Proposed Rural Subdivision at Picnic Point, Wonboyn Lake, NSW
Subsurface Test Excavation

A Report to
Picnic Point Pty Ltd
16 Glenview Avenue
Malvern VIC 3144

April 2009

Julie Dibden
New South Wales Archaeology Pty Limited
PO Box 2135 Central Tilba NSW 2546 Ph/fax 02 44737947 mob. 0427074901
julie@nswarchaeology.com.au

TABLE OF CONTENTS

1. SUMMARY

1.1 Introduction

New South Wales Archaeology Pty Ltd was commissioned by Picnic Point Pty Ltd in January 2007 to undertake an Aboriginal archaeological assessment of a proposed subdivision of Portion 14 and a boundary adjustment with adjoining Lot B DP33573 at Wonboyn, via Eden on the Far South Coast of New South Wales (Figure 1).

The proposed works included subdivision of an area of land measuring ca. 130 hectares into seven rural lots including six smaller lots and one large residual lot (also rural) containing the majority of the land.

Following the preliminary archaeological assessment undertaken by New South Wales Archaeology Pty Ltd (Dibden 2007) the low gradient spur crests adjacent Wonboyn Lake (Survey Units 3 and 7) were identified as having the potential to contain artefacts in low/moderate densities. Given that impacts in the form of building envelopes and access roads were proposed in these areas a program of archaeological test excavation was recommended within the areas of proposed impacts.

This report details the results of that archaeological testing; the work has been conducted under Part 3A of *The Environmental Planning and Assessment Act* 1979.

1.2 The Subsurface Test Excavation Program

Subsurface test excavation was conducted at the study area by New South Wales Archaeology Pty Ltd and representatives of the Eden Local Aboriginal Land Council (ELALC), Lawrence Bamblett and Terry Scott, in March 2009.

A total of 49 test pits were excavated in Survey Units 3 and 7 (previously defined in the initial survey report: Dibden 2007). