

Project Number: 19112801



# LAKE MUNMORAH ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

**PUBLIC VERSION FINAL 24 / 08 / 2020**

**DARKINJUNG LOCAL ABORIGINAL LAND COUNCIL**

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# Executive Summary

This draft report is the **PUBLIC VERSION** and has omitted sensitive cultural information, if you believe you require the confidential version of this report please contact the sender.

Heritage Now Pty Ltd has been engaged by Darkinjung Local Aboriginal Land Council (the proponent) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) Report for a proposed residential housing development at Lake Munmorah. The Project Area is located at the intersection of Chain Valley Bay Road and the Pacific Highway and includes DP 1027231 Lot 642 and part of DP 1044282 Lot 100.

The Project is part of the Lake Munmorah residential development planning proposal and will comprise roadways surrounded by residential lots. The central portion of the Project Area will include a recreational space. The northwest corner is proposed as E2 land (environmental conservation) – not to be developed - near Karignan Creek.

Aboriginal Consultation has been undertaken for the project in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (BCD, formerly DECCW 2010b). As a result of the Aboriginal consultation process 10 Registered Aboriginal Parties were identified. Feedback from the Aboriginal consultation, thus far, has been incorporated into the assessment of significance and the development of heritage management and mitigation strategies for the Project.

The archaeological survey was undertaken on 20 March 2020 by Heritage Now Consultants Crystal Phillips and Tessa Boer-Mah along with the following RAP representatives Amanda Shields of Darkinjung Local Aboriginal Land Council, Tracey Howie representing Awabakal Traditional Owners Aboriginal Corporation and Frank Smith from Didge Ngunawal Clan. The Registered Aboriginal Parties were sent a copy of the draft report and the 5 representatives that responded agreed with the recommendations of the report, with one representative suggesting wording changes which have been incorporated into the report.

Two Aboriginal sites were identified during the archaeological survey which remain confidential for Aboriginal cultural reasons, they are contained within the E2 land. The sites both have high local archaeological significance and are highly significant to the Aboriginal community.

To prevent inadvertent impacts during construction, the boundary of the construction site is to be fenced to prevent access to the E2 land and run off from the construction site is to be directed away from the E2 land.

Construction drawings are to mark the E2 land as a no-go zone.

To protect the general area of the Aboriginal sites from higher visitation, a combination of soft landscaping (and hard landscaping if necessary) is to be used to create a barrier between the Aboriginal sites and the residential development. Soft landscaping may include planting prickly and impenetrable native vegetation along the boundary of the conservation area which discourages people from accessing the area. Hard landscaping may include selective fencing or other measures, but all hard landscaping is to be used selectively for the purposes of discouraging access between the residential area and the Aboriginal sites and is not to be used in the immediate vicinity of the

Aboriginal sites. A detailed landscape plan is to be prepared and implemented to provide a barrier between the residential (and any other publicly accessible areas) and the Aboriginal sites.

All project personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. They are also to be informed that the E2 land is a no-go zone. This may be done through an onsite induction or other suitable format.

**Recommendation 1**

The general area of the E2 land is to be marked as no-go zone on all plans that are to be made publicly available.

**Recommendation 2**

Construction drawings are to mark the E2 land as being a no-go zone.

**Recommendation 3**

During construction the boundary of the E2 land is to be fenced to prevent access to the E2 land and run off from the construction site is to be directed away from the E2 land.

**Recommendation 4**

A detailed landscape plan is to be prepared and implemented to provide a barrier between the Aboriginal sites and the residential area (and other publicly accessible areas).

**Recommendation 5**

All project personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. They are also to be informed that the E2 land is a no-go zone. This may be done through an onsite induction or other suitable format.

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# 1 Introduction

Heritage Now Pty Ltd has been engaged by Darkinjung Local Aboriginal Land Council (the proponent) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) Report for a proposed residential development at Lake Munmorah.

## 1.1 Project Area

The Project Area is approximately 19 kilometres northeast of the township of Wyong. It is in the Central Coast Local Government Area and within the Darkinjung Local Aboriginal Land Council boundaries. It includes DP 1027231 Lot 642 and part of DP 1044282 Lot 100. The Project Area extent is approximately 1 kilometre north-south and 700m east-west (Figure 1).

## 1.2 Project Proposal

The Project is part of the Lake Munmorah residential development planning proposal and will comprise roadways surrounded by residential lots. The central portion of the Project Area will include a recreational space. The northwest corner is to be retained as a E2 land (environmental conservation) and there will be green corridors between residential clusters (Figure 2).

## 1.3 Project Methodology

This ACHA report has been prepared in accordance with, but not limited to, the National Parks and Wildlife Act 1974, the National Parks and Wildlife Regulations 2009, the Environmental Planning and Assessment Act 1979, Wyong Local Environmental Plan 2013, and the State Environmental Planning Policies. The following guidelines and codes of practice have been used in preparing this ACHA report:

- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011).
- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (OEH, formerly DECCW 2010)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (OEH, formerly DECCW 2010).

In accordance with the guidelines this report has outlined the:

- Project Area and proposed activity (project proposal) (Section 1.2 and Section 6.1),
- the Aboriginal consultation process (Section 3 and Appendix 1),
- provided relevant background information (Section 4.1 and 4.2),
- undertaken an assessment of cultural heritage values (Section 5),
- undertaken an impact assessment, including consideration of avoidance and/or mitigating harm (Section 6), and
- provided recommendations (Section 6.3).



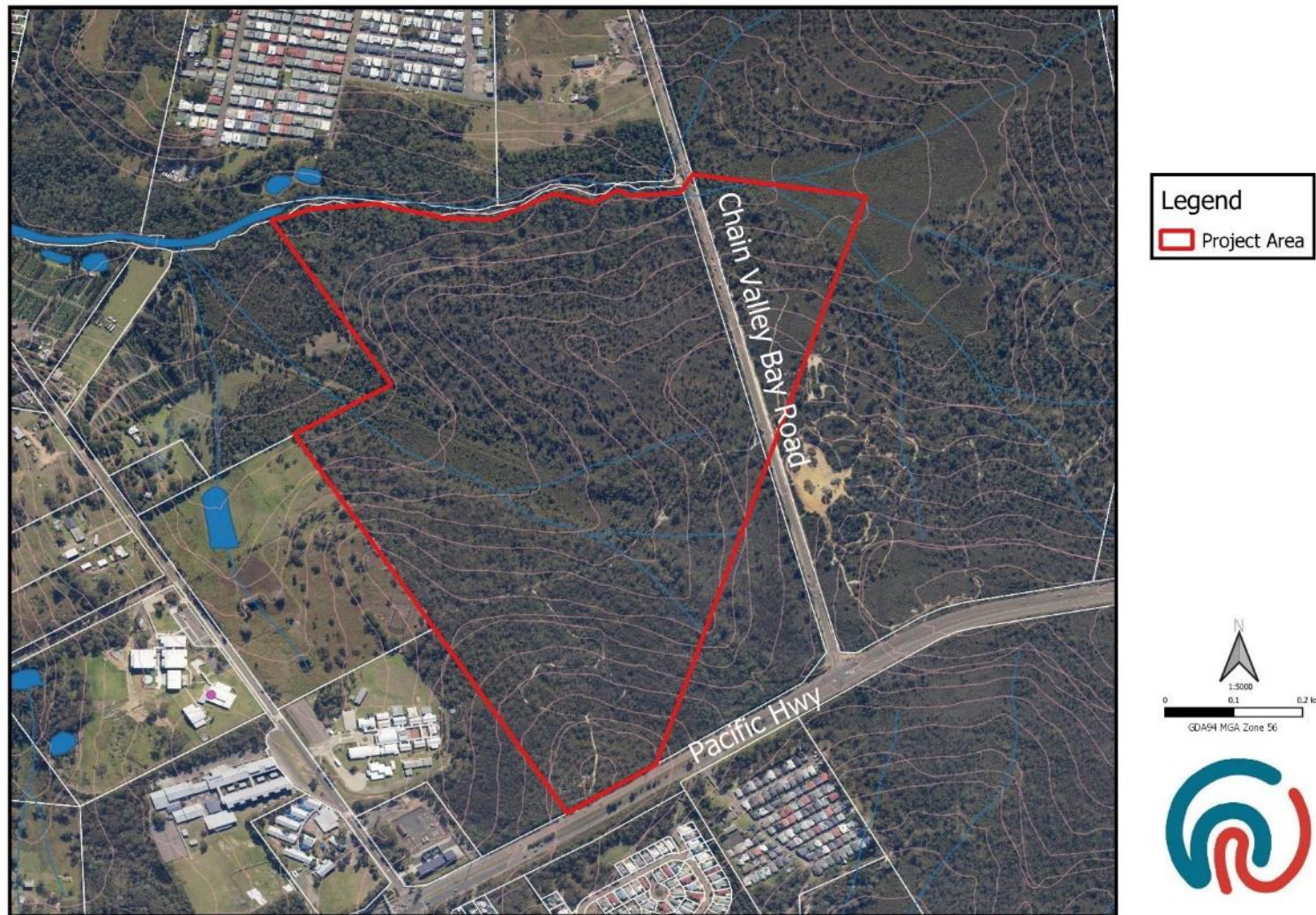


Figure 1: Project Area



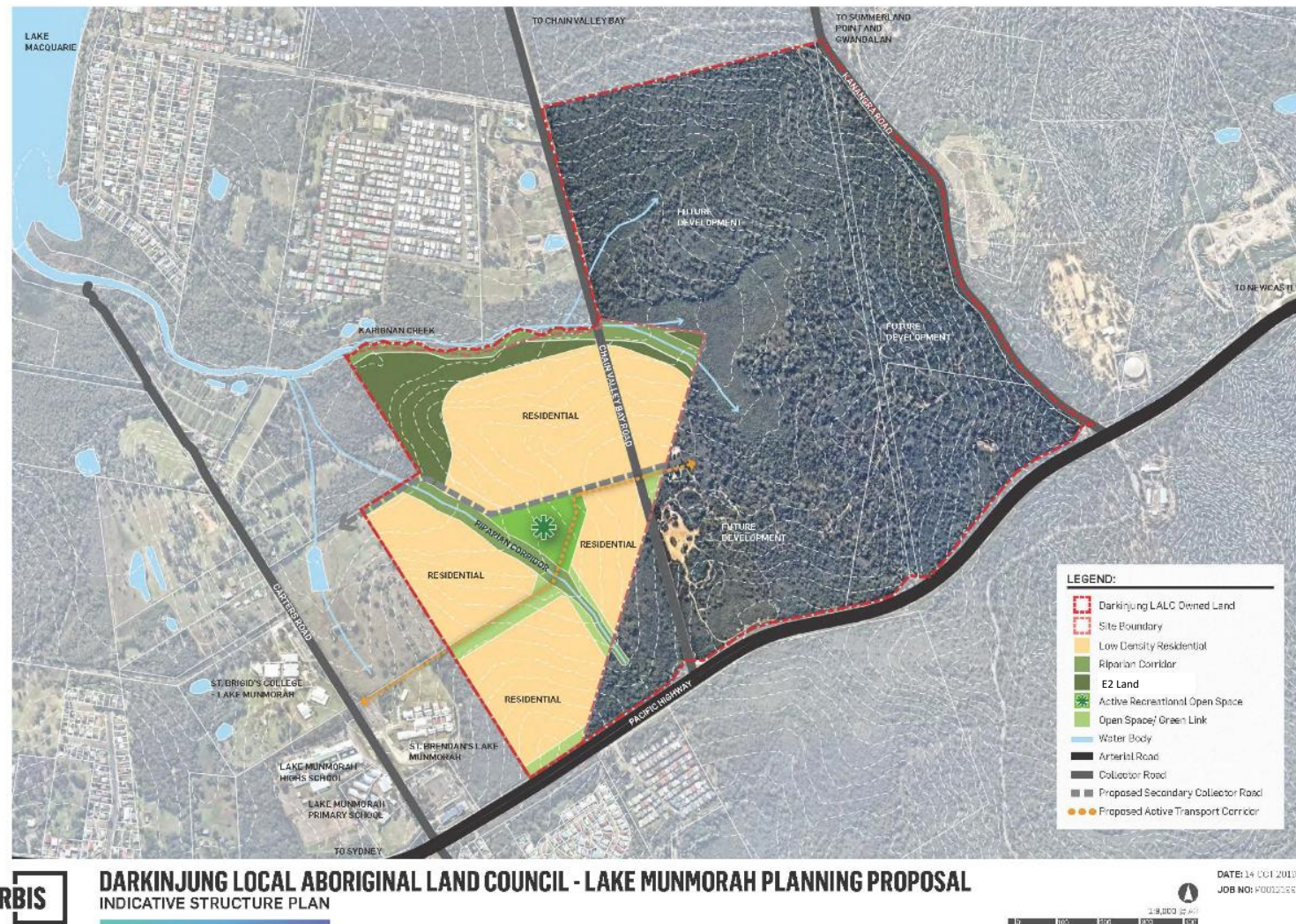


Figure 2: Lake Munmorah Planning Proposal

## 1.4 Authorship

This report was written by Crystal Phillips, Heritage Consultant at Heritage Now and Tessa Boer-Mah, Principal Heritage Consultant at Heritage Now.

## 1.5 Acronyms, Terms and Definitions

Acronym	Definition
ACHA	Aboriginal Cultural Heritage Assessment
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
DECCW	Department for Environment, Climate Change and Water
DP	Deposited Plan
EP&A	Environmental Planning and Assessment
ICOMOS	International Council of Monuments and Sites
LEP	Local Environmental Plan
NSW	New South Wales
OEH	Office of Environment and Heritage

## 2 Legislative Context

This section provides an outline of the Acts, Regulations and guidelines under which this assessment has been undertaken. It is for information purposes only and should not be taken as legal advice.

### 2.1 National Parks and Wildlife Act 1974

This Act contains the provisions for protecting Aboriginal objects in NSW. Aboriginal objects are protected regardless of whether they are in their original context (location) or not and it is an offence to harm an Aboriginal object regardless of whether you know it is an Aboriginal object or not. Protection under Section 86 of the Act is as follows:

- s86(1) A person must not harm or desecrate an object that the person knows is an Aboriginal object.
- s86(2) A person must not harm an Aboriginal object.
- s86(3) A person must not harm or desecrate an Aboriginal place.

The National Parks and Wildlife Act is regulated by the Biodiversity Conservation Division (BCD) of the Department of Planning, Industry and the Environment (DPIE). Penalties for harming Aboriginal objects or Places range from \$80,000-\$800,000 for individuals and \$330,000-\$1,650,000 for corporations and may also include imprisonment. Under Section 87 there are certain defences from prosecution, these include that harm was authorised under an Aboriginal Heritage Impact Permit (AHIP) and actions were in accordance with the AHIP, that due diligence was exercised in relation to Aboriginal object/s and/or the activity was classified as low impact.

Under Section 89A Aboriginal object/s must be reported to the BCD within a reasonable timeframe, unless it has previously been recorded and submitted to the Aboriginal Heritage Information Management System (AHIMS). Penalties for failure to report an Aboriginal object range from \$16,500 for individuals and \$33,000 for corporations.

