriginal sites or places of special significance are evaluated before impact on those areas. It is the Environmental Planning and Assessment Act (EP&A Act) which carries out this function (Hodgetts. 2017:11).

The Environmental Planning and Assessment Acts principal function is to consider 'environmental impacts' in land use and decision making. Environmental impacts include impacts on Aboriginal Heritage. There are three main sections in the EP&A Act which are applicable to Aboriginal Heritage. Part lll, administrate the preparation of planning instruments; Part lV relates to development evaluation process for local government (consent) authorities; and Part V which communicate to activity approvals by Government (determining) authorities (Hodgetts. 2017:11).

Part III of the Act governs the preparation of the following three planning instruments: 1. State Environmental Planning Policies (SEPPs); 2. Regional Environmental Plans (REPs); 3. Local Environmental Plans (LEPs). These planning instruments dictate allowable uses and potential constraints on land use. When preparing planning instruments the Department of Urban Affairs and Planning have guidelines which should be followed. These guidelines list Aboriginal sites and places of significance to the Aboriginal community as values which should be assessed (Hodgetts. 2017:11).

Part IV of the legislation governs the decision making process by local government authorities during a development application. Section 90 of the Act lists impacts which must be considered before development approval is granted. Under section 90 (1) 9b consideration must be given for 'the impact of that development on the environment (whether or not the subject of an environmental impact statement)'. Section 90 (1) 9b includes Aboriginal sites and heritage (Hodgetts. 2017:11).

Part V of the legislation governs the decision making process by State Government authorities for activities conducted by that agency or under authority from the agency are controlled by Part V of the EP&A Act. It is mandatory for these agencies to consider environmental impacts of proposed activities then, determine whether the level of impact is adequate to necessitate the planning of an Environmental Impact Statement (EIS). Environmental impacts include Aboriginal sites and places. The Department of Planning New South Wales has created a set of guidelines for explaining Section 112 which requires that Aboriginal Heritage is assessed as part of the process (Byrne 1997: 2-3 cited in Hodgetts. 2017:12)

There are a number of amendments to the NPW Act 1974. The amendments include a number of guidelines. These guidelines can be viewed on the NSW Office of Environment and Heritage (OEH) website.

The process of due diligence under the OEH guidelines require that a proponent of a development assess impacts of the proposed activity.

Below is a brief explanation of the process from the OEH web site:

The purpose of due diligence is to identify whether Aboriginal objects are present in an area, and to determine whether a proposed activity will have impacts on Aboriginal objects. Therefore it is essential to identify and understand all the expected impacts of the proposed activity.

There are two categories of activity used for assessing impacts:

(1) Activities involving no additional surface disturbance.
(2) Activities causing additional surface disturbance.

For activities causing additional surface disturbance, it is necessary to determine whether an activity is proposed for:

a) a developed area or a previously disturbed area, or
b) an undisturbed area.

For activities in previously developed or disturbed areas, it is then necessary to determine whether the new activity will create significant additional surface disturbance. If it will, then the process for undisturbed areas will apply'.

Due diligence involves taking reasonable and practicable measures to determine whether your actions will harm an Aboriginal object and if so avoiding that harm (Office of Environment and Heritage formally NSW Department of Conservation Climate Change and Water cited in Hodgetts. 2017:12)

Note: Any works that may disturb, damage, or destroy Aboriginal Cultural Heritage requires an Aboriginal Heritage Impact Permit (AHIP) from OEH, this includes impacts to both registered and unknown Aboriginal sites that may require excavation or disturbance to the soil of any kind. Prosecution may result if works are carried without a relevant permit (Hodgetts. 2017:12).

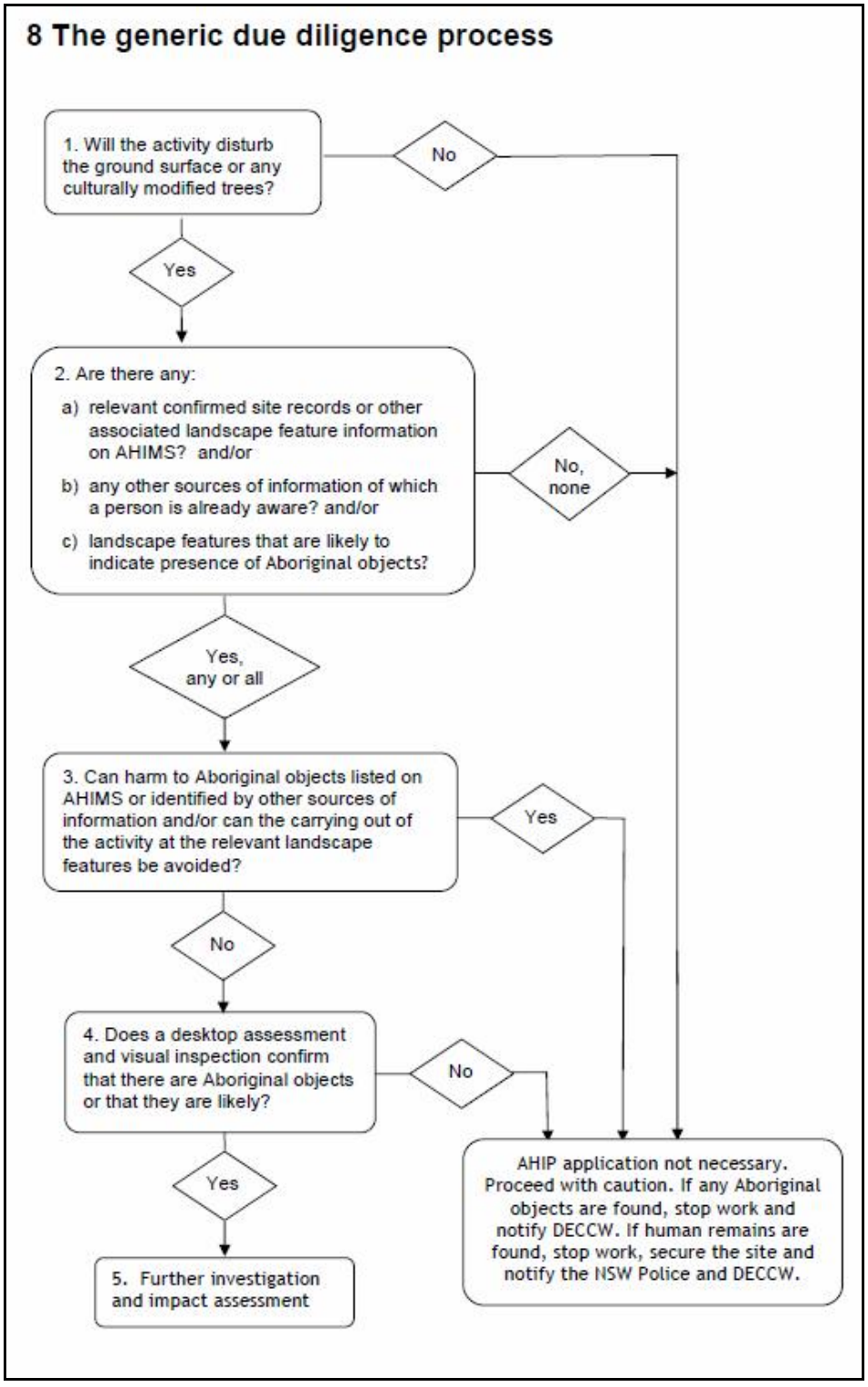

Figure 3. Shows a diagram of the generic due diligence process from the Office of Environment and Heritage's *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.*

Source: Office of Environment and Heritage.

6. Aboriginal Cultural Heritage, Values and Significance

Aboriginal people have inhabited Australia for at least 65,000 years. Recent evidence comes from Madjedbebe rock shelter (previously called Malakunanja ll) in Kakadu National Park, Northern Territory (Clarkson et al 2017cited in Hodgetts 2017:14).

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 (Morwood 2002:12). In the Sydney region some early occupation dates come from a rock shelter near the Nepean River of around 14,000 years BP (Attenbrow 2002: 153). 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 practises in the present and as a result these should be maintained and conserved (Hodgetts 2017:14).

- The first inhabitants of the Central Coast region were members of the Darkinyung (Darginung, Darginyung), language group. Several researches and publications show clan, tribal or language group boundaries within similar areas, but exact boundaries are unlikely. The area was likely a fluid zone between clans or language groups which was shared and utilised by neighbouring groups. Aboriginal dreaming stories, law and obligations extends into neighbouring clan groups and right across Australia. The traditional lands of the Darkinyung extend west, past Bucketty which is the western boundary of Darkinjung LALC and to the area around Wollombi and Yengo (Hodgetts 2017:14).

Stone artefacts in the Upper Mangrove Creek area of the Central Coast have been dated between 10,000 to 12,000 years old (Attenbrow 2002: 153). These provide some reliable evidence of Aboriginal people's occupation of the region (Hodgetts 2017:14). Upper Mangrove Creek is situated approximately 70 km to the north-west of Mannering Park and Wyee.

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 (Brisbane Water National Park Plan of Management 1992:19). As a result of colonisation and settlement many Aboriginal people die 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 (Hodgetts 2017:14).

Evidence for Aboriginal habitation, includes middens, which consist of shell, bone, charcoal, tools and sometimes burials. 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 grinding stones, axe grinding grooves, scared and carved trees, wells and water holes, quarry sites, camp sites, stone artefact scatters, earth mound, walking trails along trading routes, mythological and ceremonial sites (Hodgetts 2017:14-15).

For many of the Aboriginal groups in NSW including the Darkinyung, Baiame is one of the main Creators in the dreaming (en.wikipedia.org/wiki/Baiame) while Daramulan is the son of Baiame. Ceremonial sites with engraved or pigment art of Anthropomorphic like figures which represent Baiame or Daramulan are considered to have very high culture heritage significance (Hodgetts 2017:15).

The landscape surrounding an Aboriginal place, the landforms and features within the landscape, song lines and tracks are related to ancestor beings and are connected to other sites or places of significants, these places and the associated stories connect these sites with other sites across Darkinjung country and should not be viewed in isolation of each other (Hodgetts 2017:15).

These places and environments including the hills, valleys, creeks, wetlands, lakes and coastline provided food, medicines, and raw material for tools, weapons, shelter and decoration. 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 (Hodgetts 2017:14).

The proposed development site lies in an area with a high Aboriginal Cultural Heritage value. These environments and ecological zones provided the local Aboriginal population with many food and other natural resources (Hodgetts 2017:16).

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. These Aboriginal materials, places and landscapes have value and significance to the local Aboriginal community and need to be protected (Hodgetts 2017:15-16).

7. The Site

The assessment site is situated with a rehabilitated area on the north and western side of Vales Point Ash Dam. The Ash Dam is situated within part of Lot 22 DP 755242, Lot 102 DP 1170291, Lot 1 DP1195160, Lot 7077 DP 1056107, Lot 29 A DP755242, Lot 1 DP 1166358, Lot 4 DP 911564, Lot 7497 DP 1165634, Lot 150 DP 755266, Lot 1 DP 28898, Lot 7 DP 915257, Lot 102 DP 1196330 and Lot 12 DP 1091396 and is located approximately km of the

The Vales Point Ash Dam is located on the northern side of Mannering Lake and south of Mannering Bay. The site can be accessed from Rutleys Road. The proposed development covers an area of approximately1.106 km² and is zoned SP2 Infrastructure and is situated within the rehabilitated area of the Vales Point Ash Dam

Most of the assessment site has low ground visibility as a result of grass cover. The dirt track provided better ground surface visibility.

The assessment site is situated within the coastal hinterland, surrounded by various hills, ranges, valleys, creeks, wet lands, lakes and coast line. As shown previously these types of environments and the resources they provided to local Aboriginal people were very important (Hodgetts. 2017:18).

The assessment site and surrounding area are the location of a number of recorded Aboriginal sites and lies within an area which is rich in Aboriginal Cultural Heritage.

The Darkinjung LALC Asset Governor Management System incorporating the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management Systems (AHIMS) Register has identified a number of these registered Aboriginal sites within the area.

According to the AHIMS Register there are approximately two (2) recorded Aboriginal sites within approximately 2 km radius of the assessment site. (Hodgetts. 2017:18-19)

Site Name	AHIMS Number	Site Type/Contents
The Hole	45-7-0207	Ochre Quarry
Wyee Bay Rutleys Road	45-3-1553	Shell

Table 1: Shows details of Registered Aboriginal sites within approximately 2 km radius from the assessment site. *****indicated sites within the property.

Source: DLALC Assets Governor and OEH AHIMS Database.

The assessment site has a low cultural heritage potential as a result of the ash dam and infrastructure associated with Vales Point Power station. Any remaining undisturbed areas may have higher cultural heritage potential which could be concealed by vegetation or covered by leaf litter, sand and silt. This includes any places where there has been minimal disturbance, particularly to the subsoil or areas with intact vegetation.

Figure 4: Map shows the location of the assessment site within the red shaded area.

Source: Six Maps

7.1 Site Topography and Vegetation

The landscape and vegetation in the area of Mannering Park and Wyee is largely influenced by terrestrial and nearby aquatic environments and associated ecosystems, which include section of bushland, lakes, wetlands and creeks including Lake Munmorah, Lake Macquarie and Chain Valley Bay.

Vegetation communities within the area consist mainly of woodland. This predominantly includes the vegetation community of Coastal Plains Scribbly Gum Woodland. This community includes species such as Scribbly Gum (*Eucalyptus haemastoma*), Red Bloodwood (*Corymbia gummifera*) and She oak (*Allocasuarina littoralis*) with an understory of shrubs and ground cover. In wetter or low lying areas the dominate species are Paper barks *(Melaleuca spp)* and Tea-trees *(Leptospermun spp).*

The assessment site is located on a rehabilitated section of a man made ash dam and associated with the Vales Point Power Station. The area has undergone major previous disturbance through clearing of vegetation, excavation and construction of the ash dam. As a result the existing vegetation consist mainly regrowth, grass and shrubs (Hodgetts 2017:22-23).

7.2 Aboriginal use of Vegetation and Landscape

Many of the native plant, faunal and aquatic species found within the area are considered a valuable food and material resource for the local Aboriginal inhabitants.

Examples of those resource plants found in the area consist of; Cabbage Tree Palm (*Livistona australis*), the growing tip was eaten either uncooked or roasted, Mat Rush (*Lomandra longifolia*) which can be used as string or for food (Stewart & Percival 1997:33-35). Bracken (*Pteridium esculentum*), the rhizomes are used for food, but are toxic if not treated by roasting or baking. The young fronds are also roasted and eaten, while the sap of the crushed leaf is used to relieve ant or nettle stings (Stewart & Percival 1997:44). Many of the Paper barks (Melaleuca spp), Tea-trees (Leptospermun spp), Bottlebrush (Callistemon spp) and Wattle (Acacia spp) provide food, medicinal and other resources through the nectar from flowers, leaves and bark (Robinson 1991:55). Lilypilly (Acmena and Syzygium spp) provided eatable fruit (Robinson 1991:369-371) while the bark of Geebung's (Persoonia species) has medicinal qualities and the fruit can be eaten. The plant can be used for sore eyes and to strengthen fishing lines (Stewart & Percival 1997:42). Native Rock Lily (Dendrobium speciosum) has starchy stems that are roasted before eating. The stems could also be chewed and applied to injuries such as burns or wounds (Stewart & Percival 1997:16). The roots of Native Yams (Dioscorea transversa) can be eaten raw (Stewart & Percival 1997:19). The Saw-sedge (Gahnia aspera) has seeds that are ground to make flour (Stewart & Percival 1997:33). The Cabbage Tree Palm (Livistona australis) has growing tips that are edible raw or roasted. The leaves are also used as thatch for shelters and weaving baskets, while the bark fibres are used for making fishing lines (Stewart & Percival 1997:34 cited in Hodgetts 2017:23).

Flowering plant also provide Aboriginal people with seasonal indicators, when to move to a new area to obtain a particular food source or when certain marine of faunal species may be available, for example when Sydney Golden Wattle (Acacia longifolia) comes into flower it indicate to fish for Mullet (Stewart & Percival 1997:8

cited in Hodgetts 2017:23). Many of the Gum Trees (Eucalyptus, Angophora, Corymbia spp) provide resources from various parts of the plant. These include string, tools, weapons, shelter, canoes, food, and medicinal and spiritual uses (Hodgetts 2017:23).

The assessment site is close to lakes and the coast, areas abundant in various marine and estuary resources including fish, shell fish, marine birds and animals. Middens provide evidence of these resources utilised by Aboriginal people. Middens where once abundant along the NSW coastline, but since colonization many have been destroyed by erosion, urban development and were ustilised as a resource earlier this century, for such things as lime burning or for building mortar (Hodgetts 2017:23).

Middens contain the remains of meals consumed by Aboriginal people, their tools and also Aboriginal burials. Some of the marine species consumed on the Central Coast include, Turban shell (*Turbo torquata* and *Turbo undulata*), Sydney Rock Oysters (*Saccostrea glomerata*, formerly known as *Saccostrea commercialis*), Sydney Cockle (*Anadara trapezia*), Pipi (*Plebiodonax d' toides*), Sydney Whelk (*Pyrazus ebeninus*), *Nerita* sp and Limets (*Cellana* sp) (Hodgetts 2017:23).

The examples above show that the assessment site, including the surrounding area has the potential to provide Aboriginal people with abundant, reliable food and material resources that are within close proximity. Therefore, the assessment site is considered to have potential for Aboriginal Cultural Heritage sites or artefacts which may be concealed by deposits of soil, sand, vegetation and leaf litter (Hodgetts. 2017:23).

