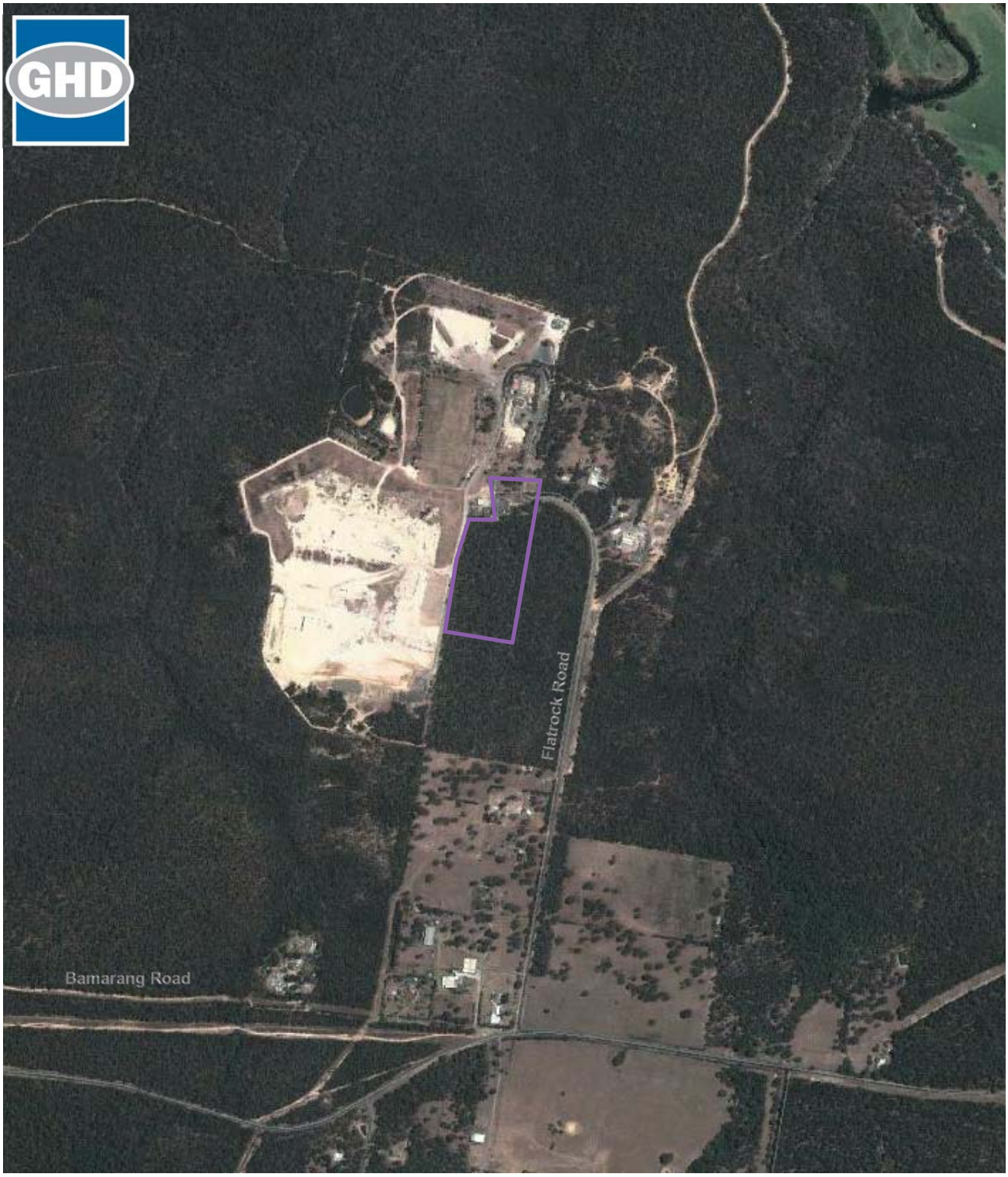

Shoalhaven City Council

West Nowra Resource Recovery Park
Environmental Impact Statement

VOLUME 2

June 2014

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Appendix L – Heritage Assessment

West Nowra Resource Recovery Park.

Aboriginal Archaeological Survey Report

Report to GHD

May 2014

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Executive Summary

Artefact Heritage was commissioned by GHD on behalf of the Shoalhaven City Council to conduct an Aboriginal heritage assessment of the proposed location for the West Nowra Resource Recovery Park (RRP). This report has been prepared in relation to the Director General Requirements (713) (DGRs) and meets the requirements of an archaeological survey report set out in the Office of Environment and Heritage (OEH) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) (The Code).

This assessment was undertaken in consultation with the Nowra Local Aboriginal Land Council (NLALC).

The assessment confirmed that no previously recorded Aboriginal sites and/or places are located within the boundaries of the study area. In accordance with The Code and based on previous studies, Aboriginal community consultation, and levels of disturbance, this assessment found that the study area has low archaeological potential.

It was found that:

- No Aboriginal sites and/or places were located within the study area.
- The study area was assessed as demonstrating low archaeological potential and low archaeological significance.

It is therefore recommended that:

- The proposed works are able to proceed without the need for further Aboriginal archaeological assessment.
- If Aboriginal objects are uncovered during works an archaeologist, the NLALC and the OEH must be notified. Further investigation and approvals may be required.
- If human skeletal remains are encountered during works, all work must cease immediately and the NSW Police contacted. If the skeletal remains are found to be Aboriginal, consultation with OEH and NLALC will be required.

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1.0 Introduction and Background

1.1 Introduction

Artefact Heritage was commissioned by GHD, on behalf of Shoalhaven City Council (SCC), to conduct an Aboriginal Archaeological Survey Report (ASR) at the proposed location for the West Nowra Resource Recovery Park (RRP), shown in Figures 1 and 2 (the 'study area'). This report has been prepared in accordance with the requirements for an ASR as set out in the Office of Environment and Heritage (OEH) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) (The Code), and in accordance with the Director General Requirements (713) (DGRs) issued for the project on 26 March 2013.

1.2 Scope of the Study

SCC is proposing to undertake development works in Lot 1 DP1104402, which is adjacent to the West Nowra Recycling and Waste Facility. The study area currently consists of regrowth woodland and covers an area of 3.5 hectares. The RRP will include the construction of a new resource recovery facility and will include:

- a composting facility to process up to 50,000 tonnes of waste per annum from both domestic and commercial waste sources;
- a materials recovery facility for sorting through up to 25,000 tonnes of dry (non-putrescible) solid wastes per annum from both domestic and commercial waste sources;
- a sorting and recovery facility for sorting of approximately 10,000 tonnes per annum of construction and demolition (C&D) waste; and,
- other stockpile areas for storing and processing approximately 10,000 tonnes per annum of recyclable materials, such as green waste, scrap steel and concrete.