### 2.2 National Parks and Wildlife Regulations 2009

This Regulation includes provides a framework for exercising due diligence and provides codes of practice in respect to Aboriginal objects (Section 80A) as well as defences for carrying out certain low impact activities (Section 80B). The Regulation also outlines requirements for Aboriginal consultation (Section 80C), particularly in relation to an Aboriginal Heritage Impact Permit. Under the Regulation the following codes of practice and guidelines are recognised, amongst others:

- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (BCD, formerly DECCW 2010a),
- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (Minerals Council),
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents*. (BCD, formerly DECCW 2010b),
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011), and
- *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW* (BCD, formerly DECCW 2010c).



## 2.3 Aboriginal Land Rights Act 1983

This Act provides land rights to Aboriginal people through the Local Aboriginal Land Councils. It outlines a process for claiming unused Crown Land in NSW and for creating land use. It also allows for agreements to permit traditional hunting, fishing and gathering.

## 2.4 Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment (EP&A) Act provides triggers for undertaking environmental and heritage assessments as part of the wider land use planning framework. This Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part 3 which governs the preparation of planning instruments, Part 4 which relates to development assessment proves for local government (consent) authorities and Part 5 which relates to activity approvals by governing (determining) authorities. Planning decisions within Local Government Areas (LGAs) are guided by Local Environmental Plans (LEPs). Each LGA is required to develop and maintain an LEP that includes Aboriginal and historical heritage items which are protected under the EP&A Act and the NPW Act.

The Project Area is located within the Central Coast LGA and falls under the Wyong LEP.

## 2.5 Wyong Local Environmental Plan (LEP) 2013

The Wyong LEP 2013 requires development consent to demolish, disturb, excavate or develop land on which an Aboriginal object is located or that is within an Aboriginal place of significance. Council must consider the effect of a proposal on an Aboriginal Place and any Aboriginal object located within an area of works. Council must inform the local Aboriginal community about the application where impacts to Aboriginal cultural heritage may occur. Protected heritage under the LEP is listed in Schedule 5.

There is one Aboriginal site listed in the Wyong LEP, but it is not within the Project Area.



## 3 Aboriginal Consultation

This section documents the Aboriginal Consultation that has been undertaken for the project in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (BCD-DPIE, formerly DECCW 2010b) and will be referred to as the 'Aboriginal Consultation Requirements'. The four stages of Aboriginal consultation were undertaken and additional documentation is available in Appendix 1.

### 3.1 Stage 1

In accordance with Stage 1 of the Aboriginal Consultation Requirements requests for information on knowledge holders were sent to the Hunter and Central Coast OEH office, the Darkinjung Local Aboriginal Land Council, the Registrar of Aboriginal Owners, Native Title Services, the Central Coast Council and the Greater Sydney office of Local Land Services. The National Native Title Tribunal only accepts searches of crown land. There is no crown land in the Project Area.

Based on information collected from government agencies, invitations for expressions of interest to become a Registered Aboriginal Party for the Project were sent to the knowledge holders.

A public notice was placed in the Wyong Chronicle local newspaper.

As a result of the expressions of interest invitations and the public notice 10 Aboriginal representatives nominated to become Registered Aboriginal Parties for the Project (Table 1).

*Table 1 Registered Aboriginal Parties*

Organisation/Individual	Representative Name/s
A1 Indigenous Services	Carolyn Hickey
Awabakal & Guringai Pty Ltd	Tracey Howie and Kerrie Brauer
Awabakal Traditional Owners Aboriginal Corporation	Kerrie Brauer
Darkinjung Local Aboriginal Land Council	Amanda Shields
Didge Ngunawal Clan	Paul Boyd and Lilly Carroll
Guringai Tribal Link	Tracey Howie
Walkaloo	Tracey Howie
Widescope Indigenous Group	Steven Hickey
Individual	Trudy Smith
Confidential Registration	Confidential

### 3.2 Stages 2 and 3

In accordance with Stages 2 and 3 details of the project and the assessment methodology was sent out to the RAPs and opportunities for feedback were provided (The RAP representatives that participated in the fieldwork were: Amanda Shields of Darkinjung Local Aboriginal Land Council, Tracey Howie representing Awabakal Traditional Owners Aboriginal Corporation and Frank Smith from Didge Ngunawal Clan.

Table 2). Opportunities for feedback were also provided during the fieldwork. The RAP representatives that participated in the fieldwork were: Amanda Shields of Darkinjung Local

Aboriginal Land Council, Tracey Howie representing Awabakal Traditional Owners Aboriginal Corporation and Frank Smith from Didge Ngunawal Clan.

*Table 2 Responses to Assessment Methodology by Registered Aboriginal Parties*

Organisation/Individual	Representative Name/s	Response summary (full response in Appendix 1)
A1 Indigenous Services	Carolyn Hickey	Agrees with methodology
Guringai Tribal Link	Tracey Howie	Agrees with methodology
Widescope Indigenous Group	Steven Hickey	Agrees with methodology

### 3.3 Stage 4

The draft report was sent to the Registered Aboriginal Parties and 28 days provided for comment. Five Registered Aboriginal Parties responded to the draft report, wording changes were made as requested.

Organisation/Individual	Representative Name/s	Response summary (full response in Appendix 1)
A1 Indigenous Services	Carolyn Hickey	Agrees with recommendations in report
Didge Ngunawal Clan	Paul Boyd	Agrees with recommendations in report
Widescope Indigenous Group	Steven Hickey	Agrees with recommendations in report
Individual	Trudy Smith	Concerned with some of the wording in the heritage assessment, this has been amended
Darkinjung Local Aboriginal Land Council	Amanda Shields	Darkinjung Local Aboriginal Land Council

### 3.4 Summary

As a result of the Aboriginal consultation process 10 Registered Aboriginal Parties were identified. Feedback from the Aboriginal consultation has been incorporated into the assessment of significance and the development of heritage management and mitigation strategies for the Project.

## 4 Archaeological Assessment

The archaeological assessment outlines the environmental and heritage context for the Project Area. It also reports on the archaeological survey.

### 4.1 Environmental Context

This section provides the environmental context for the assessment of past Aboriginal occupation in the Project Area.

#### 4.1.1 Geology and Soils

Majority of the Project Area is located on the Munmorah Conglomerate which consists of conglomerate, pebbly sandstone and grey to green shale (Geological Services of NSW, 2015). The northern east corner and entire border of the Project Area comprises gravel and sand (Geological Services of NSW, 2015).

The soil in the area is characterised by a high quantity of quartz, round and sub-rounded gravels. The soil profile consists of an A2 Horizon from 0-0.15 m of greyish brown fine loamy sand, a B Horizon from 0.15-0.5m of yellowish brown fine sandy clay loam, and a C Horizon from 0.5 m to 0.7 m of coarse sandy clay loam (colour of C Horizon not recorded) (NSW Soil and Information System, 1989).

#### 4.1.2 Topography and Hydrology

The Project Area is located on flood plain between 0 and 30 m AHD (Australian Height Datum). Three first order streams and a second order stream flow through the Project Area and into the Karignan Creek. The whole Project Area is part of the Lake Macquarie Catchment.

The area is noted to experience flooding during periods of heavy rainfall (Central Coast Council, 2018). Although the water would have provided a valuable resource, archaeological evidence of occupation could be disturbed from these periods of flooding.

#### 4.1.3 Flora and Fauna

This section is intended to give a general overview of the flora and fauna that may have been used by Aboriginal people in the past. The information has been supplied for understanding the past Aboriginal use of the landscape and is not intended for ecological assessment purposes.

The vegetation in the Project Area is classed as Sydney Coastal Dry Sclerophyll Forests based on Keith (2006). It is characterised by open eucalypt forests and woodlands 10-25 m tall with prominent and diverse sclerophyll shrub understorey and open groundcover of sclerophyll sedges. They occur on plateaux in the Sydney Basin in quartzose sandstone ridges, slopes and gullies with infertile sandy loams (Office of Environment and Heritage, n.d.).