8. Assessment Methodology

Prior to any Aboriginal site survey, assessment or monitoring carried out in the field, a desk top analysis of the area is carried out. This involves consulting the relevant topographical, council and survey maps, and the DLALC Asset Governor incorporating, OEH Aboriginal Heritage Information Management System (AHIMS) Data.

It should be noted in regards to the AHIMS database, many Aboriginal sites listed often are not situated within the location as shown on maps referring to the AHIMS information. Therefore it can be difficult to relocate the precise position of many registered Aboriginal sites due to some of the following reasons:

- Registered sites were recorded before the introduction of GPS units.
- In the past many registered Aboriginal sites were recorded on a topographical map with a scale of 1:25000. The co-ordinates were acquired by cross references to easting and northing figures located along the side of the map. The site was then marked as a point on the map and as a result of this, the co-ordinates could be up to 1 millimetre off, on the map, which then results in the sites location recorded as an error of up to 250 metres on the ground.
- Sites were frequently recorded in different datum, for example: Some site were recorded in AGD which has now changed to GDA 94, therefore the site could be out by as much as 200 metres on the ground.
- Human error, locations of Aboriginal sites may have been incorrectly recorded.
- Inability to visually relocate sites due to thick bush, vegetation, leaf litter, silt and other debris, and hazardous or inaccessible topography.

Having considered the above points, it should also be noted that sites recorded more recently are often situated in the correct location given.

The main strategy used to assess the area was to first consult the relevant maps and DLALC Asset Governor incorporating AHIMS database and information as shown above, then secondly to visually inspect the area and soil surface (Hodgetts. 2017:25).

9. Assessment Fieldwork

The inspection of the assessment site for Aboriginal Cultural Heritage sites and places was conducted on the 24 July 2017.

Involved in the assessment of the site representing Darkinjung Local Aboriginal Land Council was Anthony Freeman, Project Officer Culture and Heritage, Ky Knight Darkinjung LALC school based trainee, Tracey Howie from Guringai Tribal Link Aboriginal Corporation and Andy Roberts, Archaeologist from Jacobs.

The inspection of the proposed development site was required so that any Aboriginal Cultural Heritage material or sites located within the property could be assessed, protected and properly managed.

According to AHIMS there are no registered Aboriginal sites located within the property.

All GPS location reading is taken in Easting and Northing (WGS 84).

Day One.
Weather conditions: showers

Access to the assessment site is gained from the entry to the property along Rutleys Road and consists of one (1) transect.

Transect one
The transect starts in the north-east of the assessment site from Rutleys Road and proceeds in a westerly direction to inspect the western and south-west sections of the assessment site. From the south-western section the transect turns towards the north and north-east to inspect the area within the east of the assessment site. From the eastern side of the assessment site the transect proceeds in a northerly direction and over Rutleys Road to inspect an area on the north-eastern side of the assessment site where various types of infrastructure, such as water pipes and conveyer belts extend either side of Rutleys Road

Most of the ground surface visibility was obscured by thick grass, except on dirt tracks and drainage-lines.

10. Photographs

(Photograph A. Freeman)

Figure 5: The photograph shows the view to the south-west of the assessment site. The photograph is taken facing south-west.

(Photograph A. Freeman)

Figure 6: The photograph shows the view to the south-west, within the western section of the assessment site.

(Photograph A. Freeman)

Figure 7: The photograph shows the view of the man-made drainage line situated with in the eastern area of the assessment site.

(Photograph A. Freeman)

Figure 8: The photograph shows the conveyer belt and part of an electricity easement situated on the northern side of Rutleys Road within the northern section of the assessment site.

11. Fieldwork Results

No Registered Aboriginal sites where located within the assessment site.

12. Discussion and Recommendations

The assessment site is located within the northern portion of Vales Point Ash Dam /transmission line. Where Delta Electricity proposed to construct the Vales Point Solar Project within the rehabilitated section of the ash dam site.

The assessment site has undergone major previous disturbance due to the construction of the ash dam and infrastructure associated with the Vales Point Power Station. Vegetation consist of is mainly grass and regrowth and as a result had low ground surface visibility, except in disturbed areas such as tracks and soil exposures.

According to AHIMS there are no registered Aboriginal Cultural Heritage sites recorded within the assessment site while there are approximately two (2) recorded Aboriginal sites located within approximately 2 km radius of the assessment site.

Aboriginal sites in the area surrounding the assessment site are interlinked, they are places where Aboriginal law was taught and where people lived and camped. The stories and sacred places are part of our land based faith and belief systems. These teaching stories and sacred places and are associated with our law and responsibilities to each other and the land (Hodgetts 2017:50-51).

Bearing in mind this information there is a possibility for further objects or sites of Aboriginal Cultural Heritage within any remaining undisturbed areas of the assessment site, these may include items such as stone artefacts and rock platforms that could lie beneath leaf litter, vegetation and the top soil surface of the assessment site.

Therefore considering the information above the following is recommended for the proposed development;

Any addition or future developments proposed within will require an additional Aboriginal cultural heritage site assessment.

Darkinjung LALC's preferred practice in relation to any undisturbed areas of a site is for the site developers, employees or contractor to give Darkinjung LALC 30 days' notice prior to commencement of any construction work to engage a Darkinjung LALC Sites Officer to monitor any vegetation clearing, earthworks or excavations on the assessment site until such time as is satisfied that there is very little or no possibility of any further Aboriginal Cultural Heritage. This is due to the possibility of uncovering Aboriginal objects / items of significance whilst works takes place.

If Aboriginal sites are later identified, they must be recorded and registered with OEH AHIMS and included in the Cultural Heritage Plan of Management.

The sites developers, employees or contractor must give Darkinjung LALC 30 day's prior notice to commencement of clearing,

The site developers, employee's, contractors and personnel should receive basic training in the recognition of Aboriginal Cultural Heritage sites and material and have an awareness of the importance of such material and places to both the Aboriginal and non-indigenous community. When any soil excavation, vegetation clearing and leaf litter removal activities are carried out workers associated with the project should be observant and keep a look out for surface shell, bone, rocks or any other Aboriginal Cultural Heritage material.

If any Aboriginal Cultural Heritage sites or material are found including bone, work should cease immediately in that area and the Office of Environment and Heritage (OEH) and Darkinjung LALC be notified immediately. Work should only recommence when an appropriate and approved management strategy has been agreed to by OEH and Darkinjung LALC.

Finally the Registered Aboriginal Site information contained in this report is considered confidential and must be deleted from this report if it is to enter the public domain.

Overview of recommendations.

1. Any additional developments on site will require an additional Aboriginal cultural heritage assessment.

2. If Aboriginal sites are later identified, they must be recorded and registered with OEH AHIMS and included in the Cultural Heritage Plan of Management

3. The site developers, employees and /or contractor must give notice to Darkinjung LALC 30 days prior to any commencement of clearing, demolition, excavation or construction work.

4. The site developers, employees and /or contractor must engage a Darkinjung LALC Sites Officer to monitor clearing and earthworks or excavations on the undisturbed areas of the assessment site.

5. Monitoring will continue within undisturbed areas until such time as is satisfied that there is very little or no possibility of any Aboriginal Cultural Heritage items or material within the assessment site.

6. The site developers, employees, contractors and personnel of the developers must receive basic training in the recognition of Aboriginal Cultural Heritage material and sites.

7. When any soil excavation, earth works, vegetation clearing and leaf litter removal activities are conducted workers must be observant and keep a look out for, surface shell, bone, rocks or any other Aboriginal Cultural Heritage material.

8. If Aboriginal Cultural Heritage sites or material including bones are discovered, work should cease. The area must then be avoided and the Office of Environment and Heritage (OEH) and Darkinjung LALC should be notified immediately.

9. Any impacts, including excavations to an area, containing an Aboriginal Cultural Heritage site will require the application of an Aboriginal Heritage Impact Permit (AHIP) from the Office of Environment and Heritage (OEH) prior to any soil disturbance taking place.

10. Please Note. Under the *National Parks and Wildlife Act (1974)* it is an offence to harm (destroy, deface, or damage) or desecrate an Aboriginal object or Aboriginal place, or in relation to an object, move the object from the land on which is has been situated. Penalties range from $275,000 and 1 year imprisonment to $555,000 and 2 years imprisonment for an individual up to $1,100,000 for a Corporation.

11. Penalties for failure to notify OEH of the location of an Aboriginal object range from $11,000 to $22,000 including from $1,100 to $2,000 for each day the offence continues.

12. Registered Aboriginal Site information in this report is confidential and not to be made public or for public interest.

13. If Aboriginal site are discovered these must be recorded on AHIMS and included within the Aboriginal Cultural Heritage Plan of Management. s

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