Ancillary infrastructure will include:

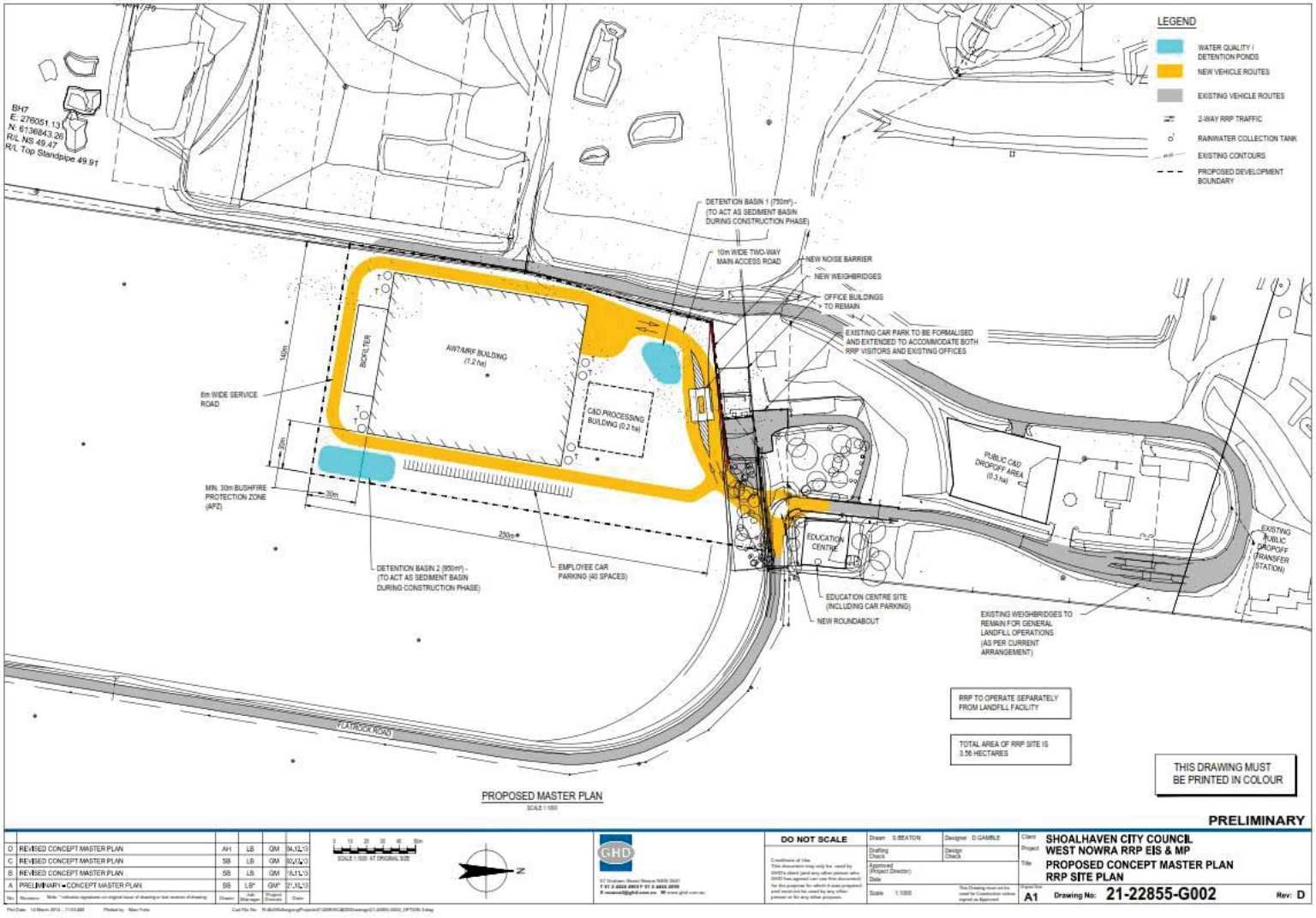
- circulation roadways and new weighbridges for entering and existing vehicles;
- offices and amenities located within the composting and Material Recovery Facility (MRF) building;
- sediment / detention basins;
- car parking for up to 30 cars plus 10 visitor spaces;
- fencing around the perimeter of the RRP site;

- asset protection zones (APZ).

Each year the RRP will have the capacity to processes up to 95,000 tonnes of waste. The RRP will play an important role in decreasing greenhouse gas production, levels of litter, and odour and waste compaction for landfill operations undertaken at the adjacent West Nowra Recycling and Waste Facility.

Figure 1: Study Area Map (background image © NSW LPI)

Figure 2: Proposed RRP footprint (Source GHD 2014)



1.3 Objectives of Assessment

In accordance with The Code and the DGRs, the objectives of this study are to prepare an ASR including the following:

- A description of the RRP and the extent of the study area.
- Discussion of the environmental context of the study area.
- Discussion of the Aboriginal historical context of the study area.
- A summary of the archaeological context of the study area including a discussion of previous archaeological work in the area.
- Development of an archaeological predictive model.
- Development of a significance assessment for the study area addressing archaeological values.
- Development of management and mitigation measures.
- Recommendations.

1.4 Investigators and Contributors

This report was prepared and reviewed by archaeologists at Artefact Heritage. This report was prepared by Joshua Madden, Archaeologist and reviewed by Josh Symons, Senior Archaeologist. Dr Sandra Wallace, Principal Archaeologist, provided management input.

1.5 Aboriginal Consultation

Consultation throughout the project has been undertaken with the Nowra Local Aboriginal Land Council (NLALC).

A Native Title register search was conducted by Artefact Heritage on 4 October 2013 with 'no relevant entries' identified.

The NLALC was contacted by Artefact Heritage and a member invited to participate in the archaeological survey. Garry Pender from the NLALC attended the site survey.

NLALC have been invited to provide a site survey report to be appended to this report but a report had not been received within the designated response timeframe.

2.0 Environmental Context

2.1 Geology

The local region is typically comprised of prominent sandstone outcroppings, gullies, hills, prominent rises and ridgelines. The study area is underlain by the Megalong Conglomerate of the Permian Shoalhaven group consisting of Nowra Sandstone, Wandrawandian Siltstone and the Conjola Formation. The formation is predominately quartz sandstone (Rose 1966).

The Nowra soil landscape is a depositional landscape characterised by moderate to gently undulating rises to low hills on Nowra Sandstone (Mills 2009: 8). Nowra Sandstone is medium to coarse grained quartz sandstone and contains rounded pebbles scattered throughout the beds. Local relief is >40 metres with slopes at >5 per cent.

2.2 Soils

Soils across the study area are moderately deep (50–100 centimetres) and consist of sandy loam and sandy clays. The soils are layered with topsoil rich in organic matter at the surface and leached deposits below down to a sandy clay rich in iron oxide. These soils are generally associated with alluvial gently undulating and flat landforms. The soils have minor to moderate erosional activity with minor erosion in zones of vegetation stripping. With minimal natural erosion likely, the soil horizon (in undisturbed zones) is conducive for intact alluvial deposits sub surface (Kuskie 2008: 5).

2.3 Vegetation and Resources

The study area is located within a crest landform around 1.2 kilometres from the Shoalhaven River. This area includes extensive gently sloping crests interspersed with low-lying creek flats and tributaries, such as Nowra Creek to the south of the Shoalhaven River and Bomaderry Creek to the north of the Shoalhaven River. In 1805 Government surveyor James Meehan recorded that the alluvial flats along the Shoalhaven were comprised of grassland and freshwater swamps and that the area was “covered with rainforest, brush cedar, softwoods, coachwood, blackbutt, sassafras, flametrees, brushes, palms, ferns, vines, orchids, eucalyptus and casuarinas” (quoted in Bayley 1975:18).

Aboriginal people were highly mobile hunter-gatherers utilising different landform units and resource zones. Different resources may have been available seasonally, necessitating movement or trade (Attenbrow 2010: 78). Aboriginal people hunted kangaroo and wallaby and snared possums for food and

skins. In marine or estuarine environments Aboriginal people caught fish and collected shellfish. There are many accounts by Europeans of Aboriginal people in canoes on rivers and the ocean, fishing and cooking the fish on small fires within the vessels (e.g. Collins 1798). The Shoalhaven estuary and floodplain area is one of the most extensive and diverse in south-eastern NSW and extends 50 kilometres upstream from the ocean (Oceanwatch 2010). Aboriginal people in the area around the Shoalhaven River would therefore have had access to both estuarine and freshwater resources, as well as the wetland and forest systems supported by the river and nearby tributaries.

2.4 Hydrology

The study area is situated along a flat landform unit approximately 1.2 kilometres from the Shoalhaven River, a major freshwater source in the region. Other watercourses in the local area include Sandy Creek more than 200 metres west of the study area, and Cabbage Tree Creek, which is located approximately 200 metres to the east. The study area is also located approximately 400 metres south east of the confluence of Sandy Creek and Mundamia Creek. Numerous first order creek lines are located within one kilometre of the study, all flowing into larger creek lines that flow into the Shoalhaven River.

2.5 Historical Land-Use Context

The Shoalhaven region began to be explored by Europeans during the late 1790s and surveyed in 1805. The first European occupants of the region were cedar getters who logged trees in the area from at least 1811. The first recorded cargo of cedar was brought from the Shoalhaven River to Sydney in December 1812, and the timber industry continued to grow, with timber getters exploiting the patches of cedar along the local rivers and creeks. During this period there was conflict between cedar getters and local Aboriginal people, and in 1815 Governor Macquarie forbade timber getters from visiting the district after a a number were killed by Aboriginal people (Navin Officer 2007: 60-61).

In 1822, merchant Alexander Berry chose the Shoalhaven as the site for an estate and he and his business partner, Edward Wollstonecraft, were jointly granted 10,000 acres named ‘Coolloomagatta’. Berry established his station at the foot of Mount Coolangatta, and by 1848 had acquired more than 15,000 acres of additional land (some of which had previously been owned by his brother, John Berry) (Navin Officer 2007: 63). A number of Aboriginal people lived and worked on Berry’s Coolangatta Estate between the time it was established and the late 1880s, when the estate began to be subdivided and the Aboriginal inhabitants were moved into the Roseby Park mission station (Kuskie 2008: 13).

In the 1850s, settlement in the district accelerated as Alexander Berry began to let farms to tenant farmers on clearing leases. In 1892, many of these tenant farmers were able to buy their portions of land when the Berry Estates were subdivided (Navin Officer 2007: 64-65).

During the nineteenth century the Aboriginal population of the Shoalhaven rapidly declined due to the effects of introduced diseases such as smallpox, and the disintegration of their traditional social structure and subsistence patterns brought about by European invasion (Kuskie 2008: 13). Today a large Aboriginal population lives in the Nowra region, many of whom grew up in the Bomaderry Children's Home or at Roseby Park mission station (DEC 2004: 18).

3.0 Archaeological Context

3.1 Aboriginal Material Culture

Aboriginal people have lived in the south coast region for at least 20,000 years (Kuskie 2008: 10). Evidence of Aboriginal occupation has been found dated to 50-60,000 yBP (years before present) at Lake Mungo in NSW and 30,000 yBP in Parramatta (JMcD CHM 2005). It is likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates we have at present. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

Ethnohistorical observations along the south coast and the hinterlands demonstrate that the material culture of the local Aboriginal population would have included a wide range of items related to subsistence, shelter, and cultural practices (Kuskie 2008: 13). The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts, followed by bone and shell. The locality of the study area, along a crest landform a considerable distance from major fresh water source indicates that the predominant site type would likely be stone artefact sites related to transient movement across the landscape.

Stone artefacts are one of the most common types of Aboriginal objects remaining in the archaeological record. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time. Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times, for example ground stone hatchets are first observed in the archaeological record around 4,000 yBP in the Sydney region (Attenbrow 2010: 102). It is argued that these changes in material culture were an indication of changes in social organisation and behaviour.

Another form of material culture identified in the local area is shelter sites. Shelter sites have been recorded where suitable overhang formations occur in outcropping bedrock, and can contain occupation deposit, including shell and stone artefact material, and/or pigment and engraved art (Kuskie 2008).

3.2 Aboriginal Ethno-historical Context

Aboriginal tribal boundaries within Australia have been reconstructed, primarily, based on surviving linguistic evidence and are therefore only approximations. Social interaction, tribal boundaries and linguistic evidence may not always correlate and it is likely boundaries and interaction and communication

levels varied and fluctuated over time. Tindale (1974) identifies the study area as being a border between Wodi Wodi and the Wandandian people. Tindale (1974) described the territory of the Wodi Wodi as extending from north of the Shoalhaven River at Nowra to Wollongong and inland to Mossvale. The Wandandian people are described as extending from the Lower Shoalhaven to Ulladulla, and inland to Braidwood. The Wodi Wodi spoke the Dharawal language, while the Wandandian people spoke the Dhurga language (Eades 1976).

As Aboriginal people were mobile hunter-gatherers, it is likely that they moved across the landscape between resource zones. It is also likely that movement was related to socio/cultural factors such as gatherings and ceremonial obligations (Attenbrow 2010). Campsites would have provided temporary residences. It is difficult to ascertain whether a campsite existed at a given location, but correlations between stone artefact density and campsites are often assumed. While it is likely that knapping would have occurred at a campsite, it is also likely that knapping would have occurred during movement across the landscape, as tools may have been prepared or repaired during hunting and gathering activities (Artefact Heritage, 2013a).

Boot (2002) has formulated a model for occupation patterns in the South Coast hinterland. He argues that small groups of people travelling in the hinterland are likely to have exploited resources from the immediate surrounds of a site and rarely exported these resources elsewhere, while larger groups would have congregated where abundant short term resources occurred. Therefore, greater intensity of occupation would have occurred in regions of greater biodiversity (Boot 2002: 317-319).

The South Coast is thought to have been one of the most densely populated regions prior to colonisation; while exact population figures are not known it is likely to have been in the order of 204 people per square kilometre (Organ & Speechley 1997: 1). This may be related to the availability of many and varied food resources the coastal locality provided.