Trees present include Sydney red gum and red bloodwood. Sydney peppermint is often present in the gullies, while brown stringybark, broad-leaved scribbly gum, narrow-leaved scribbly gum and silvertop ash are common on ridges. Old man banksia and Christmas bush may also grow into small trees. Shrubs include flax-leaved wattle, sunshine wattle, myrtle wattle, old man banksia, hairpin banksia, *Bossiaea heterophylla*, wallum heath, *Eriostemon australasius*, *Gompholobium grandiflorum*, grey spider-flower, pink spider flower, broad-leaved hakea, broad-leaved drumsticks, mountain devil, flaky-barked tea tree, prickly broom-heath, broad-leaved geebung, pine-leaved

geebung, heath phyllota, and grass tree. Forbes include devil's twine, bushy clubmoss and leafy purple-flag.

Some of these plants would have provided useful resources as raw materials for implements and weaving, such as the red gum and stringybark. The grass-tree (*Xanthorrhoea australis*) is of great value, as its flowering spike was used for spear making, its nectar as a sweet drink, its resin as an adhesive, and its dried stems as fire-sticks (Brayshaw, 1987). Banksias and Grevilleas (spider flowers) produce edible nectar. Devil's twine produces edible fruits. Wattle can be cooked and eaten or used as an adhesive. Other plants were sources of medicine, such as the geebung, which has antiseptic properties and Sydney Peppermint, which can be used to treat gastrointestinal issues.

Sydney Coastal Dry Sclerophyll Forests provide habitat for wallabies, potoroos, quolls, possums, and bats. These were important food sources to the local Aboriginal people. The hides of these animals were also used as a resource for clothes making. Possum skin and hair was one of the more frequently chosen sources of clothing (Australian Walkabout Wildlife Park, 2018). The nearby water sources would have also provided food resources. Local midden sites show that snapper, bream, leather jacket, rock cod and groper were commonly consumed (Australian Walkabout Wildlife Park, 2018).

#### 4.1.4 Land Use

Currently the Project Area is dominated by bushland, with some unformed dirt access tracks.

#### 4.1.5 Synthesis

The Project Area is an area rich in floral, faunal and water resources. It is likely that the Aboriginal people in the area utilised these resources. However, the lack of useful material for stone tools and the propensity of flooding in the area suggests low potential of dense artefact scatters or open campsites. It is likely that archaeological deposits have been disturbed by periodic flooding. Archaeological finds are more likely to occur on slightly elevated parcels of land that would have been less subject to flooding.



## 4.2 Heritage Context

A review of the archaeological, ethno-historical and post-contact history of an area provides contextual information for Aboriginal sites within the local and regional landscape. Previous archaeological research undertaken in the region as well as a review of environmental factors can inform predictive models for the locations of Aboriginal sites. Predictive models can be further refined by the consideration of the post-contact land use of the area which may identify potential sources of post-depositional disturbances that may have occurred.

### 4.2.1 Historic Records of Aboriginal Occupation

Aboriginal people have occupied Australia for at least 50,000 years. Historical records indicate that the traditional lands of the Darkinjung were the traditional owners of the Project Area, their lands are bounded by the Hawkesbury River floodplain to the south and the Hunter River floodplain to the north (Ford, 1939). The land surrounding Brisbane Water and its tributaries were of cultural significance to the Darkinjung for thousands of years. Aboriginal occupation in the area has been dated to 11,050 years before present which precedes the rise of sea levels around 6000 years before present (Attenbrow, 1979). However, due to the limitations in dating techniques, this figure may be even older.

### 4.2.2 Regional Archaeological Background

Archaeological investigations of the area indicate that Aboriginal people utilised a variety of the available environments in the Central Coast Region, including; estuaries, rocky shorelines, beaches and swamps. Known site types in the region include camp sites, middens, rock engravings, grinding grooves, shelters with art, archaeological deposits, water holes quarries, Dreaming sites and burials.

Shell middens are found in the tidal delta sands of coastal lagoons such as Lake Munmorah and Lake Macquarie. Middens in this area may contain both coastal and estuarine species. Many of the middens along estuaries that flow into Lake Macquarie, show highly selective shellfish exploitation, with small deposits and only a few species present (Bonhomme & Buzer, 1994, p. 34). While shellfish was an important food resource, shell was also a useful source for making fish hooks and could also be used to cut and scrape (Bonhomme & Buzer, 1994, p. 47).

Grinding grooves were important to stone tool maintenance and food preparation. Grinding grooves are commonly found in sandstone sheets associated with creeks and water holes. Water was needed to be able to sharpen stone tools on the sandstone.

Art sites often take the form of rock engravings in the Central Coast Region. These engravings were usually made on flat sandstone sheets and represented hundreds of spiritual figures including ancestral beings (sky heroes) and a wide range of animals and objects and normal-sized human beings. There is very little historical accounts of their use, as it appears they were mainly used for ceremonial activities and thus under Aboriginal custom their use was not openly discussed. The oldest of these art sites in the region has been dated to 4000 years old (Taçon, et al., 2007).

Shields were often made from the buttress of the giant nettle tree (*Dendrocnide excelsa*) or fig tree (figus spp). Usually about 1 m long and 0.5 m wide, with a handle on the inner side and soft paperbark padding. Bark was also removed to make vessels for food. Hardwood Eucalypt species were important for hunting sticks, throwing sticks, digging sticks, boomerangs and clubs. Although these types of artefacts are unlikely to survive due the nature of the organic material, the

modifications made to trees for their creation can survive as they often left a distinctive scar on the tree.

Red and yellow ochre quarry sites have also been found in the region. The ochre was ground and mixed with water and applied with fingers or twigs (Brayshaw, 1987, p. 92). It was used to create rock art, often in sandstone rockshelters. Ochre was also used for ceremonial purposes, as a body paint or to decorate shields and other weapons.

