

Preliminary Aboriginal Cultural Heritage Assessment Lot 130 Boral Rd, Bulahdelah, NSW 2423



Report to
Perception Planning

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1.0 Introduction

1.1 Background

This preliminary report has been prepared at the request of Perception Planning to assess the possible impact of a proposed solar farm at Lot 130 Boral Rd, Bulahdelah, NSW 2423.

This report will demonstrate due diligence by:

1. identifying whether or not Aboriginal objects are, or are likely to be, present in the area;
2. determining whether or not the proposed activities are likely to harm Aboriginal objects (if present); and
3. determining whether an Aboriginal Heritage Impact Permit (AHIP) application is required.

1.2 Legislative Context

The *National Parks and Wildlife Act 1974*, administered by the NSW Departments of Planning and Environment, is the primary legislation protecting some aspects of Aboriginal cultural heritage in NSW. Section 86 of that Act deals with harming and desecrating Aboriginal Objects.

'*Aboriginal object* means 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.'

Under Section 86 of the NPW Act, it is an offence to 'harm' an Aboriginal object. 'Harm' means any act or omission that:

1. destroys, defaces, damages or desecrates the object
2. moves the object from the land on which it had been situated or
3. causes or permits the object to be harmed.

The NPW Act provides several defences to prosecution for an offence. Where a person either knows or does not know they are harming an Aboriginal object, a person has a defence under Section 87 where:

- the harm or desecration concerned was authorised by an Aboriginal heritage impact permit, and the conditions to which that Aboriginal heritage impact permit was subject were not contravened
- due diligence was undertaken, and it was reasonably determined that no Aboriginal object would be harmed
- was work on land that has been disturbed for maintenance of existing roads, fire and other trails and tracks, maintenance of existing utilities and other similar services
- the land is disturbed if it has been the subject of human activity that has changed its surface, being changes that remain clear and observable.

Harm does not include something that is trivial or negligible.

2.0 The Due Diligence Process

The regulations under the Act set out a generic *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* for initial assessment, as well as a *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* to assess the significance and extent of archaeological evidence (in order to apply for an AHIP), identified as a result of a Due Diligence Assessment.

In NSW to undertake any activity, due diligence must be undertaken with respect to that activity, to ensure it does not harm an Aboriginal object or Place.

Heritage NSW (Department of Premier and Cabinet) sets out a stepped process for assessing Aboriginal heritage within a land-use planning context and whether an activity is likely to cause harm to an Aboriginal Object or Place. The following is the process as outlined by Heritage NSW.

Check if the Integrated Development Application (IDA) process is appropriate for your proposal

Integrated Development is an efficient way for Heritage NSW and a local council to assess proposals at the same time.

An Integrated Development Application (IDA) relates to activities or works that require both development consent and one or more other approvals. So, if you lodge a Development Application (DA) with a local council for development that will harm known Aboriginal objects or an Aboriginal Place, that application will become an Integrated Development Application (IDA).

Will your activity cause harm?

If the proposed activity will harm an Aboriginal object or declared Place you will need to apply **and be granted** an Aboriginal Heritage Impact Permit before the activity can take place.

An Aboriginal Heritage Impact Permit (AHIP) is the legal instrument issued by Heritage NSW under Part 6 of the National Parks and Wildlife Act 1974. Section 90 relates specifically to AHIPs. You must apply **and be granted** an Aboriginal Heritage Impact Permit before the activity can take place. **An AHIP can be issued, transferred, varied, surrendered, revoked or suspended.**

Consultation with Aboriginal People

It is a fundamental right of Aboriginal people to determine the cultural significance of their heritage. It is a mandated requirement for AHIP applicants to consult with Aboriginal people who hold cultural knowledge that will help to determine the cultural significance of Aboriginal objects and/or places in a proposed project area. The Aboriginal community does not have a legal role in preliminary archaeological work. However, it is probably prudent that the Local Aboriginal Land Councils and/or Traditional owners are engaged from the outset. The Aboriginal Cultural Heritage

Consultation Requirements for Proponents outlines how to consult with Aboriginal people.

These requirements:

- Apply to all activities throughout NSW that have the potential to harm Aboriginal objects or places and that require an AHIP

Due Diligence

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (Due Diligence Code of Practice) can be used by individuals or organisations who intend to undertake activities that could harm Aboriginal objects.

Due diligence is not mandatory and is not required in all circumstances.

The Due Diligence Code of Practice provides guidance on a process you can follow to determine whether:

- Aboriginal objects are present in an area,
- Aboriginal objects will be harmed by an activity,
- further investigation is warranted,
- the activity requires an AHIP application.

If Aboriginal objects are present in the area of a proposed activity, an Aboriginal cultural heritage assessment of the area must be conducted.

Following the Due Diligence Code of Practice can provide a legal defence against prosecution for harming Aboriginal objects if, after following due diligence, it was determined Aboriginal objects were unlikely to be present.

Due diligence cannot be used in some circumstances, for example:

- in declared Aboriginal Places
- to support planning proposals and major projects.

In these instances, and if Aboriginal objects are present in the area of a proposed activity, an Aboriginal Cultural Heritage Assessment must be conducted.

Whilst the above requirements are noted, the council only requires a preliminary assessment at this stage.

Investigate and Assess

The investigation and assessment of Aboriginal cultural heritage is undertaken to:

- identify whether Aboriginal cultural values and objects are present
- assess the nature and extent of Aboriginal cultural values and objects.
- assess the harm a proposed activity may cause to Aboriginal objects and declared Aboriginal Places.

This process provides a way to clearly identify the harm that your activities will cause, and what is avoidable and what is not.

Aboriginal Cultural Heritage Assessment Report

The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW describes the process to follow and the requirements for Aboriginal cultural heritage assessment reports.

The report should include:

- the results of your investigation and assessment
- recommended actions to be taken before, during and after an activity to manage and protect any Aboriginal objects and declared Aboriginal Places that have been identified.
- supporting information for an AHIP application where the harm cannot be avoided.

The regulated code links to other planning processes under the EP&A Act and the applicable section in the code referring to the EP&A Act is as follows:

4.1 Development under Part 4 EP&A Act and activities under Part 5 EP&A Act

Consideration of the potential impacts of development on Aboriginal heritage is a key part of the environmental impact assessment process under the Environmental Planning and Assessment Act 1979 (EP&A Act). The standards in this code can be used or adapted by proponents to inform the initial assessment of the environmental impacts of an activity on Aboriginal heritage. An environmental impact assessment that meets all of the requirements of this code will satisfy the due diligence test. Alternatively, you could adapt the requirements of this code, provided it still meets the ordinary meaning of exercising due diligence (see section 7.7).

If it is found through this initial assessment process that Aboriginal objects will or are likely to be harmed, then further investigation and impact assessment will be required to prepare information about the types of objects and the nature of the harm. This is further explained in step 5 in section 8. If you are going to harm a known Aboriginal object, you will need to apply for an AHIP. In this situation, the need to obtain the AHIP is in addition to any approval under the EP&A Act (unless the project is subject to Part 3A EP&A Act).

Whilst Due Diligence is a legislated defence if one harms an Aboriginal object, an assessment under the generic Due Diligence code does not meet the requirements for assessment under the EP&A Act for planning proposals. A fuller assessment is required that assesses and considers Aboriginal cultural heritage values. However, such an archaeological and cultural heritage assessment is part of the legislated Due Diligence process.

Rather than only attempting to identify individual sites across the study area, the assessment also takes a landscaped approach to determining any potential Aboriginal archaeological evidence. This will require the identification of the range of landscape units likely to contain Aboriginal archaeological evidence. This will ensure that the landscape context is assessed for significance. The landscape approach and previous archaeological work in the area will determine a predictive model of the Aboriginal occupation of the study area.

2.1 Assessment Personnel

Principal Archaeologist Tim Roberts JP (Grad. Dip. Archaeology & Heritage Management, Grad. Dip. Management, BA [Business/ Geography], B Education) undertook the research, assessment and report. Tim gained valuable experience working at Myall Coast Archaeology under the mentorship of Len Roberts for three years. Following this, he took over the family business in 2022 and rebranded it as East Coast Heritage and Archaeology. Tim is trained in the latest human skeletal identification and recovery and stone tool identification techniques through Flinders University.

Tim has a wealth of experience across a broad range of industries. Having owned & managed a range of successful businesses, projects and developments, Tim has 15 years of management and leadership experience in both the private and public sectors, including local government, not-for-profit organisations and community groups. He has completed archaeological projects for various planning and surveying companies, Local Governments and large organisations. He has cultivated strong connections with Local Aboriginal Land Councils and Traditional Owners. Tim is well known for his negotiation and project management skills and has completed many Due Diligence assessments, archaeological and cultural heritage investigations and assessments. Tim is a member of the Karuah Aboriginal Land Council, and the business is a member of the NSW Indigenous Chamber of Commerce.

2.2 Aboriginal Community Consultation

As per the Due Diligence Code of Practice (2010), consultation with the Aboriginal community is not a formal requirement of the due diligence process. Nevertheless, proponents may consider undertaking such consultation as it could aid in informing their decision-making. In the case of Lot 130 Boral Rd Bulahdelah, the land can be classified as being disturbed, as it has been the subject of human activity that has changed the land's surface through farming, clearing and vegetation management. Due to this disturbed classification, the LALC was not contacted.

3. The Assessment

3.1 Description of Land and Activity

The property is located within Karuah Country and Mid Coast Shire Council. A site locality is shown in **Figure 1**, and an aerial image of the subject site is shown in **Figure 2 (Study Area)**. This site is situated approximately 2.5 km southwest of Bulahdelah. **Figure 2a** shows the proposed development plan.

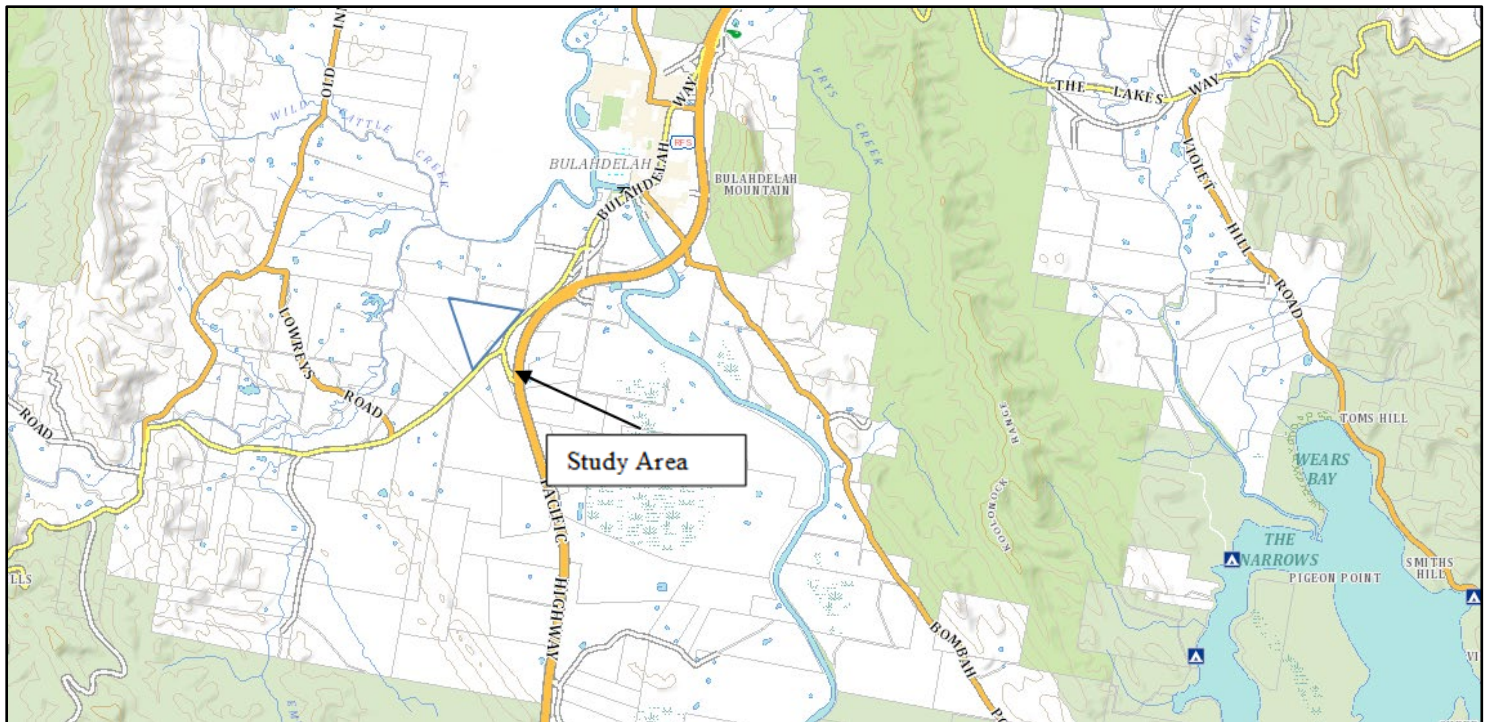


Figure 1: Image of site locality (Source: NearMap 2025)

3.2 Is the Land defined as “Disturbed Land” or an exempt or complying development?

The site can be described as being disturbed. **Figure 3** displays an aerial image from 1964, illustrating the property with scattered vegetation, most likely being cleared for farming purposes. **Figure 4** shows an aerial image from 1991 depicting an increase of vegetation throughout the property and **Figure 4a** is an image from 2009 showing the clearing of vegetation on western half of the property. Therefore, the subject property meets the definition of disturbed land under the *NPW Act* in that the changes are clear and observable.



Figure 3: 1964 Aerial image (Source: NSW Historical Image viewer, 2025)



Figure 4: 1989 Aerial image (Source: NSW Historical Image viewer, 2025)



Figure 4a: 2009 Aerial image (Source: Google Earth, 2025)

3.3 Is the activity exempt?

No

3.4 Will the activity involve harm that is trivial or negligible?

No

3.5 Is the activity in an Aboriginal Place or are you already aware of Aboriginal objects on the land?

No. According to AHIMS there are 0 Aboriginal objects on the land.

3.6 Is the activity a low-impact activity for which there is a defence in the regulation?

No

3.7 Will the activity disturb the ground surface?

Yes, the proposed development application will involve the construction of solar panels and associated infrastructure.

3.8 Does the Aboriginal Heritage Information Management System suggest potential?

There are no sites within 50m, but 5 sites within 1000m.

3.9 Is there archaeological potential because the proposal is:

- **within 200m of waters;**
No. The Crawford River is at least 500m to the west, and the Myall River is 1200m to the east
- **located within a sand dune;**
No
- **located on a ridge top, ridgeline, or headland;**
No
- **located within 200m below or above a cliff face;**
No
- **within 20m of or in a cave, rock shelter, or a cave mouth;**
No

3.10 Can harm be avoided to the object or disturbance of the landscape feature?

N/A

3.11 Is Desktop assessment and visual inspection required?

The land is disturbed and does not contain Aboriginal objects. A visual assessment is not required unless the desktop assessment indicates a high likelihood of subsurface evidence of Aboriginal occupation in sections 4.0 & 5.0.

3.12 Are Further investigations and impact assessment required?

No.

4.0 Desktop Assessment

4.1 Methodology

The analysis and assessment of the study area's archaeological potential and the impact of the proposal required the completion of the following;

- *Research*
This involved a review of primary and secondary sources including written material, maps, plans, the AHIMS database and other reports.
- *Predictive modelling;*
This involved an analysis of the research to produce a model of possible archaeological deposits within the study area. To conduct the analysis of the research material effectively and consistently the following aspects were examined:
 1. Aboriginal heritage values
 2. Archaeological record
 3. Previous Studies
 4. Landscape
 5. Soils
 6. Geological Features
 7. Past land use

4.2 Aboriginal Heritage Values

Aboriginal heritage is dynamic. It includes tangible and intangible expressions of culture that link generations of Aboriginal people over time. For Aboriginal people, relationships with country, people, beliefs, knowledge, law, language, symbols, ways of living, sea, land and objects all arise from their spiritual and cultural practices and associations (Ask First. Australian Heritage Commission 2002)

Aboriginal heritage includes landscapes and places that are important to Aboriginal people as part of their customary law, developing traditions, history and current practices. Aboriginal heritage landscapes, areas and places have associated heritage values which include spirituality, law, knowledge, practices, traditional resources or other beliefs and attachments. Aboriginal people have occupied the NSW landscape for at least 50,000 years. The evidence and important cultural meanings relating to this occupation are present throughout the landscape, as well as in documents and the memories, stories and associations of Aboriginal people. Therefore, any activity, which impacts the landscape, may impact Aboriginal heritage. Through investigating the social structures, location, environmental impact, and resource availability we gain a greater and comprehensive understanding of Aboriginal heritage values.

SOCIAL

The survival of prehistoric people stranded on islands has been studied by Jones who has concluded that “in hunter-gatherer conditions, the limiting viable population may be somewhere in the range of four hundred to six hundred depending on local circumstances and the vagaries of chance.”

This estimated minimum viable population of about five hundred was also the average size of a so-called tribe in Australia. The term tribe, which was adopted from 19th century Europe, has often been used to describe the organisation of Aboriginal society in Australia. Several anthropologists feel that ‘tribe’ does not accurately reflect the interaction and make-up of Aboriginal Australia, preferring the term ‘band’ to be the most appropriate term to describe the basic social and economic unit of Aboriginal society. It is described as a small-scale population, comprising between 2 to 6 extended family units, who together occupied and exploited a specific area.

The band was by no means a social or cultural isolation but, rather, interact with other bands in a variety of ways. Typically, these interactions involved visits, marriage, ceremonies and trade. As a result of these interactions, clusters of bands were formed; wherein there was a sense of collective identity, often expressed in terms of common and distinctive language.

LOCATION

In recent times the territories of Aboriginal tribes generally encompassed the drainage basin of one river and stretched from the shoreline up to the top of an escarpment, another River or a prominent landform feature. There is no way of knowing how far back in time this territorial organisation goes, but it may well be quite ancient.

The evidence suggests a comparatively small early population, spread thinly around the Continent and concentrated in the places where food was most abundant: the coast and large inland lakes and rivers. Thousands of Aboriginal middens have been found on the south-eastern coast of Australia. The least inhabited parts of mainland Australia were the snowy mountains and the desert centre of the Continent. According to Flood (p.219), “We now know that people were camping at least occasionally on the fringes of the snowy mountains, in the treeless country at 730 metres above sea level and in the region north of Uluru, at Puritjarra, around 30 thousand years ago.”

The bands developed into regional groupings or cultural areas of interacting Aboriginal societies possessing broadly similar languages, social organisation and customs, material culture and art styles, ways of life and environment. According to the work by Peterson (1986), there is a general correlation between culture areas and major drainage basins, which has been explained because a drainage basin is unified by its river system and bounded by its catchment. Water supply determines plant cover and therefore the availability of food and consequently, Aboriginal population density.

On the coast, according to Flood (p.219), “The most favoured campsite was a foredune close to a rock platform on the north side of a headland. Such a site, offered easy access to shellfish, a landing place for canoes, proximity to drinking water, shelter from prevailing winds, and soft sand for a bed.” Inland, the camps would have been near reliable watercourses and protected from prevailing winds. If hills were nearby, they may have had winter camps in rock shelters or caves. JW Fawcett (1898, p.152), stated of the Wonnaruah “In choosing their site [camp] proximity to freshwater was one essential, some food supplies a second, whilst a vantage ground in case of attack from an enemy was a third”. Pearson (1981) made similar observations of the Wiradjuri (Western Plains, NSW) for suitable campsite location: accessibility to water; level ground with good drainage; elevation above cold

air currents and lingering frost-prone valley systems often with good views of the river flats and watercourses; sheltered from cold winter winds and with adequate summer cooling breezes; and, adequate fuel supplies.

Aboriginal people were able to exploit and survive in a wide range of environments where European agriculture failed. They tended to congregate in bands of about 500 consisting of family groupings, generally limiting themselves to a river, lake or bay drainage basin, living off the abundant food supply that was easily available. Each family grouping would be about 8 miles (12-15km) apart (Bennett, 1926). They were not nomadic in the clinical sense; however, they did move from campsite to campsite on a rotational basis, mainly for reasons of hygiene (Bennett, 1926). Extensive use was made of fire as a hunting tool, modifying the Australian vegetation. There was regular contact with other bands for social and economic purposes. Many of the paths followed would be along watercourses or from one water source to another.

According to Horton (1994), the Band that would be of interest to this survey would be the family groupings of the Worimi or Gringai. They probably had various base camps along the Karuah River on high ground overlooking the River. The camps would have been near reliable watercourses. The main watercourses on the study area are intermittent, although there is an extensive area of wetlands. The Aboriginal people would not only have used the river as an abundant food source, but the wetlands, the ridgeline, and the hill would also have been used for communication and ceremonial or mythological purposes. The Worimi and Gringai had extensive relationships with one another as well as the Awabakal, Wonnarua and Biripi.

Irrespective of the clan relationship, the Aborigines around the Hunter River area were numerous and healthy, as they had an abundant food supply. The earliest inhabitants were hunters and gatherers living off the abundant wildlife. "The Aboriginal population was controlled by the food resources available, which in turn was related to water resources." (Flood 1995, p265)



Figure 5 Horton's Map of Aboriginal Territorial Organisation

ENVIRONMENTAL IMPACT

Several researchers have shown that the Australian Aboriginal has had a huge impact on the vegetation through the use of fire. There were many reasons for the extensive burning. It was used for signalling and also to make travel easier by clearing undergrowth along the corridor. Aboriginal tracks were open by regular firing in the early timbered ranges. Throughout the Continent, burning was used as an aid to hunting, animals could be speared as they broke to escape the flames.

Other uses of fire were for longer-term hunting strategies. After firing, the Bush would regenerate; new grass would spring up and attract kangaroos and other animals, on which the hunters could prey. Likewise, fire encouraged the regrowth of eucalyptus trees and edible plant roots. The ashes acted like manure, and sweet, new green shoots would spring up after the first hard rain following the burn.

The term 'fire-stick farming' has been applied to this aspect of hunting.

There is an assumption that before European settlement the land was heavily forested. However, according to early settler's accounts and the Aboriginal oral history, this was not so. Walsh, (p26), cites extracts from the accounts of early explorers,

"The extracts from letters, diaries and journals of early European settlers, explorers and government officials describe a parklike landscape of grasslands and grassed open forest lands with very few areas of thick forest. The cessation of regular burning following European settlement allowed the growth of a thick forest of young trees that, together with an increasing understorey, choked out the grasses."

These grasslands provided perfect pastures for sheep, but when Aborigines were no longer present to maintain them with a regular fire regime, sour grass and scrub took over, gradually obliterating the open land, with considerable loss to the non-fire stick farmers.

Such regular, light burning was the pattern all over Australia at the time of first European contact. The fires were of low intensity, which meant that they consumed the litter of leaves and branches on the forest floors but did not burn down the trees.

Aborigines never put out their fires. Campfires were left burning, as were signal fires, including those lit in a sequence to indicate the direction of travel of humans or game.

Gould (1980), "never encountered an occasion when a fire invaded an area that was already producing wild food crops". It seems that as well as increasing their future food supply; the Aboriginals also protected their present food resources. As Flood (1995) put it, "Fire is the most versatile and important tool of hunter-gatherers. It is used for warmth, light, cooking, hunting, signalling, track making, and, whether intentionally or not, had the effect of improving the food supplies of prehistoric Australia."

RESOURCES

The food resources available controlled the Aboriginal population, which in turn were related to water resources: the areas with the highest rainfall were generally the richest in food. The number of mouths that could be fed was regulated by the food available at the leanest time of year.

When food was difficult to obtain, the food quest simply required more time and effort rather than new strategies. Thus, when times were hard, people could simply move more often and further afield.

The typical Australian Band's economy is flexible with a wide variety of foods being sought and advantages being taken of seasonal abundance or chance events, such as the stranding of a whale. Aboriginal Australia was not vulnerable to famine through the failure of one crop.

The simplicity and self-sufficiency of Aboriginal society were observed by Captain Cook in 1770 and cited in Beaglehole (1955).

"From what I have said of the natives of New Holland they may appear to some to be the most wretched people on earth, but in reality, they are far happier than we Europeans. They live in a tranquillity which is not disturbed by the inequality of condition: the air and sea of their own accord furnish them with all things necessary for life, they covet not magnificent houses, household stuff etc., they lie in a warm and fine climate and enjoy a very wholesome air, so that they have very little need of clothing and this may seem to be fully sensible of, for many to whom we gave cloth etc. to, left it carelessly upon the sea beach and in the Woods as a thing they had no matter of use for. In short, they seemed to set no value upon anything we gave them, nor would they ever part with anything of their own for any one article we could offer them; this in my opinion argues that they think themselves provided with all the necessities of life and that they have no superfluities."

4.3 Archaeological Record

Five Objects are listed on the AHIMS database within the 1000m area. These five objects are classified as Open Sites (see glossary).

4.4 Previous Studies

Reviewing previous archaeological and cultural heritage assessments provides a context and baseline for what is known about Aboriginal cultural heritage within the Project Area. These studies contribute to assessing the archaeological potential and significance of the proposed development area. Reviewing previous archaeological assessments forms part of the basis for making predictive statements about the type of sites and the environmental contexts in which they might be found. Regionally and state-wide, several studies have been undertaken that have proven to be definitive works and a canon for understanding archaeological potential.

Navin Officer Heritage Consultants (2000)

A survey of the 1620-hectare study area proposed for the Pacific Highway upgrade near Bulahdelah, conducted in May 2000 by Navin Officer Heritage Consultants, sought to document Aboriginal cultural heritage sensitivity. The investigation—undertaken in consultation with the Karuah Local Aboriginal Land Council and local researchers—involved archival research, field surveys, and predictive modelling of archaeological site locations. Twelve Aboriginal archaeological sites were identified, all situated on well-drained, elevated ground consistent with the predictive model. More significant artefact sites appeared closer to major freshwater drainage lines, pending further subsurface testing.

Ford (1999) 20km South of subject site

An archaeological study was conducted for the Karuah to Bulahdelah Pacific Highway upgrade. That included test excavations. Ten trenches were dug on the eastern and western sides of Bundabah creek, near to the Pacific Highway crossing. Eleven stone artefacts were found in the trenches and further 29 were recorded along the track near the creek. The artefacts were mudstone or silcrete and were identified as flakes or flake pieces. The investigation confirmed Aboriginal peoples occupied or traversed the landscape in the past, and that ridgelines were the most likely landforms to find archaeological material.

Insight (2003) 30km S of Subject site

An archaeological assessment of a proposed chicken farm was conducted. The study area is located on the Branch Lane, to the east of the Karuah River and north of the Pacific Highway. Its topography comprises hill and ridge crests and slopes, plains, and drainage lines adjacent the Karuah River that feeds into Port Stephens to the south. One isolated stone artefact (a silcrete core fragment) was located in the area to be impacted by the development.

RPS Group (2010)

RPS, on behalf of Great Lakes Shire Council, conducted a cultural heritage assessment for land adjacent to Bulahdelah Golf Course. Bulahdelah (Alum) Mountain had previously been identified as a heritage item as an Aboriginal Place designation. During the survey, one Scar Tree was recorded within a riparian zone. Aboriginal stakeholders indicated no significant cultural heritage constraints for rezoning in the immediate study area; however, they noted that areas with cultural significance exist outside the proposed project area on the upper slopes of Alum Mountain.

Comment:

Past Aboriginal societies lived, hunted, survived, and died throughout the area, and these activities are evident in the local and regional archaeological records. Previous studies confirm the relationship between occupation and distance to water. Therefore, it is possible that the study area could contain Aboriginal objects. However, past land use has impacted the topsoil of the project area, and the likelihood of discovering *in situ* archaeological deposits is limited.

4.5 Landscape

The differing landscape creates different land uses. For instance, swampy or poorly drained land would not be conducive to campsites or burial grounds. Conversely, caves and rock shelters would give rise to artwork and practical purposes such as shelter or women's birthing areas.

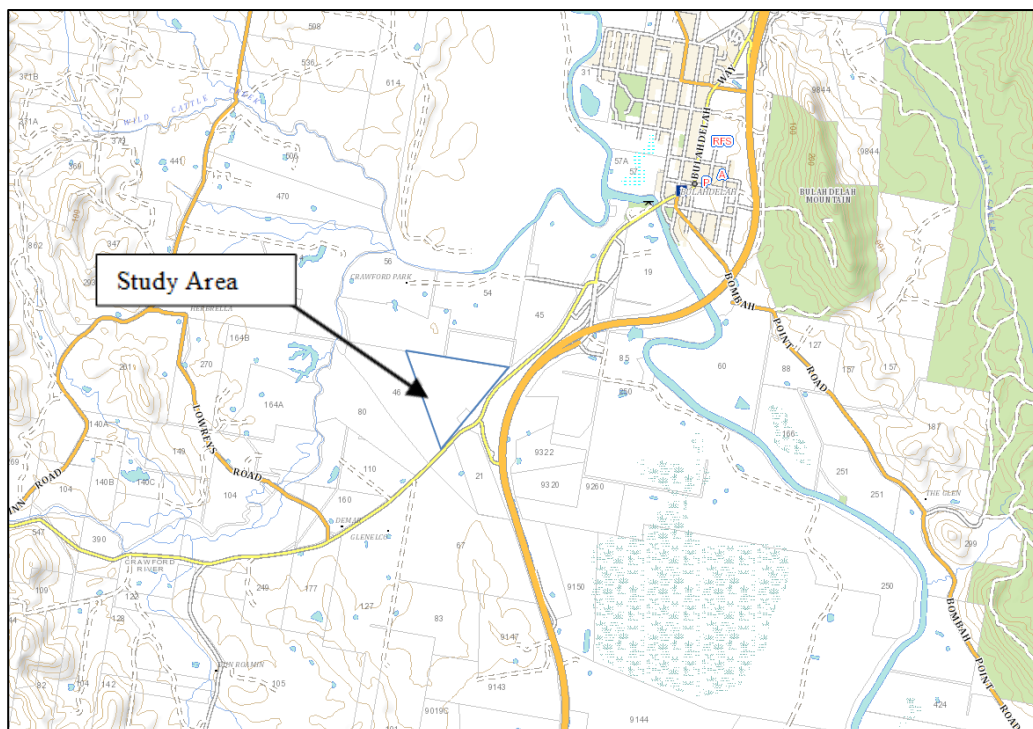
Early roads, stock routes, and river crossings during European settlement often followed Aboriginal Song Trails (walking trails), and natural features adjacent to such trails were significant for various reasons. Over the years, the main highways and roads have been realigned and adjusted, but initially, the roads between settlements, which were generally established around Aboriginal camping grounds, followed the Aboriginal trails.

Speight et. al formulates the landscape survey and classification followed in this report in the *Australian Soil and Land Survey, Field Handbook, Second Edition*. The characteristics of landforms are categorised into two groups. The first group consists of site-specific features that directly influence the landform and can be observed within a 10-meter radius from the soil profile. These features describe the landform element. The second group includes landscape features contextualising the landform element within its geomorphic setting. This is achieved by describing the surrounding landscape within a 300-meter radius, including the landform pattern and local relief. *40 defined landform patterns include floodplains, dune fields and hills. Landform Patterns are then subdivided into smaller areas known as Landform Elements. There are approximately 70 of these smaller landform elements, including cliffs, foot slopes and valley flats.*

Relative elevation classes have been standardised and used throughout Australia. The standard text is called the *Soil and Land Field Handbook* (McDonald et al, 1990, Ed 2, p36). The landscape is divided into the following classes:

Landform	Relative Elevation
Plains	0-9 m
Rises	9-30 m
Low hills	30-90 m
Hills	90-300 m
Mountains	>300 m

Landforms, as well as having morphological characteristics (surface dimensions), have been formed by processes. The formation processes can interact to produce an array of landforms. For example, plains can be separated into depositional plains of various kinds or erosional surfaces (peneplain). The formation process contributes to the concealing/revealing and the preserving/destroying archaeological evidence. The identification of landforms is paramount in predicting areas that have the potential to contain archaeological evidence.



Comment:

The study area's landform can be described as a plain with an elevation of approximately 0 metres above sea level. The subject area would have potentially been a food resource, especially being between 2 rivers. **Figure 6** illustrates the topography.

4.6 Soils

Where an archaeological survey is only a surface investigation, any information relating to subsurface information is important in that it indicates the possibility of:

- archaeological evidence beneath the surface,
- archaeological evidence being destroyed through erosion or other natural phenomena,
- archaeological evidence preserved through soil/sand deposition.

The main soil features of interest are the depth of deposits, soil composition stability, and the depositional age of the soil groups. Detailed analysis of the effects of different soils on the burial process of archaeological remains can only be carried out during an excavation.

The susceptibility of land to sheet and rill erosion is governed largely by the topsoil texture, slope of the land, length of slope and the probability of intense summer rainfalls. The topsoil or 'A' horizon is where most nutrients, organic matter, seeds and microporosity are desirable for a seedbed. If this is stripped away through soil loss, soil fertility and productivity are reduced. The first few centimetres of soil also generally contain artefacts.

Figure 7 details the soil profile, revealing that it is classified as a Kurosol. A marked texture contrast distinguishes kurosols between the surface horizons, typically sandy or loamy, and strongly acidic clay subsoils. Their subsoil pH is usually below 5.5, reflecting high levels of soil acidity that can limit root development and nutrient availability. Despite these challenges, the surface horizons often exhibit reasonable organic matter content, offering some capacity for nutrient retention and supporting vegetation. Kurosols are frequently found in higher-rainfall regions where leaching contributes to acidity, necessitating careful management practices such as lime application and strategic fertilisation. These soils can be productive under well-regulated cultivation but require specific techniques to address acidity and maintain structure, ensuring sustainable agricultural and environmental outcomes (Australian Soil Club, 2022).

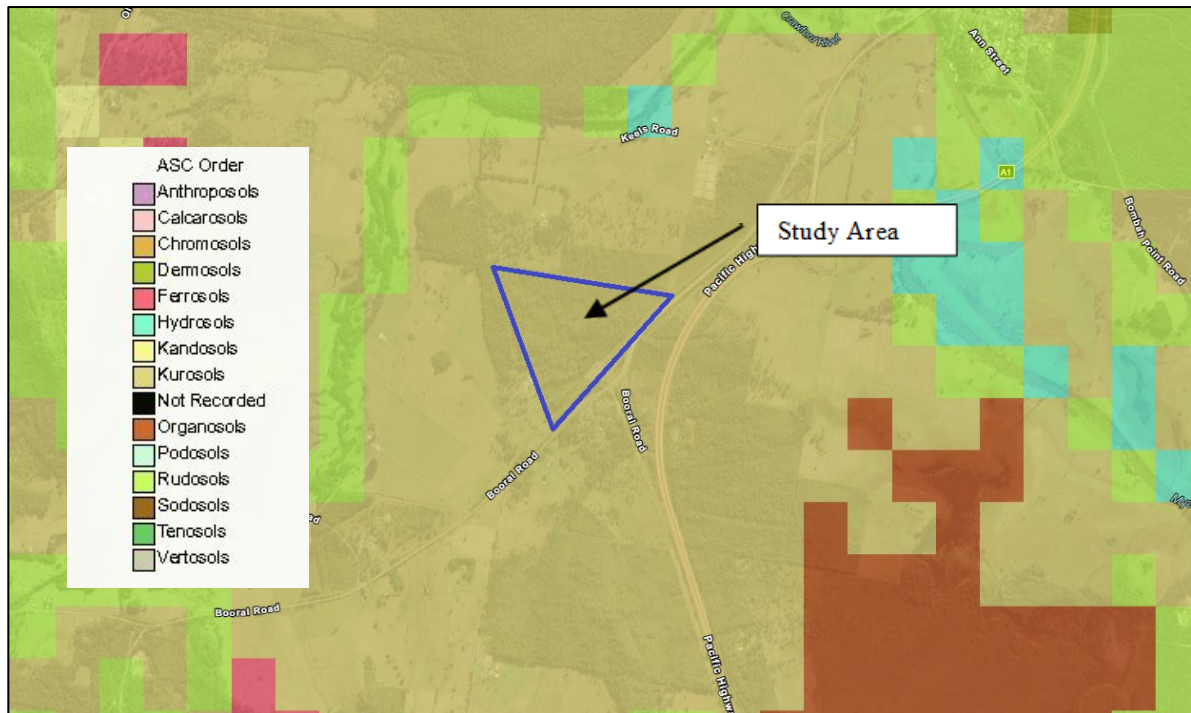


Figure 7: Environment NSW eSpade Soil Profile.

Comment:

The likelihood of successfully recovering Aboriginal artefacts is significantly reduced in disturbed soils. Soil disturbance, resulting from activities such as agriculture or construction, disrupts the critical stratification for preserving artefacts in their original depositional contexts. This disturbance can lead to the displacement or mixing of artefacts across various soil layers, complicating the process of locating and interpreting these items' historical and cultural significance. Moreover, the disruption of soil integrity may expose artefacts to environmental degradation and physical damage, further diminishing their chances of recovery.

4.7 Geological Features

The geological data allows for analysis of the landscape to determine any special features that may contribute to Aboriginal occupation in prehistory. There may be particular outcrops or features that would suggest significant Aboriginal use. The following map shows the geological composition of the study area. The geological mapping identifies the bedrock in this area as Permian (Ps), indicating that it dates to the Permian Period, approximately 299 to 252 million years ago. This classification typically includes sedimentary formations such as sandstones, shales, and siltstones, which in some regions may outcrop prominently and provide raw materials or shelter opportunities. In an archaeological context, these outcrops or exposures may have served as sources of stone suitable for tool production. They could also influence patterns of ancient habitation, as the availability of workable stone or natural rock formations often guided Aboriginal settlement and activity in prehistory.

By comparing the geological map (Figure 8), with the soil map (Figure 7), there is a general correlation between geological data and soil type. This is not surprising in that soil is formed by natural processes which alter landforms and geological features.

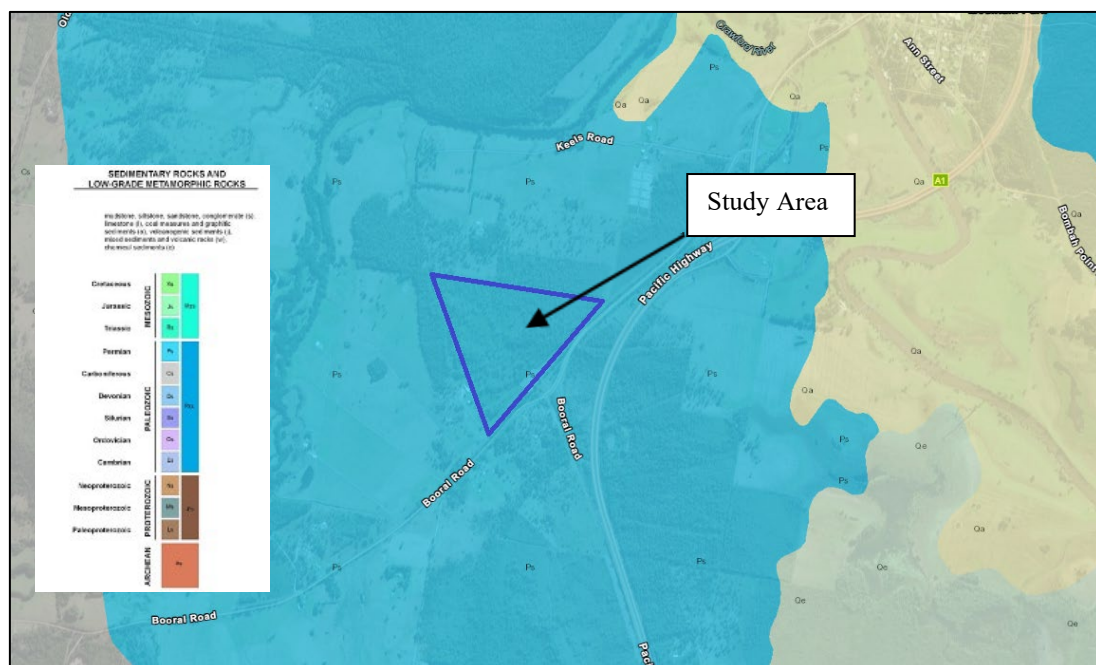


Figure 8 Geological Classification. (Australian Government Geoscience Australia)

Comment:

There is no indication of a geological abnormality or feature that would suggest special significance to the landscape.

4.8 Past Land Use

Past Aboriginal activities are not well manifested by archaeological records because many activities did not leave material evidence or because the material evidence was not durable. Many of the implements were organic materials, such as wood and bone, which readily decay when exposed to the elements. Even burials are subject to the acidic condition of the soil.

Durable evidence, such as stone and rock implements, is affected by European land use. Easily recognisable implements such as stone axes have found their way into many private collections well before it became illegal to do so, with no record of the location of the find. Cultivation, with the associated stick raking and stone gathering, also tended to destroy surface evidence. However, cultivation and pastoral land use also helped preserve the archaeological record. In some cases, cultivation would expose evidence in others and cover the evidence. The archaeological record generally depends on sites' exposure through erosion, weathering, fire, drought, and anthropogenic activities.

The pattern of Aboriginal occupation indicates that the study area was part of a wider resource area used by Aboriginal people in the past. However, the early European activities such as farming and eventual residential development would have disturbed the soil profile to such an extent that the likelihood of finding evidence of the Aboriginal use of the land would be highly unlikely.

Comment:

The study area was predominantly clear from vegetation in the 1960s, but the vegetation has been altered over the last 60 years. Therefore, the landform of the study area has been disturbed, meaning any archaeological evidence that may have existed on the surface has possibly been destroyed contextually.

5.0 Intangible Heritage

Intangible heritage refers to the practices, expressions, knowledge and skills that communities recognise as part of their cultural heritage. It is communicated from generation to generation and is constantly recreated by communities in response to their environment and their history. It provides communities and individuals with a sense of identity and continuity.

Aboriginal intangible heritage includes:

- ceremony
- creation Stories
- skills involved in the creation of cultural items
- knowledge and skills associated with medicinal plant use
- language
- dance
- song
- a great variety of other cultural expressions and cultural knowledge systems.

Recording and acknowledging the ownership of any aspects of tangible and intangible Indigenous cultural heritage is important. Gaining consent from those who own that heritage ensures that the exchange of information from them is demonstrable and transparent. It helps to ensure that the context, purpose or intent of cultural heritage is preserved, appropriately represented and authentically presented. This also properly accounts for the content that may impact Indigenous peoples' rights to manage, control and transmit their cultural heritage.

Stories may also have important significance to broader areas of the Country and may overlap or interconnect, sometimes over great distances, to contribute to or build a much larger story. The recounting and transmission of stories ensure that designs and processes for representing the stories of the Country are carefully managed and protected. The non-physical process of creating or recreating the designs to tell a story of the Country in the environment includes processes of trust, status, kinship, intention, and rights given to tell the story.

Aboriginal intangible heritage often has a strong relationship with the landscape. The Australian landscape, at the time of European settlement, was the oldest continuing cultural landscape. For Aboriginal Australians, their land contained cultural and social meanings developed through the long occupation of their respective landscape (lands and waters and skies and air). They continue to see and perceive today their Country as being full of the places and objects that their ancestors left them as a living legacy.

Clarke, P.A. (2014) put it well in his article, *The Aboriginal Australian cosmic landscape. Part 1: The ethnobotany of the Skyworld* (Journal of Astronomical History and Heritage, 17(3), 307–335).

“To an Aboriginal, everything in their Country is alive and everything is embodied in relationships, whereby the past, present, and future are one, and where both spiritual and physical worlds of the Country interact. The Dreaming is an ongoing celebration and reverence for past events: the creation of the land, the creation of law, and the creation of people. Stories have been given to and vested in Aboriginal peoples from the Dreaming, everything comes into being through the expression or journey through the story, and the

Dreaming is the ancestors. All things exist eternally in the Dreaming; the Dreaming is alive. The individual is born to Country, not just in Country but from Country, and his or her identity is inextricably and eternally linked to the Dreaming."

Thus, there are a large number of special places associated with Aboriginal history and connection to the country that Aboriginal people celebrate and enjoy today.

Comment:

Past land use by the Worimi People was characterised by a deep understanding of the local environment and a rich intangible cultural heritage passed on through oral traditions, ceremonies, and social practices (Tindale 1974). Archaeological and ethnographic evidence indicates they utilised a diverse range of habitats—riverine corridors for fishing and gathering aquatic resources, open woodlands for hunting and plant collection, and elevated ridges for ceremonial activities and occupation sites. Intangible heritage, including knowledge of seasonal resource availability, cultural protocols for land stewardship, and spiritual associations with key landmarks, guided these land-use practices and reinforced social connections across generations. This interwoven system of cultural and ecological knowledge underpinned the Worimi peoples' identity and provided continuity in how they related to their ancestral lands.

The lifestyle of the Aboriginal people was transitory, not in the nomadic sense, but for reasons of hygiene and land fallowing. They never stayed in one place too long, constructing only the most basic shelters. The Aboriginal people lived a hunter-gatherer life. The men hunted larger animals such as kangaroos, whilst the women and children hunted smaller animals and collected fruits, berries, and medicinal plants. The local environment provided a variety of food sources.

7.0 Impact Assessment

6.1 Key Principles in Determining Occupation Pattern

Roberts, 2009 formulated 7 key principles to determine probable Aboriginal land use of a particular area.

Using those principles, it is possible to place the study area into an Aboriginal occupation context and use.

1. Proximity to water

The Crawford River is at least 500m to the west, and the Myall River is 1200m to the east

2. Food resource

The subject area would have been used for various food resources.

3. Geological features

The subject property has no major geological features.

4. Ease of access

The study area is easily accessible on foot for all age groups.

5. Connectivity

The study area connects to the Crawford River, Myall River and Alum Mountain

6. Safety

*The study area is not dangerous or close to dangerous or unhealthy landscapes.
There does not appear to be natural protection from harsh and extreme weather.*

7. Archaeological evidence

No objects have been identified within 50m of the study area; however, 5 objects are located within 1000m. The information from AHIMS cannot be relied upon to reach any definitive conclusion regarding the archaeological potential of the study area.

Comment:

Aboriginal people view all Aboriginal sites as significant, as they are evidence of past Aboriginal occupation and are valued as a link to their traditional culture. The subject property is likely to be significant to Aboriginal people due to its connectivity to the Rivers and Alum Mountain.

6.2 Landscape Significance Assessment

It is important to stress that the significance of a cultural landscape is not dependent on archaeological evidence being significant in itself but on the interrelatedness of the individual objects to the cultural landscape as a whole. Through holistically understanding the cultural landscape one may be able to appreciate the associations that may exist between Aboriginal objects and other features within the landscape.

Using the following criteria (Australian Heritage Commission 1998 and Burra Charter 2013) the significance of the study area in an Aboriginal cultural heritage context can be assessed as follows:

- **Social value** (Sometimes termed Aboriginal value) refers to the spiritual, traditional, historical or contemporary associations and attachments that the place or area has for the present-day Aboriginal community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed.

Comment:

There does not appear to be any spiritual, traditional, historical or contemporary associations and attachments that the place or area has for the present-day Aboriginal community. Similarly, there do not appear to be associations with tragic or warmly remembered experiences, periods or events. However, that is not to say that discovering evidence or knowledge of past spiritual connections to the place will not rekindle such association.

- **Historic value** refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community. Historic places may or may not have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). Gaining a sufficient understanding of this aspect of significance will often require the collection of oral histories and archival or documentary research, as well as field documentation. These places may have 'shared' historic values with other (non-Aboriginal) communities. Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage, and the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives.

Comment:

Currently, there does not appear to be an association of the study area with a person, event, phase or activity of importance to the history of an Aboriginal community.

- **Scientific value** refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information. In the past, a consideration of scientific (archaeological) value was the focus of most approvals assessment processes for Aboriginal heritage, and this will still be an important component of most assessment processes. These Guidelines intend to ensure that these values are incorporated within a broader consideration of Aboriginal heritage significance.

Comment:

There is no scientific value to the study area.

- **Aesthetic value** refers to the sensory, scenic, architectural, and creative aspects of a place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape and the smell and sounds associated with the place and its use. These aspects of a place or object's heritage significance are commonly interrelated because all assessments of heritage values occur within a social and historical context; all potential heritage values will have a social or Aboriginal community heritage component.

Comment:

The sensory, scenic, and creative milieu of the adjacent and surrounding landscape does not evoke feelings of a sense of place and its past use.

Landscape Significance Comment:

Whilst the study area is likely to have been part of a significantly wider Aboriginal occupation and resource area, additional physical evidence of that association is unlikely within the study area due to its disturbed nature.

8.0 Summary and Analysis

By combining and analysing historical data (3.2), Aboriginal culture (4.2), archaeological context (4.3) and landscape evaluation (4.5), we can gain insight into how the study area was used in the past. The study area and surrounding region are known to have been used by past Aboriginal people.

Historical sources describe the periodic use of campsites by the Worimi over generations to exploit resources in the surrounding area. The local environment potentially provided a variety of food sources. Archaeological investigations within the region have revealed physical traces of various Aboriginal land use activities. The soil landscapes present within the study area are generally favourable for the preservation of in situ archaeological material; however, the study area has been strongly affected by environmental factors and modern land-use disturbances.

9.0 Recommendations

After reviewing the landscape attributes of the study area, Aboriginal occupation patterns and the likelihood of observing Aboriginal objects, it is reasonably concluded that the proposal can proceed without the need for further assessment, subject to the following recommendations:

1. That the consent authority advises the proponent that any consent does not give the approval to harm an Aboriginal object. Under the NPW Act 1974, all persons must ensure that harm does not occur to an Aboriginal object. If human skeletal remains are found during the activity, work must stop immediately, the area must be secured to prevent unauthorised access, and the NSW Police and OEH must be contacted. The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under S.89A of the NPW Act to notify OEH as soon as possible of the object's location. This requirement applies to all people and to all situations.
2. Management protocols should be developed that detail the measures to be taken in the event that Aboriginal objects of significance or a nature not anticipated, such as burials or ceremonial items, are discovered during the course of activities on the site. (per Schedule 1)
3. The proponent should develop a Cultural Education Program to induce personnel involved in the construction activities in the project area. The proponent has a duty of care to ensure each worker knows individual responsibilities under the Act (*National Parks and Wildlife Act 1974*). The Local Aboriginal Land Council may be able to assist in the delivery of such induction.

10.0 Certification

This report was prepared in accordance with the brief given by Perception Planning to assess the impact the proposed development application will have on Aboriginal heritage and was undertaken to demonstrate due diligence. To the best of our knowledge, the report accurately reflects the archaeological assessment, findings, and results.

Whilst every care has been taken in compiling this report to determine the proposal's potential impact on Aboriginal Heritage and demonstrate a due diligence process, ECHA can neither warrant nor guarantee that due diligence has been met. The individual or proponent is responsible for ensuring that they have undertaken full due diligence.

Signed

Tim Roberts
Archaeologist
10/03/24

This report has been compiled according to the specifications provided by the authorised recipient. The findings, conclusions, and recommendations presented herein are based on data gathered under specific conditions detailed within the document. The contents of this report are deemed confidential and are intended solely for the use of the authorised recipient as per the terms of the agreement with East Coast Heritage & Archaeology. Distribution or reliance on this report by parties other than the authorised recipient, requires prior written approval from East Coast Heritage & Archaeology. Unauthorised use, including but not limited to reproduction for resale or other commercial purposes, is strictly prohibited unless expressly permitted under the Copyright Act 1968 (Cth), and further consent from East Coast Heritage & Archaeology is obtained. East Coast Heritage & Archaeology disclaims any liability and duty of care to third parties regarding this document, except as contractually agreed with the authorised recipient and within the bounds of applicable law.

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Maps

Central Mapping Authority

Topographical Map NSW 25k East. Copyright © 2010 NSW Department of Lands

Aboriginal Australia

Source: *Aboriginal Australia* by David R. Horton. Names and regions as used by D. Horton in his book "The Encyclopaedia of Aboriginal Australia" published in 1994 by Aboriginal Studies Press for the Australian Institute of Aboriginal and Torres Strait Islander Studies.

Australia Geology

Source: Specially compiled in 1979-80 by G.W-Addario, W.D. Palfreyman, A.J. Stewart, J.M. Bultitude and R.A. Chan, Bureau of Mineral Resources, Geology and Geophysics, Canberra. Geological data published and unpublished information by BMR, State geological surveys, the Commonwealth Scientific and Industrial Research Organisation, universities and companies.

Australia Soil Resources

Source: Specially compiled 1976-77 by K.H. Northcote, Division of Soils, CSIRO, Adelaide, from 'A Soil Map of Australia' (1:5000 000) accompanying A Description of Australian Soils by K. H. Northcote and others(Commonwealth Scientific and Industrial Research Organisation, Australia, 1975

eSPADE

eSPADE provides access to soil profile and soil map information published by the NSW Department of Planning, Industry and Environment, including map data, reports and images, primarily sourced from the NSW Soil and Land Information System (SALIS). Source: State of NSW and Department of Planning, Industry and Environment 2021.

NearMaps (2024)

www.nearmaps.com.au

NSW Spatial Collaboration Portal

The Spatial Collaboration Portal provides a secure platform to facilitate the delivery of NSW spatial datasets. The Portal allows local, state, and federal agencies to deliver spatial data, asset management and visualisation services and enables the search and discovery of datasets for all NSW citizens
Source: <https://portal.spatial.nsw.gov.au/portal/apps/sites/#/home>

Six Maps

This service provides access to cadastral and topographic information, satellite data and aerial photography for New South Wales. Developed by NSW Government. <https://maps.six.nsw.gov.au/>

Historical, Aerial and Satellite Imagery

Spatial Services holds a wide range of aerial photography and other historical imagery of NSW for viewing and purchase. Aerial Imagery is captured across NSW and is available in a range of years from the 1930s through to current.

https://www.spatial.nsw.gov.au/products_and_services/aerial_and_historical_imagery

Geoscience Australia – Australian Government

<https://portal.ga.gov.au/>

12.0 Glossary

Aboriginal Sites

Occupation Sites

Evidence of human occupation, which includes food remains, stone tools, baked clay, fire-blackened and fire-cracked stones and charcoal, is found in a range of sites known collectively as occupation sites

Shell middens

These sites are found on the coastline and along the edges of rivers and lakes. It is a deposit composed of the remains of edible shellfish and also usually contains fish and animal bones, stone tools and campfire charcoal.

Rock shelters with archaeological deposit

In rock outcrops such as sandstone and granite, overhangs sometimes form creating useable shelters. Sediments from fires, roof fall, discarded stone tools and food remains form a deposit protected within the shelter and this deposit can be excavated by archaeologists to study patterns of Aboriginal life.

Open campsites

These sites are mostly surface and associated sub-surface scatters of stone artefacts, sometimes with fireplaces. They exist throughout the landscape and are the most common site type in rural areas. While found in all environmental locations larger and denser sites tend to be found on riverbanks and lower slopes facing watercourses, as well as ridgelines and other areas that offer movement routes. The study of open sites can assist in understanding patterns of Aboriginal land use.

Base camp

This is the name applied to the major or main area of habitation. They tended to be close to a permanent water source and food source. Generally well sheltered. These camps would be rotated for hygiene reasons. They are different to smaller open campsites, which were mainly camps on transport routes or overnight areas on hunting forays.

Aboriginal Reserves and Missions

These places are very important to Aboriginal people today. Although Aboriginal people were often moved to reserves by force and were restricted by harsh regulations, the reserves became home to many people, where they and their families were born, lived and died. Historic cemeteries at many reserves are still cared for by the local Aboriginal community.

Rock Paintings

Aboriginal paintings are found on the ceilings and walls of rock shelters, which occur wherever suitable rock surfaces and outcrops exist. Figures include humans, kangaroos, emus, echidnas, grid patterns, animal tracks, boomerangs, axes, hand stencils and other motifs. Paintings are made with white, red, yellow and black pigments. The motifs may be drawn, painted or stencilled, and charcoal drawings are common as well.

Rock Engravings

These occur usually where there is a suitable exposure of fairly flat, soft rock or in rock overhangs. The outlines of motifs were made by hitting the rock surface with a sharp stone to make small holes or pits. Sometimes the pits were jointed to form a groove, by rubbing with a stone. People, animal shapes and tracks are common as well as non-figurative designs such as circles.

Grinding Grooves

Grooves are located on flat rock exposures close to a stream or rock hole. They vary in size but are generally long (about 30-40cm in length) and elliptical in shape. Stone axes were ground into the softer stone allowing a working edge to be created or sharpened. Deeper grooves may have been used to work spears or other thin implements.

Quarries

Quarry sites occur wherever there are outcrops of siliceous or igneous rock. Stone material was used in creating stone tools, which in turn were used to work wood and provide people with tools to assist in hunting and gathering activities. Siliceous rock is easily flaked and made useful cutting and scraping tools whereas igneous rock was preferred for edge-ground tools, particularly axes.

Ceremonial grounds

These sites were used for initiation ceremonies, marriages, tribal meetings and other important functions and are of great significance to Aboriginal people. Bora rings, which are one or more raised earth rings, were used for male initiations.

Stone arrangements

These range from simple stone mounds to complex circles and pathways. Arrangements are found throughout inland New South Wales as well as the coast, where fish traps were sometimes constructed.

Carved and scarred trees

Tree bark was used for constructing canoes, shelters, coolamons and shields. Distinctive scars are left from bark removal and can usually be differentiated from natural scars. Carved trees are more distinctive, exhibiting patterns etched into the wood of the tree. They can occur throughout the state although clearing and forestry practices have greatly reduced numbers.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (1989). It should be noted that these criteria have never been quantitatively tested or quantified using non-relative criteria such as absolute dating or an analysis of pre-occluded scar morphologies. This is because radiocarbon dating or dendrochronology is mostly inconclusive, and the removal of regrowth exposes trees to further damage.

The scar does not normally run to ground level: (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal Origin (some ethnohistoric examples of canoe scars reach the ground);

1. (A). If a scar extends to the ground, the sides of the original scar must be relatively parallel: (natural scars tend to be triangular in shape):

The scar is either approximately parallel-sided or concave, and symmetrical: (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular and often adzed);

The scar should be reasonably regular in outline and regrowth: scars of natural origin tend to have irregular outlines and may have uneven regrowth:

The ends of the scar should be shaped, either squared off or pointed (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);

A scar that contains adze or axe marks on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted):

The tree must date to the time of Aboriginal bark exploitation within its region: (an age of at least 100 years is a prerequisite)

The tree must be endemic to the region: (and thus exclude historic plantings).

Field-based identification of Aboriginal scars is based on surface evidence only and will not necessarily provide a definitive classification. In many cases, the possibility of a natural origin cannot be ruled out, despite the presence of several diagnostic criteria or the balance or interpretation leaning toward an Aboriginal origin. For this reason, interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories are used

Definite Aboriginal scar - This is a scar that conforms to all of the criteria and/or has, in addition, a feature or characteristic that provides definitive identification, such as a diagnostic axe or adze marks or a historical identification. All conceivable natural causes of the scar can be reliably discounted.

Aboriginal origin is most likely - This is a scar that conforms to all of the criteria and where a natural origin is considered unlikely and improbable.

Probable Aboriginal scar - this is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out.

Possible Aboriginal scar - This is a scar that conforms to all or most of the criteria and where an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. The characteristics of this scar will also be consistent with a natural cause.

Burials

Aborigines feel equally as respectful about prehistoric burials as modern cemeteries. As Aborigines have lived in Australia for over 30 000 years burials are seen as part of a continuing culture and tradition as well as offering valuable archaeological information. The dead were sometimes cremated, sometimes placed in trees or rock ledges and sometimes buried. Burials exist throughout New South Wales and can be accidentally uncovered in construction work or become exposed through erosion. It is important that if a skeleton is found it be reported to the police, to a representative of the National Parks and Wildlife Service and the relevant Aboriginal community group.

Natural sacred sites

Many features of the landscape, such as mountains, rocks, waterholes etc., are regarded as sacred sites by Aborigines. They are places associated with Dreamtime ancestors and usually can only be identified by Aboriginal people. They retain a high significance to Aborigines.

Fire-stick Farming

The process of burning aids in hunting. Animals could be speared or clubbed as they fled to escape the flames. Other uses of fire were for long-term hunting strategies. After firing, the bush would regenerate attracting animals on which the hunters would prey. (Flood, p250)

Flake fragment of stone that was used as a tool for weapons, scrapers etc.

Geographical

AHD (Australian Height Datum) Australian standard measurement of the mean high sea level.

Swamp

An almost level closed, or almost closed depression with a seasonal or permanent water table at or above the surface, commonly aggraded by overbank stream flow (Speight 1990: 33).

Legal

Activity means a project, development, activity or work (ie this term is used in its ordinary way, and does not just refer to an activity as defined by Part 5 EP&A Act). Disturbed land or land already disturbed by previous activity Land that has been previously subjected to any activity that has resulted in clear and observable changes to the land's surface. Examples include soil that has been ploughed; urban development that has occurred; existing rural infrastructure such as dams and fences; existing roads, trails and walking tracks; and other existing infrastructure such as pipelines, transmission lines and stormwater drainage.

Aboriginal Heritage Values

Social value (sometimes termed Aboriginal value) refers to the spiritual, traditional, historical or contemporary associations and attachments which the place or area has for the present-day Aboriginal community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with one or more Aboriginal communities.

Historic value refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community. Historic places may or may not have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). Gaining a sufficient understanding of this aspect of significance will often require the collection of oral histories and archival or documentary research, as well as field documentation. These places may have 'shared' historic values with other (non-Aboriginal) communities. Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage, and the Aboriginal involvement and contribution to important regional historical themes are often missing from accepted historical narratives.

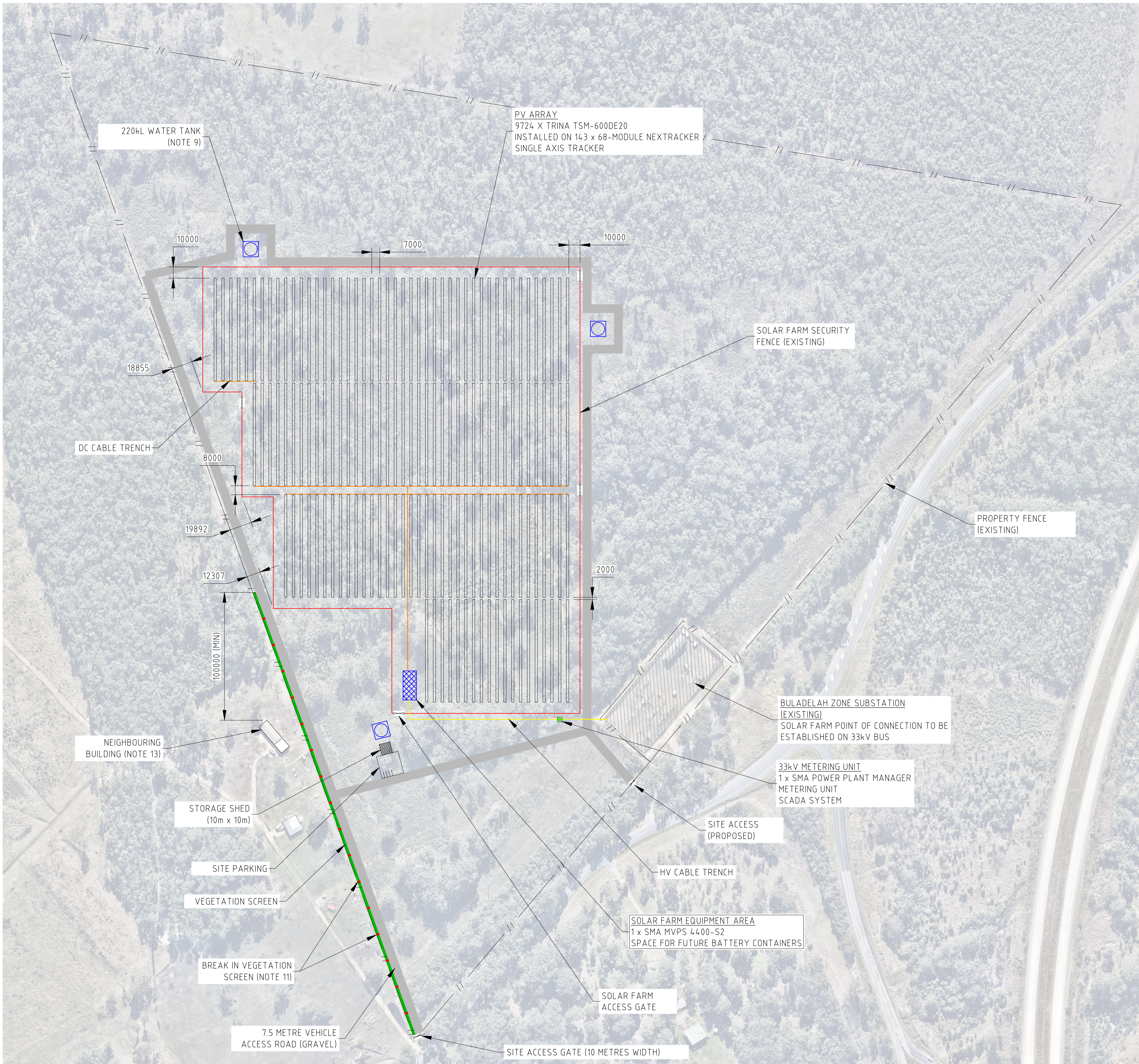
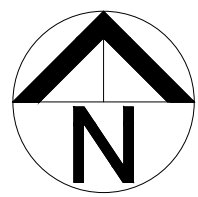
Scientific value refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information. In the past, consideration of scientific (archaeological) value was the focus of most approvals assessment processes for Aboriginal heritage, and this will still be an important component of most assessment processes. These guidelines intend to ensure that these values are incorporated within a broader consideration of Aboriginal heritage significance.

Aesthetic value refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.

These aspects of the heritage significance of a place or object are commonly interrelated. Because all assessments of heritage values occur within a social and historical context, all potential heritage values will have a social or Aboriginal community heritage component.

Cultural Landscapes refer to the way perceptions, beliefs, stories, experiences and practices give shape, form and meaning to the landscape is termed a cultural landscape.

13.0 Appendix



OVERALL SYSTEM SPECIFICATION		
MODULE	9724	TRINA TSM-600DE20 600W
INVERTER	1	SMA MVPS 4400-S2
RACKING	143	NEXTRACKER HORIZON (68 MODULE)
DC CAPACITY	5834.40	kWp
AC CAPACITY	4400	kVA
DC/AC RATIO	1.33	

- NOTES:
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS AND LEVELS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE VERIFIED ON SITE BY CONTRACTOR.
 - EXACT LOCATION OF ALL PARTS OF THE INSTALLATION TO BE DETERMINED BY CONTRACTOR ON SITE.
 - PRINT IN COLOUR.
 - THIS DRAWING IS BASED ON THE INFORMATION SUPPLIED TO THE DESIGNER FROM ITS CLIENTS OR SUBCONTRACTORS AND HAS BEEN PROVIDED IN ACCORDANCE WITH GSES' TERMS AND CONDITIONS.
 - ALL EXISTING EQUIPMENT LABELLED "EXISTING". ALL OTHER EQUIPMENT TO BE INSTALLED.
 - MODULE QUANTITIES ARE INDICATIVE ONLY. PV ARRAY LAYOUT TO BE CONFIRMED DURING DETAILED DESIGN.
 - NEXTRACKER RACKING DIMENSIONS AND MODULE QUANTITIES ARE APPROXIMATE. EXACT DIMENSIONS AND PANEL QUANTITIES TO BE DETERMINED DURING DETAILED DESIGN.
 - MIN. 10m CLEARANCE REQUIRED AROUND ALL WATER TANKS. ACTUAL DESIGN AND PLACEMENT IS TO BE CONFIRMED.
 - MIN. 10M AROUND THE PERIMETER OF THE SOLAR FARM SHALL BE LEFT UNTOUCHED TO SERVE AS ASSET PROTECTION ZONE (APZ).
 - BREAKS IN THE VEGETATION SCREEN ARE REQUIRED EVERY 25 METRES TO COMPLY WITH FIRE REGULATIONS.
 - 15 METRE TURNING CIRCLES AROUND WATER TANKS IS TO BE MAINTAINED FOR FIRE TRUCK ACCESS REQUIREMENTS.
 - VEGETATION SCREEN TO RUN AT LEAST 100 METRES PAST THE NEIGHBOURING BUILDING.
 - 7.5 METRE WIDE GRAVEL TRACK TO BE CONSTRUCTED AROUND PERIMETER OF SOLAR FARM.

- LEGEND:
- SUBSTATION
 - HARDSTAND AREA
 - STORAGE SHED
 - DC CABLE TRENCH
 - HV CABLE TRENCH
 - TRAFFICABLE ROAD
 - VEGETATION SCREEN
 - BREAK IN VEGETATION SCREEN
 - PROPERTY FENCE
 - SOLAR FARM FENCE
 - ACCESS GATE
 - METERING UNIT

SITE PLAN
SCALE 1:2000

REVISION PANEL					DESIGN PANEL			CLIENT		BOORAL SOLAR FARM			A1		TOTAL SHEETS:		3	
REV	DATE	DRN	DETAILS	APR'D	AUTHORISED	DESIGNED	REVIEWED	APPROVED		LOT 130, BOORAL RD, BULAHDELAH			SHT SIZE	SITE ID:	PROJECT No: P2319		REVISION	
					N.TAM	V.MARALKAR	M.A.MALIK	N.TAM	MINDARO PTY LTD	NSW 2423								
					SIGNATURE					CIVIL/SITE								
3	16/04/2025	B.C	UPDATED PER CLIENT FEEDBACK	N.T						SITE PLAN								
2	20/03/2025	B.C	ADDED DIMENSIONS TO BOUNDARY	N.T														
1	3/03/2025	B.C	UPDATED BASED ON ECOLOGY STUDY	N.T														
0	7/03/2024	V.M	ISSUED FOR CONCEPT DESIGN	N.T														

CONCEPT ISSUE
NOT FOR CONSTRUCTION

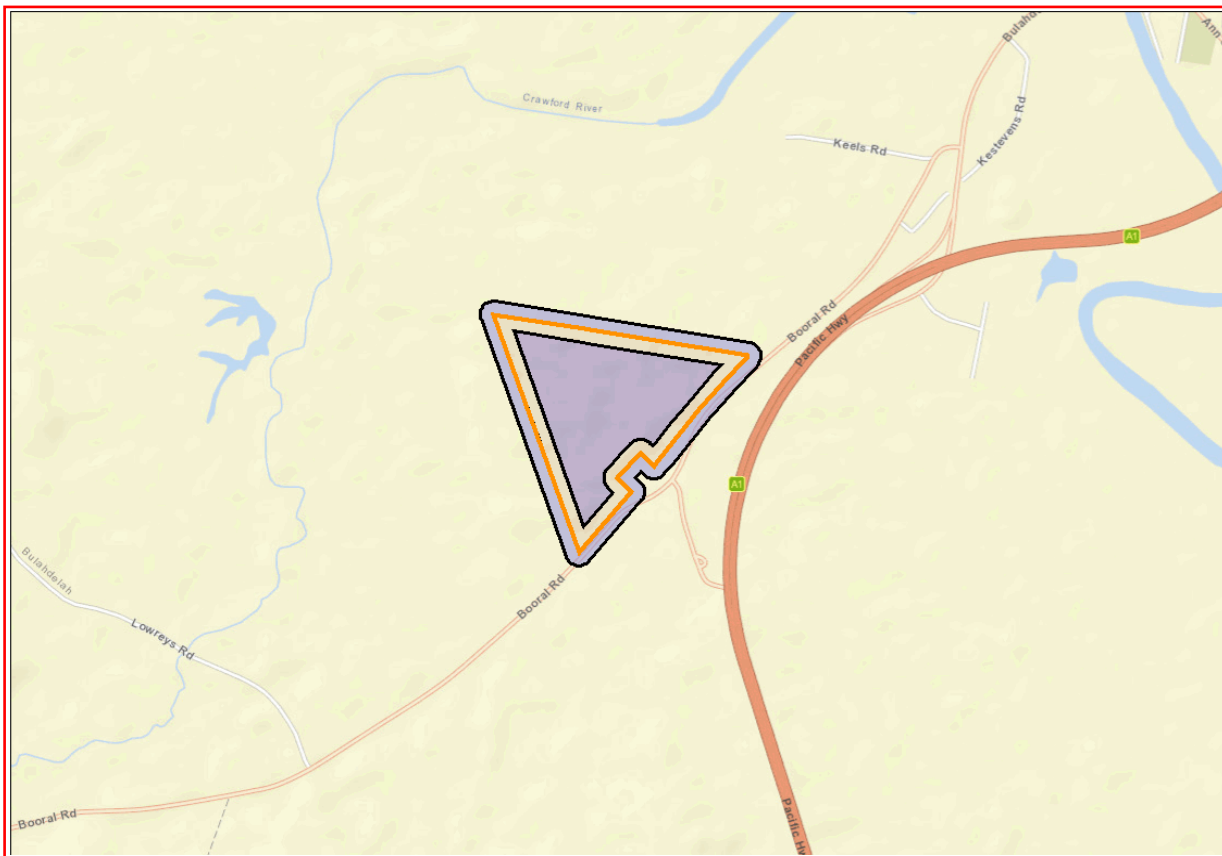
Timothy Roberts
 37 City View Drive
 East Lismore New South Wales 2480
 Attention: Timothy Roberts
 Email: tim@echa.com.au

Date: 09 June 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 130, DP:DP1005958, Section : - with a Buffer of 50 meters, conducted by Timothy Roberts on 09 June 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

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

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

Important information about your AHIMS search

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

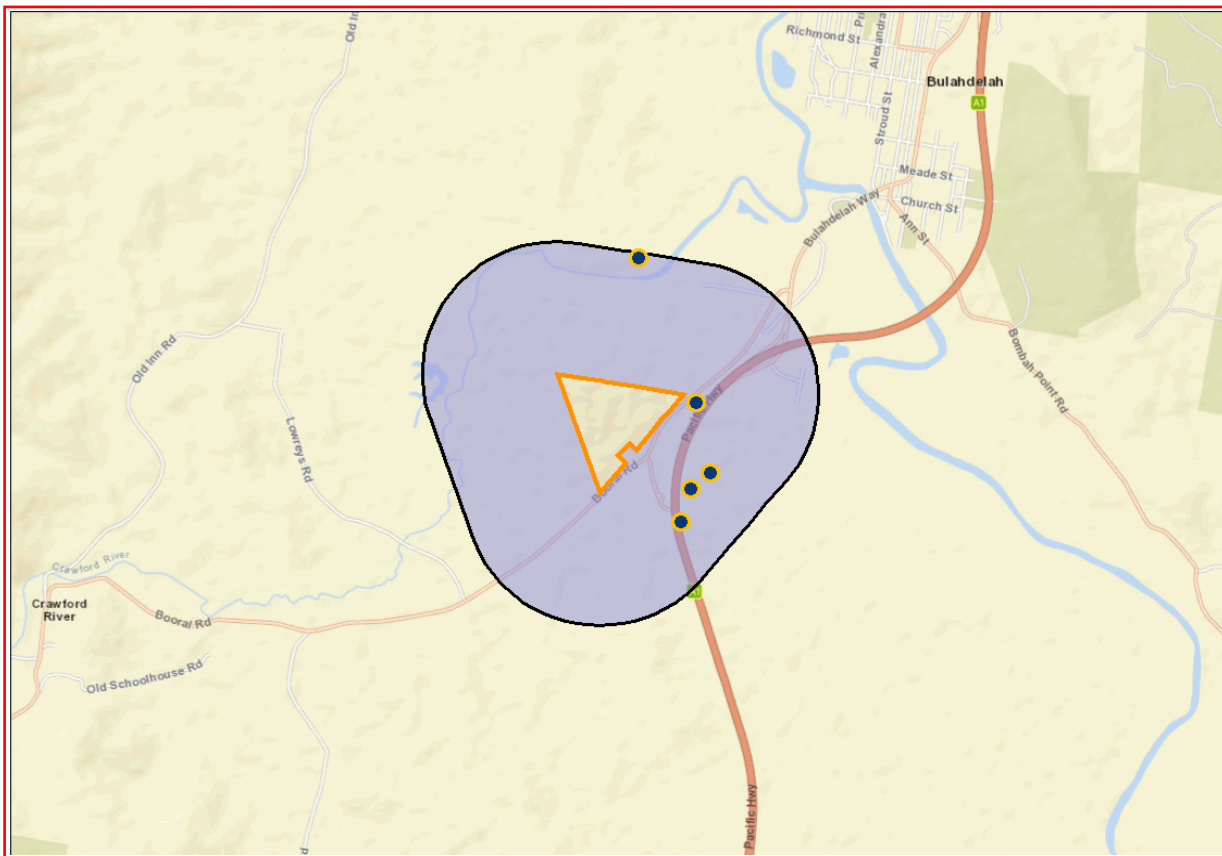
Timothy Roberts
 37 City View Drive
 East Lismore New South Wales 2480
 Attention: Timothy Roberts
 Email: tim@echa.com.au

Date: 09 June 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 130, DP:DP1005958, Section : - with a Buffer of 1000 meters, conducted by Timothy Roberts on 09 June 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 130 boral

Client Service ID : 899475

<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>Site Status **</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
38-2-0119	BULAHDELAH 11 (B11)	AGD	56	423960	6410760	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						<u>Permits</u>	
38-2-0120	BULAHDELAH 10 (B10)	AGD	56	424030	6411010	Open site	Valid	Artefact : -		4756
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						<u>Permits</u>	3668
38-2-0122	BULAHDELAH 7 (B7)	AGD	56	423630	6412750	Open site	Valid	Artefact : -		4756
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						<u>Permits</u>	
38-2-0145	BULAHDELAH (16)	AGD	56	424179	6411128	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						<u>Permits</u>	
38-2-0153	BPAD6 Bulahdelah	AGD	56	424070	6411660	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						<u>Permits</u>	

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 09/06/2024 for Timothy Roberts for the following area at Lot : 130, DP:DP1005958, Section : - with a Buffer of 1000 meters.. Number of Aboriginal sites and Aboriginal objects found is 5

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Schedule 1

SCHEDULE of PROTOCOLS

Procedures for new sites, relics and human remains

FLOWCHART 1 – PROCEDURE FOR UNRECORDED ABORIGINAL OBJECTS

During the course of construction an Aboriginal Object or possible Aboriginal Object is identified work in the immediate vicinity is stopped and the Aboriginal Heritage Adviser (AHA) notified



The AHA determines whether object is Aboriginal. If not work continues. If it is, the AHA appoints a recorder to cordon off the object



Before the recorder picks up any artefact, the position of each potential artefact to be observed or recorded must be marked with a stake, flag, nail or similar, by the recorder.

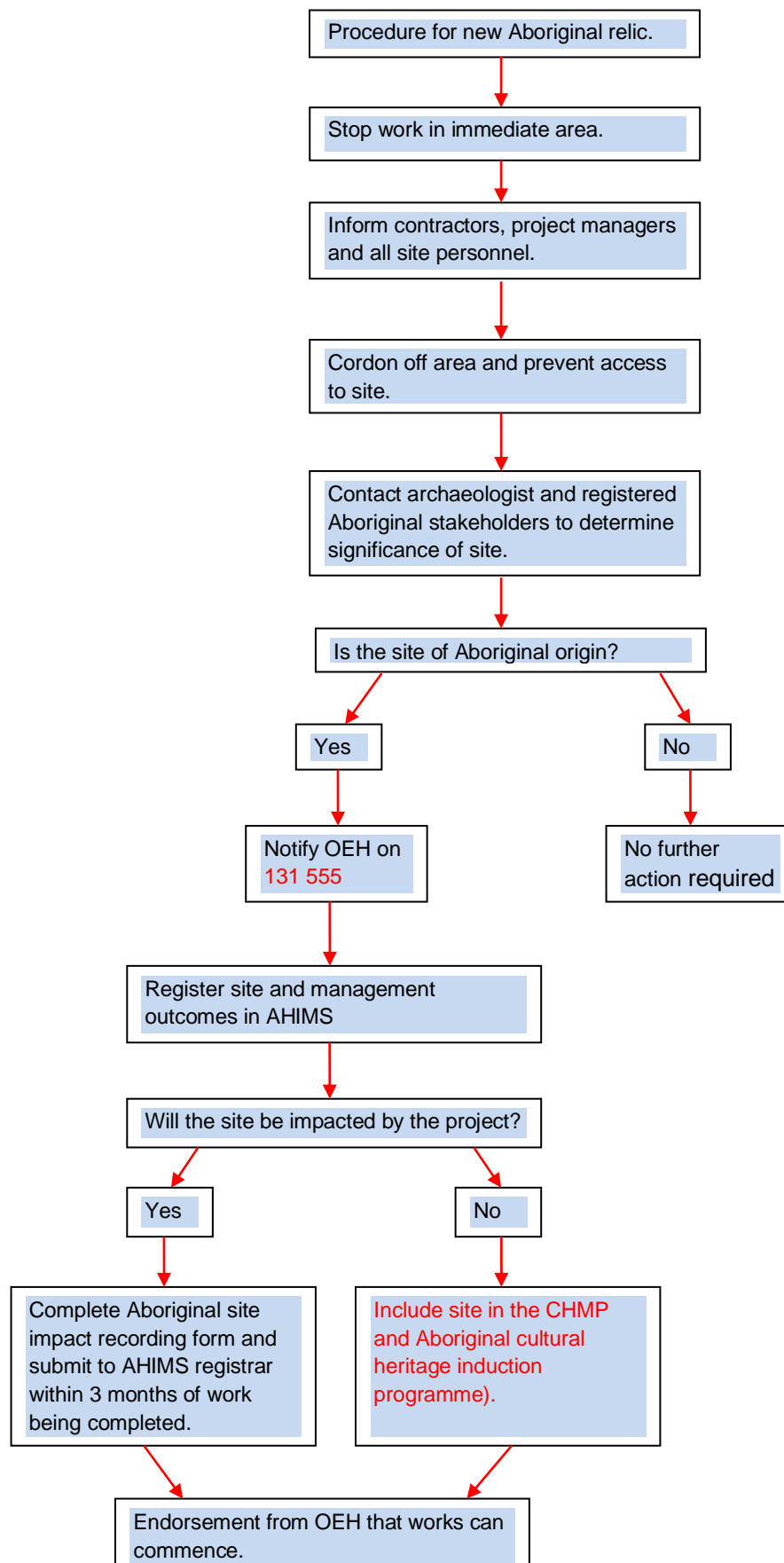


Once their positions are marked, each artefact may then be picked up and recorded (attributes, measurements, photography or drawing) before replacing in the exact same spot.



Notify OEH
And follow their advice

FLOWCHART 2 – PROCEDURE FOR ABORIGINAL RELICS



FLOWCHART 3 – PROCEDURE FOR HUMAN REMAINS