Ethnographic sources suggest that faunal species available to Aboriginal people in the current study area would likely have included possum, bandicoot, kangaroo, fish and wild fowl, as well as prawns, eel and shellfish (Townsend 1848).

3.3 OEH Aboriginal Heritage Information Management System (AHIMS)

A search of the OEH AHIMS site register was undertaken on 4 October 2013 (Client Service ID 1133744). The coordinates for the search area are outlined in Table 1.

Table 1: AHIMS Search Coordinates

GDA 94	MGA 56	271200E 6131900N	281200E 6141900N
Buffer (metres)		50	

A search of approximately three kilometres around the study area was undertaken with a total of 91 registered sites identified (Figure 4). The predominant site types in the local area were open artefact sites and closed shelter sites with deposits (Table 1).

Table 2: AHIMS Search Results

Site Feature	Frequency
Artefact (Isolated Find and Open Camp Site)	30
Shelter with Deposit	30
Axe Grinding Groove	9
Shelter with Art	12
Habitation Structure	3
Scarred Tree	3
Burial	1
Shelter with PAD	1
Stone Arrangement	1
Art	1
Total	91

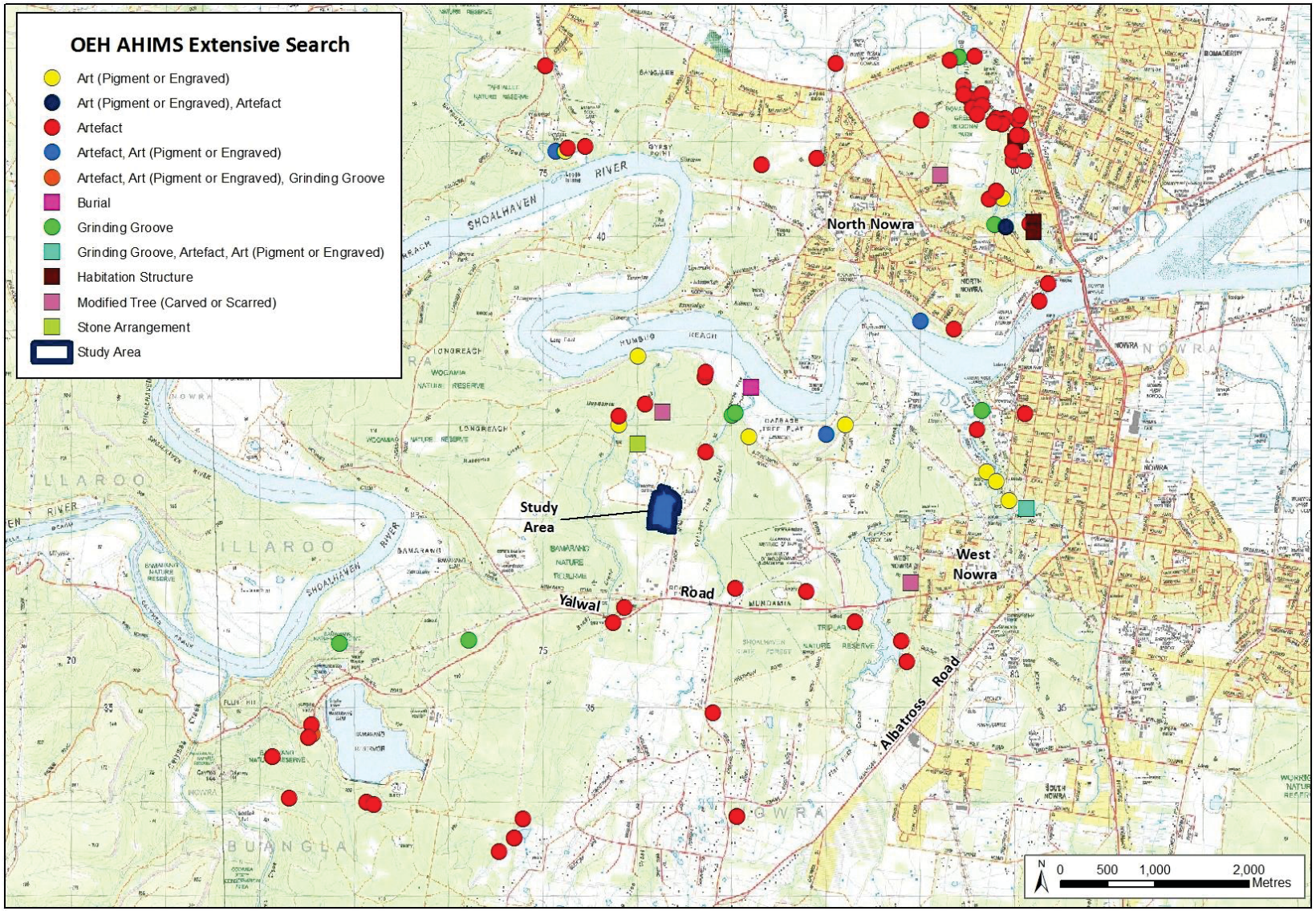
Material traces of Aboriginal occupation exist throughout the landscape and are known as Aboriginal sites. The primary site types that are found in the region include:

- Stone Artefacts – Flaked and ground stone artefacts are the most common trace of Aboriginal occupation in the Shoalhaven region. Aboriginal people used particular techniques to flake stone and these changed over time. The approximate age of a tool can often be diagnosed by the way that it was made. Stone artefacts are most often found in scatters that may indicate an Aboriginal campsite was once present. Stone artefacts may also be found as isolated finds. It is possible that stone artefacts, either on the surface, or buried, are present within the study area.
- Rock shelters with deposit – Rock shelters were used by Aboriginal people for habitation, rest places and as art or ceremonial sites. Deposits can build up on the floor of these shelters over time and bury traces of Aboriginal occupation. If these deposits are not disturbed, rock shelters can provide an intact stratigraphy that can tell us about the way Aboriginal occupation changed

through time. Rock shelters are unlikely to occur within the study area due to the lack of sandstone outcrops.

- Rock engravings/Rock art – Rock engravings are often found in sandstone geologies on flat sandstone platforms. Shapes of animals, ancestor figures or other symbols were carved into the sandstone. Weathering has affected the visibility of many rock engravings. Other rock art includes stencils, charcoal drawings and paintings. It is unlikely that rock art / engravings will occur within the study area due to the lack of suitable landforms where outcropping bedrock is likely to occur.
- Axe grinding grooves – Axe grinding grooves are created when axe blanks (often basalt cobbles) are shaped by rubbing the stone across an abrasive rock such as sandstone, often using water. Sharpening axes and other tools also forms them. Axe grinding grooves are often found on the banks of streams or rock pools. It is unlikely that axe grinding grooves will occur within the study area due to the lack of suitable landforms where outcropping bedrock is likely to occur.
- Scarred trees – Aboriginal people practiced tree marking or scarring for a variety of reasons. Large scars are often the result of a tree being debarked for a canoe blank and smaller scars may have been the result of making shields or coolamons (storage vessels). Tree marking may have been the result of ritual practices, or associated with burial. Scarred trees that remain today would be over 150 years old and the scar would retain certain characteristics that enable its identification as cultural.
- Potential Archaeological Deposit (PAD) – Areas are classified as PADs if there is a likelihood of archaeological material existing below the ground surface or on the ground surface but obscured from view. An Aboriginal object does not need to be recorded for an area of PAD to be specified. It is possible that areas of PAD may be present within the study areas.

Figure 3: AHIMS Map (background image © NSW LPI 2013)



3.4 Previous Archaeological Investigations

Over the last three decades a number of archaeological investigations have been conducted in the South Coast region, some of which have been undertaken in close proximity to the current study area. A discussion of the findings of those investigations is outlined below.

3.4.1 Previous archaeological investigations in the Broader Area

Clarke and Kuskie (2006)

In 2006 Clarke and Kuskie developed a predictive model for the Shoalhaven region. They suggested that the region could be divided into two main resource zones, each supporting a different range of occupation types. These zones were called 'Primary' and 'Secondary' zones, and were defined as follows:

- 'Primary': "Primary resource zones were defined in terrain units in close proximity to the major Shoalhaven and Crookhaven Rivers. These zones have higher probability of containing evidence for a wide range of occupation types including congregations of large groups of people, community base camps, nuclear / extended family base camps, camping by small hunting and/or gathering (without camping) and transitory movement. Occupation is likely to have been regular and potentially longer in duration in the primary zones" (Clarke and Kuskie 2006: ii).
- 'Secondary': "Secondary resource zones were defined in terrain units in close proximity to higher order creeks and/or wetlands, including Bomaderry, Mundamia, Calymea, Flat Rock, Bengalee and Sandy Creeks and their associated flats, slopes and terraces. These secondary zones have a high probability of containing evidence of nuclear / extended family base camps, camping by small and/or gathering parties, hunting and/or gathering (without camping) and transitory movement. Occupation is likely to have been sporadic and relatively short in duration in secondary zones" (Clarke and Kuskie 2006: ii).

Areas outside the primary and secondary resource zones included terrain units distant from higher order creeks and/or wetlands, such as lower order drainage depressions and associated slopes and crests. Occupation in these areas is likely to have involved hunting and/or gathering (without camping) and transitory movement and is likely to have been sporadic and very short in duration' (Clarke and Kuskie 2006: ii).

The current study area, based on Clarke and Kuskie's predictive model is situated outside both the Primary and Secondary resource zones. It was identified that artefact scatters are likely to be the most common site type in the area, with potential for stone artefact evidence to occur across virtually the entire region. Typically, artefacts occur in low densities consistent with background scatter.

Rock shelters and axe grinding grooves occur with relative frequency. Rock shelters are more likely to be located in moderate to steep drainage depressions or spur crest units, although they can also occur in gently sloping terrain where suitable stone outcrops occur. It is possible that larger shelters situated close to a wide variety of resources may have been used as base camps, with smaller shelters utilised when needed. Art sites may occur in any area with suitable surfaces. Likewise, grinding grooves may occur in any area with suitable stone outcrops (such as sandstone), generally with a relatively close water source (Clarke and Kuskie 2006).

Kelleher Nightingale Consulting Pty Ltd (KNC) 2010:

In 2010 KNC was commissioned by GHD, on behalf of SCC, to undertake an Aboriginal heritage assessment for the North Nowra Link Road project. The study area was located approximately 3.8 kilometres north east of the current study. The KNC study was situated within the Bomaderry Creek Regional Park and within a gully landscape with sandstone escarpments and overhangs. The assessment aimed to identify Aboriginal sites and/or places within the study area and assess the impact that development would have on each individual site. The survey and overall assessment identified twenty eight sites, twenty of which were newly recorded. Within the KNC study area the predominant site type consisted of occupation shelters (or shelters with deposits). Of the twenty eight sites identified, twenty one were assessed as having low archaeological significance and six 'exhibit at least moderate archaeological significance' (KNC, 2010: 76).

Navin Officer Heritage Consultants 2012:

In 2009 Navin Officer was commissioned by Conybeare Morrison International Pty Ltd, on behalf of the Shaolin Temple Foundation (Australia), to undertake an Aboriginal Cultural Heritage Assessment for a 1200 hectare area of land at Comberton Grange approximately twelve kilometres south east of the current study area. The study identified that nine previously recorded sites were located within the study area with only three being re-located during a study area survey. The survey identified a further five previously un-recorded sites. The sites located within the study area were primarily artefact scatters with scarred trees, isolated finds and a rock shelter was also identified. The majority of the known sites were recorded on slopes associated with creek lines or along crest and ridgeline landform units.

Artefact Heritage 2013a:

In 2013 Artefact Heritage was commissioned by GHD to conduct an Aboriginal due diligence assessment for the St Ann's Street Nowra, and Edwards Avenue, Bomaderry proposed sewage pumping station. The St Anne's study area is located approximately 4.5 kilometres east of the current study area. The due diligence assessment did not locate any Aboriginal sites and/or places within the St Ann's Street study area and it was identified that the study area had low archaeological potential. The Edwards Avenue

study area identified one isolated find within a disturbed context within close proximity to a creek line along a low lying landform unit. The Edward's Avenue study area was likewise assessed as having low archaeological potential.

Artefact Heritage 2013b:

In 2013 Artefact Heritage was engaged by Parson Brinkerhoff to conduct an Aboriginal and non-Indigenous heritage assessment for the implementation of the Nowra 33kV feeder Line 7501/1. The feeder line extended along an easement approximately 7.1 kilometres in length and fifteen metres wide. The easement was located approximately 1.9 kilometres east of the current study area.

The assessment identified that four previously recorded Aboriginal sites within the vicinity of the easement. Two of the previously recorded sites were rockshelters. The assessment identified that these sites would not be impacted by the proposed development. The other two previously recorded sites were identified as open artefact sites. The study investigation did not relocate these artefacts at the coordinates provided. The assessment recommended that the site areas be cordoned off to mitigate against secondary impacts that may be associated with the feeder line implementation.

3.4.2 Previous archaeological investigation within the study area

Mills 2009

In 2009 Mills prepared a desktop based Aboriginal heritage assessment for the Preliminary Environmental Assessment (PEA) of the current study area. The aim of the assessment was to identify the approvals processes required for the proposed works.

The preliminary assessment found that the study area was a considerable distance from permanent freshwater resources. It was hypothesised that the distance of the study area from permanent freshwater sources meant that large habitation sites would be unlikely. The study suggested that, smaller sites and / or isolated artefacts would be more likely to occur within the study area based on the availability of freshwater. It was further identified that, if sites did occur across the landscape, they would be found dispersed and low density.

4.0 Predictive Model

Predictive models are important and provide assessment on the most likely areas of archaeological potential within a given study area, based on regional archaeological sites and studies. These models also indicate the likely types of archaeological evidence likely to occur within a particular area.

This predictive model comprises a series of statements about the nature and distribution of evidence of Aboriginal land use that is expected in the study area. These statements are based on the information gathered regarding;

- Landscape context and landform units.
- Ethnohistorical evidence of Aboriginal land use.
- Historical disturbance and landscape modification.
- Results of previous archaeological work in the vicinity of the study area.
- Historical accounts of Aboriginal occupation, and landscape character.
- Predictive modelling proposed in previous archaeological investigations.

A predictive statement for Aboriginal site types in the local area is as follows:

- Stone artefacts are likely to be the predominant Aboriginal site type in the local context.
- Aboriginal cultural material and / or objects, if present, will likely be representative of transitory movement across the local area.
- Modified trees may occur where suitable old growth trees remain.
- Any existing intact archaeological deposits will be located in areas of least ground disturbance.

Other Aboriginal site types such as shell middens, shelter sites and open campsites are unlikely to occur within the study area.

5.0 Study Area Survey Methods

5.1 Site Definition

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

OEH guidelines state, in regard to site definition, that one or more of the following criteria must be used when recording material traces of Aboriginal land use.

- The spatial extent of the visible objects, or direct evidence of their location.
- Obvious physical boundaries where present, e.g. mound site and middens (if visibility is good), a ceremonial ground.
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this study sites were defined as obvious physical boundaries.

5.2 Study Area Survey

The aim of the study area survey was to identify if Aboriginal cultural material and / or objects are present within the study area and to establish the likelihood of Aboriginal objects occurring beneath the ground surface.

The survey was undertaken in accordance with the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010). All areas were covered on foot. A handheld Global Positioning System (GPS) was used to track the path of the surveyors, and to record the co-ordinates of sites, features and location of landform units within the study area. An aerial map of the study area was also carried by members of the survey team in the field. GDA94 coordinates for sites and PADs were taken with a handheld GPS.

All ground exposures were examined for stone artefacts, shell, or other traces of Aboriginal occupation. Old growth trees were examined for signs of cultural scarring or marking.

A photographic record was kept of representative sections of the study area. Photographs were taken to record the landform units within the study area, vegetation, levels of disturbance, and Aboriginal sites and PADs. Scales were used for photographs where appropriate.

Due to proposed boundary changes, an additional survey was conducted. NLALC was not able to send a representative out to the additional survey on 28 March 2014. Table 3 provides the names of the individuals who undertook the survey.

Table 3: Site Survey Register

Organisation	Individual	Date
NLALC	Garry Pender	9 October 2013
Artefact Heritage	Joshua Madden	9 October 2013 & 28 March 2014
Artefact Heritage	Josh Symons	9 October 2013 & 28 March 2014

5.3 Field Methods

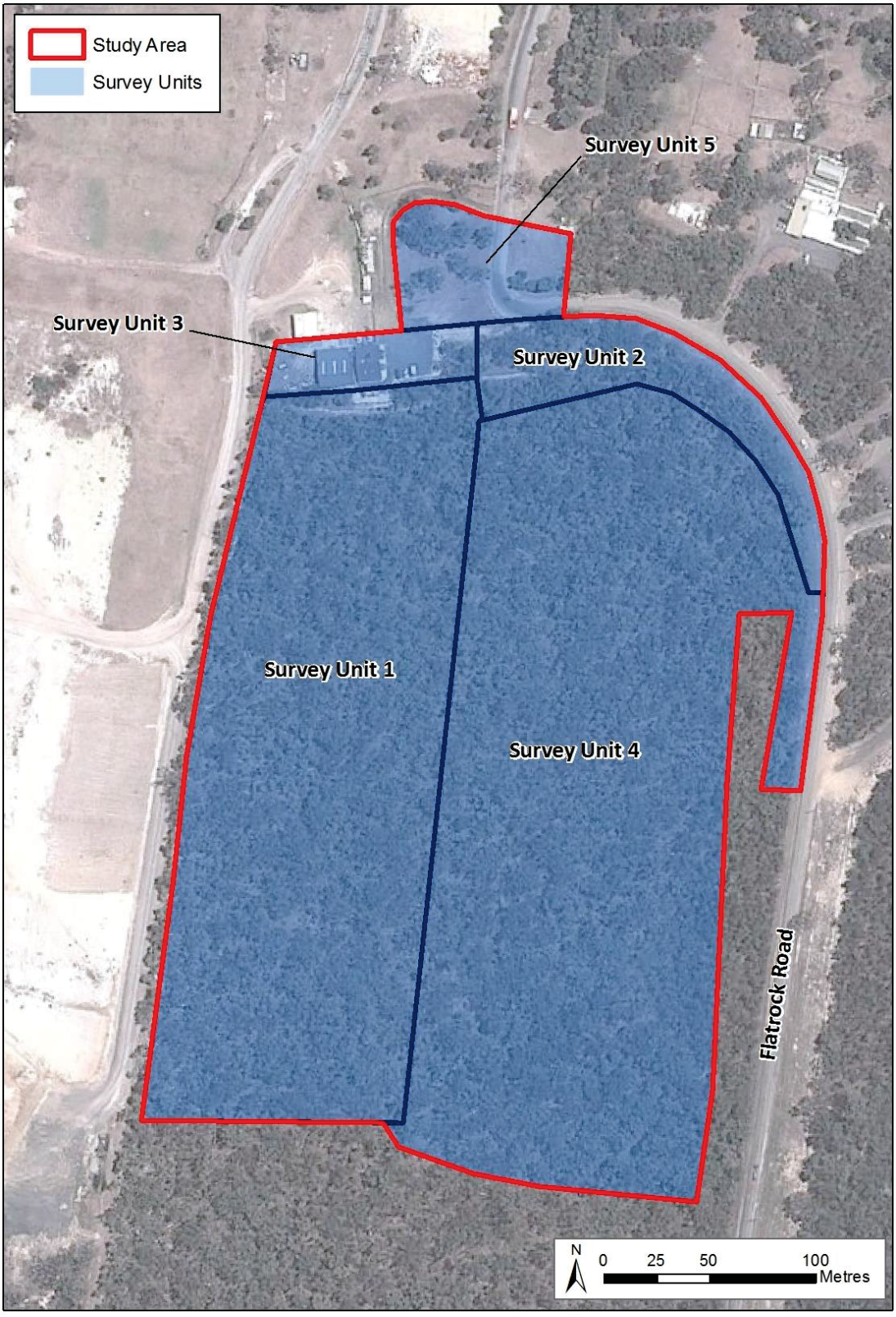
Due to the layout of the study area and the various disturbance levels, the study area was divided into five survey units (Figure 4). A description of the survey units is described below in Section 6.

Due to the extensive undergrowth and limited surface visibility a sample survey was conducted of Survey Units One, Two and Four. Survey Units Three and Five were subject to full survey coverage. A sample survey is acceptable under the OEH *Code of Practice* (2010) with justification. The patches of dense undergrowth and limited surface visibility meant a sample survey of those areas was practicable.

The study area sample survey was undertaken on foot with the survey team carrying colour aerial photography and topographic maps of the study area and a non-differential GPS. The tracks walked during the survey were marked out on the coloured maps and plotted on the GPS unit. All Aboriginal sites, areas of potential, survey units and features were recorded using a non-differential GPS unit. Photographs were taken of different landform units, sites and sample survey units.

Descriptions of the survey and associated survey images are outlined in Section 6.

Figure 4: Survey Units (background image © Google 2013)



6.0 Study Area Survey Results

Survey Unit One:

Survey Unit One covered the western portion of the study area and measured approximately 400 metres by 100 metres. Survey Unit One was located across a broad crest landform. Surface visibility across the survey unit was limited due to dense shrubbery, leaf litter and rubbish blown in from neighbouring landfill. The overall surface visibility for the unit was below ten per cent. Overall exposure across the study area was assessed as five per cent. Seven survey transect lines were walked through Survey Unit One with approximately six metres spacing's between each individual. The Survey Unit was densely covered with re-growth woodland and is likely to have been previously cleared of vegetation for agricultural purposes.

Areas of disturbance were associated with the implementation of fence lines and walking routes on the edges of the study area.

No Aboriginal objects were identified in Survey Unit One.

Plate 1: Survey Unit 1 View south showing disturbance associated with walking track and showing visibility of the majority of the survey unit

Plate 2: Survey Unit 1 View north showing tree cover, leaf litter and shrubbery

Survey Unit Two:

Survey Unit Two is located on the northern and eastern margins of the study area and measured approximately 25 metres by 300 metres. Survey Unit Two runs parallel to the Flatrock Road and the waste disposal entrance and is situated on a broad crest that has been cut directly to the north and east of the Survey Unit for the construction of the road. Surface visibility was approximately ten per cent. Overall exposure across the study area was assessed as five per cent. The Survey Unit was densely covered with re-growth woodland and is likely to have been previously cleared of vegetation for agricultural purposes. Two transect lines were walked through Survey Unit Two.

No Aboriginal objects were identified in Survey Unit Two.

Plate 3: Survey Unit 2, View west of disturbance next to the road

Plate 4: Survey Unit 2 View southwest of the general view of the survey unit

Survey Unit Three:

Survey Unit Three was located within the existing West Nowra Recycling and Waste Facility car park and included disturbances relating to site buildings and storage sheds, a car park and a storm water runoff drain and drainage channel. The landform was heavily disturbed with one small zone to the south of the survey unit (and abutting Survey Unit One associated with the broad crest) not developed. Visibility across the survey unit was below ten per cent. Areas of exposure were identified in areas of moderate disturbance and where natural landforms still occurred and were at ten per cent.

No Aboriginal objects were identified in Survey Unit Three.

Plate 5: Survey Unit 3 View the cutting for the implementation of the car park and buildings

Plate 6: Survey Unit 3 View west of the storm water drain, car park, facilities and area of lower disturbance

Survey Unit Four:

Survey Unit Four covered the eastern portion of the study area and measured approximately 400 metres by 125 metres. Survey Unit Four, like Survey Unit One was located across a broad crest landform. Surface visibility was limited due to dense shrubbery, leaf litter and weeds. The overall surface visibility for the unit was below five per cent. Overall exposure across the study area was assessed as five per cent. Survey Unit Four was traversed by six transects with approximately six metres spacing's between each individual. Large areas along the eastern edge of Survey Unit Four had previously been subject to landscape alteration and soil mounding and cutting which is now currently overgrown with new growth trees and shrubbery. The Survey Unit in general was covered with dense re-growth woodland, shrubbery and weeds and is likely to have been previously cleared of vegetation for agricultural purposes.

Other disturbances were associated with the implementation of what appeared to be fence lines and small pitfall traps for the ecological investigations carries out as part of the EIS.

No Aboriginal objects were identified in Survey Unit Four.

Plate 7: Survey Unit 4 area of exposure and soil mounding.

Plate 8: Survey Unit 4-typical foliage cover

Survey Unit Five:

Survey Unit Five was located at the location of a proposed round-a-bout north of Survey Units Two and Three and included disturbances associated with landscape modifications, fence lines, a drainage channel, sub-surface storm water drains, a road and clearing. Survey Unit Five was assessed as being heavily disturbed. Visibility across the survey unit was below five per cent. Areas of exposure were identified in areas of disturbance and were at ten per cent.

No Aboriginal objects were identified in Survey Unit Five.

Plate 9: Storm water drain at the southern end of Survey Unit 5.

Table 4: Survey Coverage

Survey Unit	Landform	Survey Unit Area (sq. m)	Sample Survey Unit Coverage (sqm.)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
1	Broad crest	40704	15000	10	5	75	0.5
2	Broad crest	5268	3600	10	5	18	0.5
3	Disturbed	2524	–	10	10	25	1
4	Broad crest	42580	13780	5	5	34	0.2
5	Disturbed	4331	–	5	10	22	0.5

Table 5: Landform Summary

Landform	Landform Area	Area effectively surveyed (sq. m)	% of landform effectively surveyed	Number of sites	Number of artefacts or features
Broad crest	32380	127	0.4	–	–
Disturbed	6855	47	0.7	–	–

7.0 Analysis and Discussion

7.1 Analysis of Survey Results

No Aboriginal objects or areas of archaeological potential were identified within the study area. No areas of Aboriginal archaeological potential were identified within the study area.

The overall visibility across the study area was limited, but adequate for assessment considering the open woodland environment with patches of dense undergrowth and frequency of leaf litter. Very few large, old growth trees remained. All old growth trees were inspected for scarring. The majority of vegetation appeared to be fairly recent regrowth interspersed with shrubbery, grasses, litter and rubbish.

The study area is approximately 1.2 kilometres from permanent freshwater sources and located outside both Primary and Secondary Zones outlined within the Shoalhaven Aboriginal Predictive Model.

7.2 Discussion

In 2009 Mills prepared a preliminary Aboriginal heritage assessment of the study area. The assessment identified that the study area was a substantial distance from major watercourses and as such concluded that smaller sites and scatters (which are usually associated with low density background densities) would be the most likely site types to be identified within the area.

Using Clarke and Kuskie's model for the Shoalhaven Region (2006), the study area is located outside the Primary and Secondary resource Zones, suggesting that archaeological material in the local area is likely to be associated with transitory movement with sporadic and short occupation periods.

The current study has likewise concluded that the study area is situated a considerable distance from permanent freshwater sources. Further, it is identified that the broad crest landform has not been identified as a landform conducive of 'primary or secondary zone datum' (Clarke and Kuskie 2006).

7.3 Analysis of potential

Archaeological potential is closely related to the levels of ground disturbance within a given area. However, other factors are also taken into account when assessing archaeological potential, such as whether artefacts were located on the surface, and whether the area is within a sensitive landform unit according to the predictive statements. This section provides an analysis of the archaeological potential of the study area.