### 4.2.3 Aboriginal Heritage Information Management System (AHIMS)

The AHIMS database was searched on 10 Friday 2020. The search was based on the coordinates; latitude from -33.2149 to -33.1524 and longitude from 151.5412 to 151.6179 and returned a result of 19 Aboriginal sites. The AHIMS sites were plotted according to the latitude and longitude co-ordinates in the extensive search.

The majority of AHIMS sites are middens, accounting for approximately 47% of all sites. All of these sites occur along water ways including Lake Macquarie and several first, second, and third order streams that flow into the lake (Figure 3). AHIMS #45-7-0006 is a midden site located on Birdie Beach and is also an ochre quarry.

The second most common site type in the AHIMS search is surface artefacts accounting for 31.6% of sites. These occur both at creeks and at higher elevations up to a kilometre away from water sources

All 19 sites in the AHIMS search are valid sites.

*Table 3 AHIMS Site Summary*

Site types	Number	Percent
Midden	8	42.11%
Isolated Find	3	15.79%
Artefact/s	3	15.79%
Modified Tree	2	10.53%
Scarred Tree	2	10.53%
Midden, Ochre Quarry	1	5.26%
<b>Total</b>	<b>19</b>	<b>100.00%</b>

*Table 4 AHIMS Site Groups*

Site types (grouped)	Number	Percent
Middens	9	47.37%
Surface artefacts	6	31.58%
Modified trees	4	21.05%
<b>Total</b>	<b>19</b>	<b>100.00%</b>



Figure 3: AHIMS Sites



#### 4.2.4 Heritage Report Summaries

Heritage reports relevant to the Project Area have been summarised in this section to provide an understanding of the previous assessments that have been undertaken and the implications for Aboriginal site patterning.

##### **Dallas 1986 Archaeological Survey – Gwandalan to Mannering Park**

The route for a sewage pipeline between Gwandalan and Mannering Park approximately 3 km north of the project area was surveyed. The survey identified a midden (AHIMS #45-3-0334) on the south side of the mouth of Tiembula Creek. Subsurface exposure has been caused by vehicles, tree removal and the construction of a powerline. The midden is present as a sparse scatter of shell over an area approximately 60 x 40 metres on fine black soils as well as thin sections along the roadway (up to 7 centimetres thick). The only shell present is *Andara trapezia* (Sydney Cockle). It was assessed as being of little scientific value.

##### **Heritage Concepts 2006 Aboriginal Archaeological Assessment and Statement of Heritage Impact – Munmorah Power Station**

Two proposed routes for a pipeline were surveyed near the Lake Munmorah Power Station, approximately 6 km south west of the Project Area. The surveyed area was observed to be heavily modified and erosion was found on the majority of slopes. Though no surface artefacts or sites were identified, it was determined that this may be the result of poor visibility. Based on previous research of swamp margins, four PADs were identified (AHIMS #45-7-0249; #45-7-0250, #45-7-0251, #45-3-3335). The swamps were important resource areas and have a high potential to retain deposits. The slightly higher drier areas adjacent to the swamps could provide base camp areas, and therefore may also contain archaeological deposits. PADs were identified on both proposed routes, so test excavation was recommended.

##### **Abel Archaeology 2012 Aboriginal Heritage Impact Assessment 48-54 Carters Rd**

The area on Carters Road was investigated on behalf of the Catholic Diocese of Broken Bay for the development of a Catholic High School (St Brigid's High School), approximately 300 m west of the Project Area. Ground Surface Visibility on the survey was very low and no sites were found along either of the two transects. Other areas, closer towards the road had been disturbed for farming activity. It was suggested that there was some potential of intact archaeological deposits below the older farm buildings and that monitoring of ground disturbances should take place. The assessment reported no finds, however the AHIMS database has a surface artefact site recorded for St Brigid's High School (AHIMS #45-7-0344) by Sharon Hodgetts.

#### 4.2.5 Predictive Model

The most common Aboriginal sites are predicted to be midden sites. The majority of midden sites occur at elevations below 10 m AHD along the creek lines, beaches, and lake foreshore, however there are a few outliers occurring on the slightly elevated parcels of land in between the creeks. Species found include *Anadara trapezia* (Sydney Cockle), which are an estuarine species (Lamb & Owen, 2007). There is potential of finding midden sites within the Project Area, given its proximity to both Lake Macquarie and Lake Munmorah and the presence of first and second order streams.

The second most common site type predicted are surface artefacts. Isolated finds are generally found along low-lying creek lines. These could have potentially been washed down by flooding



recorded in the area. Other surface artefact sites occur at much higher elevations, including ridgelines 80 m AHD. There is potential of finding artefact scatters in the higher elevated land in the southern part of the Project Area.

Modified trees are also documented in the area along the lake foreshore. While they have only been documented in this area, this could be a result of Lake Macquarie having been more developed and researched. The Project Area is situated within bushland containing species such as stringy bark and red gum, which Aboriginal people have known to modify to create items such as canoes, coolamons and shields. Therefore, there is also potential of finding modified trees in the Project Area.

On the basis of environmental and heritage information available it is predicted that Aboriginal midden sites are the most likely to occur in the Project Area.

#### **4.2.6 Synthesis**

The most common Aboriginal archaeological sites are predicted to be midden sites. There are creeks within the Project Area, and middens may be present in association with these creeks. However, shell species from Lake Munmorah may also be present on the southern end of the site which contains similar land formations to other AHIMS sites.

## 4.3 Archaeological Survey

The survey was undertaken on 20 March 2020 by Heritage Now Consultants Crystal Phillips and Tessa Boer-Mah along with the following RAP representatives Amanda Shields of Darkinjung Local Aboriginal Land Council, Tracey Howie representing Awabakal Traditional Owners Aboriginal Corporation and Frank Smith from Didge Ngunawal Clan.

### 4.3.1 Survey Units

The survey was undertaken in two survey units.

#### Survey Unit 1

Survey Unit 1 encompasses the creek lines through the Project Area and the land south of these creek lines. The survey unit contained open eucalypt forest, with scribbly gums (Plate 1). Casuarina pines were also observed throughout the survey unit (Plate 2). Vegetation along the creek lines included thicker longer grasses and a higher number of paperbark trees (Plate 3).

A dirt track runs through the survey unit, with entries on both Chain Valley Bay Road and the Pacific Highway (Plate 4). Ground surface visibility was good along the track. Sections of the track have heavily eroded exposing parts of the C Horizon (Plate 5). Other parts of the track had exposures that confirm a large B Horizon (from 0.15 - 0.50 m) (Plate 6). Visibility off the track was poor with long thick grass cover throughout (Plate 7 and Plate 8).

The northern section of the survey unit along the creek line has been disturbed, with many large holes and depressions present. Other disturbances include vehicles, with evidence that several vehicles have been driven into the bush and burned out (Plate 9).

Overall ground surface exposure was 10 % and ground surface visibility was 10%.

No Aboriginal sites were identified.

#### Survey Unit 2

This unit encompasses the section of the Project Area north of the creek. It contained similar vegetation to Survey Unit 2 (Plate 10). There was good ground surface visibility along the track east of Chain Valley Bay Road (Plate 11), however, parts of the track have weathered all the way down to the B Horizon (Plate 12). Vegetation was thicker and contained a higher number of old growth trees in the north and north western part of the Survey Unit (Plate 13).

Overall ground surface exposure was 10% and ground surface visibility was 15%.

Two Aboriginal sites were identified in this this survey unit.

#### Survey Unit Summary

No sites were identified in Survey Unit 1, two Aboriginal sites were identified in Survey Unit 2, both survey units had similar levels of visibility and exposure (Table 5).

Table 5 Survey Coverage Summary

Survey Unit	Landform	Survey Unit Area	Visibility %	Exposure %	Effective coverage Area (m <sup>2</sup> )	Sample fraction	No. of sites identified
1	Flood plain	256362	10%	10%	2563.62	1%	0
2	Flood plain	292557	15%	10%	4388.355	2%	2

#### 4.3.2 Aboriginal Sites Identified

This section has been removed from the PUBLIC VERSION of this report.

#### 4.3.3 Subsurface Archaeological Potential

No areas of subsurface archaeological potential were identified in the Project Area.

#### **4.3.4 Aboriginal Consultation**

Tracey Howie from Awabakal Traditional Owners Corporation, Amanda Shields from Darkinjung Local Aboriginal Land Council and Frank Smith from Didge Ngunawal Clan attended the survey. Due to the cultural sensitivities around the Aboriginal sites it was agreed that their details would be excluded from the PUBLIC version of this report.

#### **4.3.5 Summary**

Two Aboriginal sites were identified during the archaeological survey and we located within the E2 land.



## 5 Significance Assessment and Aboriginal Cultural Values

Cultural heritage refers to the tangible and intangible values that we choose to pass on to future generations. In order to identify the values worth passing on, a significance assessment needs to be undertaken. The significance assessment needs to: identify the range of values present across the Project Area and assess their importance.

### 5.1 Methodology

Identifying the Aboriginal cultural values is part of the significance assessment process and is guided by the Burra Charter and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*.

There are four recognised classes of values under the Burra Charter (Australia ICOMOS, 2013):

- Social,
- Historical,
- Aesthetic, and
- Scientific

Within this significance assessment, Aboriginal cultural values are captured within social, historical and aesthetic values. The archaeological values are contained within scientific values.

Social value refers to the spiritual, traditional, historical or contemporary associations that Aboriginal people have for place. Historical value refers to the associations of a place with a historically important person, event, phase or activity in the Aboriginal community. Aesthetic value refers to the sensory, scenic, architectural and creative aspects of the place.

Archaeological values refer to the importance of the landscape, area, place or object because of its rarity, representativeness and the extent to which it may inform our understanding of Aboriginal culture.

#### 5.1.1 Aboriginal Cultural Values

Aboriginal cultural values are identified through the Aboriginal consultation process. Formal opportunities for the Aboriginal community to contribute to identifying cultural values are provided in the ACHA methodology review period, during fieldwork and during the draft report review period. In addition, RAPs are invited to provide feedback at any time through the consultation process, by phone or in writing (email or letter).

#### 5.1.2 Archaeological (Scientific) Values

Archaeological (scientific) values relate to whether the Project Area can contribute to our understanding of Aboriginal culture. Under the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, archaeological values are to be considered within the below sub-categories:

- Representativeness,
- Rarity,

- Research potential, and
- Educational potential.

## 5.2 Aboriginal Cultural Values of the Project Area

Amanda Shields and Tracey Howie indicated that the sites were highly culturally significant.

## 5.3 Aboriginal Archaeological Values of the Project Area

This section has been abbreviated in the PUBLIC version of this report.

The Aboriginal sites are of high local significance and of moderate to high regional significance.

## 6 Impact Assessment and Mitigation

This section assesses the potential impact of the proposed works in relation to Aboriginal heritage values in the Project Area and provides options for mitigating loss of Aboriginal cultural values.

### 6.1 Proposed Works

The proposed works are divided into: residential development, recreation area, open/space green link, riparian corridor and E2 land.

The proposed works for the residential development and recreational area will include land clearing and cut and fill. For the residential section of the development the installation of below and above ground services including water and sewer, telecommunications and electricity will be required, along with the formation of roads and access ways to the residential lots as well as the building of individual residences.

The riparian and E2 land will not be cleared or subject to cut and fill. The E2 land is intended to remain as a bushland habitat.

### 6.2 Impact Assessment

The Aboriginal sites are located within the proposed E2 land (Figure 2). As such they will not be directly impacted by the residential development. However, there is potential for inadvertent impact to the sites from construction as a result of plant movement and/or run off from the construction area.