Survey Units One, Two and Four were located across a broad crest landform with disturbances relating to the installation of fences, previous land clearances and in Survey Unit 4 some soil landscape modification. The study area is located outside the Shoalhaven 'Primary and Secondary Zones' and as such, is considered to be a transitory zone. The considerable distance from freshwater resources and habitation areas associated with sandstone overhangs also indicates the study area is located within an area that is likely to have Aboriginal objects in dispersed contexts related to transitory movement.

Survey Units Three and Five were identified as having high levels of disturbance associated with the installation of buildings and storage sheds, a car park, a road, landscape modification and a storm water runoff drain and drainage channel.

Based on previous studies the current survey, levels of disturbance, distance from permanent fresh water sources and the Shoalhaven predictive model, this assessment has identified that the study area has low archaeological potential.

8.0 Statutory Requirements

There are several items of State legislation that are relevant to the current study. A summary of these Acts and the implications for the proposed development follow.

National Parks & Wildlife Act (1974)

The *National Parks & Wildlife Act 1974* (the NP&W Act) provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 90. Aboriginal objects are afforded automatic statutory protection in NSW whereby it is an offence to:

'*damage, deface or destroy Aboriginal sites without the prior consent of the Director-General of the National Parks and Wildlife Service* (now the OEH)'.

The Act defines an Aboriginal 'object' as:

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

The Act was recently amended (2010), with the legislative structure for seeking permission to impact on heritage items modified. A 'section 90' permit is now the only Aboriginal Heritage Impact Permit (AHIP) available and may only be granted by OEH if the conditions of the 'due diligence guidelines', and/or an 'archaeological investigation' have been met. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

The Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (the EP&A Act) establishes the framework for cultural heritage values to be formally assessed in the land use planning and development consent process. The EP&A Act requires that environmental impacts are considered prior to land development; this includes impacts on cultural heritage items and places as well as archaeological sites and deposits.

Aboriginal Land Rights Act (1983)

The Aboriginal Land Rights Act 1983 is administered by the NSW Department of Human Services - Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Act to; (a) take action to protect the culture and heritage of

Aboriginal persons in the council's area, subject to any other law, and (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area. The study area is located within the boundaries of the NLALC.

Native Title Act (1994)

The Native Title Act 1994 was introduced to work in conjunction with the Commonwealth Native Title Act. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act. No Native Title Claims are listed within the study area.

9.0 Significance Assessment

9.1 Assessment Criteria

Archaeological significance refers to the archaeological or scientific importance of a landscape or area. This is characterised using archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practiced? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

The NLALC did not raise any particular issues of cultural significance during the site survey.

9.2 Archaeological Significance Assessment

The archaeological significance of the study area has been determined based on observations of each survey unit during the field survey and the results of previous archaeological investigations.

Previous studies and the current assessment have confirmed that the study area is a significant distance from freshwater resources and is located outside the Primary and Secondary Zones identified within the Shoalhaven Predictive Model. The study area is located within an area that has been assessed as having low representative and rarity values for Aboriginal archaeological material and / or sites. Aboriginal objects may be present in areas of low archaeological significance, but are likely to be in disturbed contexts and / or associated with transient Aboriginal occupation and identified as low density background scatters. The study area is assessed as having low levels of both scientific and research potential and as demonstrating overall low archaeological significance.

10.0 Impact Assessment

10.1 Archaeological Impact Assessment

As discussed in Section 1.2, works associated with construction of the RRP will include the following:

- a composting facility to process up to 50,000 tonnes of waste per annum from both domestic and commercial waste sources;
- a materials recovery facility for sorting through up to 25,000 tonnes of dry (non-putrescible) solid wastes per annum from both domestic and commercial waste sources;
- a sorting and recovery facility for sorting of approximately 10,000 tonnes per annum of construction and demolition (C&D) waste; and,
- other stockpile areas for storing and processing approximately 10,000 tonnes per annum of recyclable materials, such as green waste, scrap steel and concrete.

Ancillary infrastructure will include:

- circulation roadways and new weighbridges for entering and existing vehicles;
- offices and amenities located within the composting and Material Recovery Facility (MRF) building;
- sediment / detention basins;
- car parking for up to 30 cars plus 10 visitor spaces;
- fencing around the perimeter of the RRP site;
- asset protection zones (APZ).

Construction works will impact upon the ground surface, including excavation to varying levels. These sub-surface impacts will be associated with vegetation clearance, levelling the ground surface, as well as construction of foundations for proposed structures.

The proposed construction of the RRP will not impact upon any recorded Aboriginal objects. The proposed works will not impact upon any areas of moderate or high archaeological potential.

11.0 Management and Mitigation Measures

11.1 Guiding Principles

Conservation of Aboriginal sites is best practice cultural heritage management. Retaining Aboriginal archaeological material within a natural landscape setting enables the continuation of past cultural associations with the landscape.

The nature of mitigation measures recommended is primarily based on an assessment of archaeological significance. The recommendations are also informed by cultural significance. The NLALC were invited to comment on cultural significance, but no comments have been received.

11.2 Mitigation Measures

Mitigation measures recommended vary depending on the assessment of archaeological significance of the area and are based on its research potential, rarity, representativeness and educational value. In general the following mitigation measures would be employed:

- Low archaeological significance – No further work required. No archaeological constraints on development.
- Moderate archaeological significance – Archaeological excavation would be required if areas of moderate significance were to be impacted.
- High archaeological significance – Conservation as a priority. Archaeological excavations would be required if the areas of high significance were to be impacted.

The current assessment has established that the study area demonstrates low archaeological potential and low archaeological significance. The assessment confirmed that no previously recorded Aboriginal sites and/or places and no areas of archaeological potential are located within the boundaries of the study area.

No further Aboriginal archaeological investigation is required for the study area.

If Aboriginal objects are uncovered once works commence, work in the vicinity of the find must cease and an archaeologist, the OEH, and the NLALC must be informed. It is an offence under the *National Parks and Wildlife Act 1974* (as amended 2010) to disturb or destroy an Aboriginal object without appropriate approvals. If human remains are found, work must cease, the site must be secured and the NSW Police and OEH notified. An Aboriginal Heritage Impact Permit (AHIP) would be required before works recommence. Further archaeological investigations may also be required.

12.0 Recommendations

The following recommendations were based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended.
- The *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* DECCW *(24 September 2010)*.
- The Director General Requirements for the development (713) Attachment C: Aboriginal Cultural Heritage Assessment requirements.
- The results of the background research, site survey and assessment.
- The interests of NLALC.
- The likely impacts associated with the construction of the RRP.

It was found that:

- No Aboriginal sites and/or places were located within the study area.
- The study area was assessed as demonstrating low archaeological potential.

It is therefore recommended that:

- The proposed construction of the RRP is able to proceed without the need for further archaeological and/or Aboriginal heritage assessment.
- If Aboriginal objects are uncovered during works an archaeologist, the NLALC and OEH must be notified. Further investigation and approvals may be required.
- If human skeletal remains are encountered during works, all work must cease immediately and the NSW Police contacted. If the skeletal remains are found to be Aboriginal, consultation with OEH and NLALC will be required.

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