At present the Aboriginal sites occupy an unused lot comprising of bushland, there is no nearby residential developments, with the closest being separated by Karinbnan Creek and the high school's boundary is also fenced preventing access to the area. The Aboriginal sites are relatively remote, it takes approximately 20-30 minutes to walk to the sites from the road through thick bush and thus the area is not often frequented.

The creation of the residential development will remove the relative remoteness of the location, the sites will be within approximately five minutes walk from the nearest road. The residential development will also bring substantially more people closer to the Aboriginal sites (at present there no residents or others who have regular access to the area).

These sites are also of high Aboriginal cultural value and sensitivity and thus their location and nature of the sites is not to be publicised.

There is potential for inadvertent impacts to these Aboriginal sites as a result of construction. Other more long-term impacts of the development will be to remove the remoteness of the location of the Aboriginal sites as well as bringing substantially more people closer to the Aboriginal sites.

## 6.3 Mitigation

To prevent inadvertent impacts during construction, the boundary of the construction site is to be fenced to prevent access to the E2 land and run off from the construction site is to be directed away from the E2 land.

Construction drawings are to mark the E2 land as a no-go zone.

To protect the general area around and the Aboriginal sites themselves from higher visitation, a combination of soft landscaping (and hard landscaping if necessary) is to be used to create a barrier between the Aboriginal sites and the residential development. Soft landscaping may include planting prickly and impenetrable native vegetation along the boundary of the conservation area which discourages people from accessing the area. Hard landscaping may include selective fencing or other measures, but all hard landscaping is to be used selectively for the purposes of discouraging access between the residential area and the Aboriginal sites and is not to be used in the immediate vicinity of the Aboriginal sites. A detailed landscape plan is to be prepared and implemented to provide a barrier between the residential (and any other publicly accessible areas) and the Aboriginal sites.

All project personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. They are also to be informed that the E2 land is a no-go zone. This may be done through an onsite induction or other suitable format.

## 6.4 Sustainable Development

Under the NSW *Protection of the Environmental Administration Act 1991* Ecologically sustainable development principles (ESD) are to be considered in the assessment of environmental impacts; and this includes impacts to heritage. The consideration of ESD principles is required under the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales 2010*. In particular, the precautionary principle and the principle of inter-generational equity are to be considered where there are proposed impacts to the environment (which includes heritage).

### 6.4.1 Precautionary Principle

The precautionary principle states that if there are threats of serious or irreversible damage to the environment, then a lack of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

Mitigation measures for the development have provided a framework to ensure the proposed works do not pose a threat of serious or irreversible damage to the environment and thus has an acceptable conservation outcome for the Aboriginal sites.

### 6.4.2 Inter-generational Equity

The principle of inter-generational equity states that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

The mitigation measures proposed will ensure that the Aboriginal sites are conserved in-situ and avoided and thus satisfies the principle of inter-generational equity.



## 7 Conclusions and Recommendations

Two Aboriginal sites were identified during the archaeological survey which remain confidential for Aboriginal cultural reasons, they are contained within the E2 land. The sites both have high local archaeological significance and are highly significant to the Aboriginal community.

To prevent inadvertent impacts during construction, the boundary of the construction site is to be fenced to prevent access to the E2 land and run off from the construction site is to be directed away from the E2 land.

Construction drawings are to mark the E2 land as a no-go zone.

To protect the general area of the Aboriginal sites from higher visitation, a combination of soft landscaping (and hard landscaping if necessary) is to be used to create a barrier between the Aboriginal sites and the residential development. Soft landscaping may include planting prickly and impenetrable native vegetation along the boundary of the conservation area which discourages people from accessing the area. Hard landscaping may include selective fencing or other measures, but all hard landscaping is to be used selectively for the purposes of discouraging access between the residential area and the Aboriginal sites and is not to be used in the immediate vicinity of the Aboriginal sites. A detailed landscape plan is to be prepared and implemented to provide a barrier between the residential (and any other publicly accessible areas) and the Aboriginal sites.

All project personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. They are also to be informed that the E2 land is a no-go zone. This may be done through an onsite induction or other suitable format.

### **Recommendation 1**

The general area of the E2 land is to be marked as no-go zone on all plans that are to be made publicly available.

### **Recommendation 2**

Construction drawings are to mark the E2 land as being a no-go zone.

### **Recommendation 3**

During construction the boundary of the E2 land is to be fenced to prevent access to the E2 land and run off from the construction site is to be directed away from the E2 land.

### **Recommendation 4**

A detailed landscape plan is to be prepared and implemented to provide a barrier between the Aboriginal sites and the residential area (and other publicly accessible areas).

### **Recommendation 5**

All project personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, this includes protection of Aboriginal sites and the reporting of any new Aboriginal, or suspected Aboriginal, heritage sites. They are also to be informed that the E2 land is a no-go zone. This may be done through an onsite induction or other suitable format.

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## Plates



*Plate 1: Open forest with scribbly gum in Survey Unit 1*



*Plate 2: Open forest with Casuarina pines in Survey Unit 1*





*Plate 3: Vegetation along a first order stream in Survey Unit 1*



*Plate 4: Track entry/exit point from Chain Valley Bay Road with high ground surface visibility*





*Plate 5: Exposure in track showing orange clay*



*Plate 6: Exposure in waterlogged part of track in Survey Unit 1, most of A Horizon has weathered away*





*Plate 7: Thick vegetation near second order stream*



*Plate 8: Poor ground surface visibility*





*Plate 9: Evidence of modern disturbances – a burnt vehicle*



*Plate 10: Vegetation in Survey Unit 2*





*Plate 11: High ground surface visibility along track east of Chain Valley Bay Road*



*Plate 12: Ground exposed to B horizon along track in Survey Unit 2*





*Plate 13: Dense gum trees in north section of Survey Unit 2*

## Appendix 1 Aboriginal Consultation

This section has been excluded from the PUBLIC version of this report.

## Appendix 2 AHIMS Search Results

This section has been excluded from the PUBLIC version of this report.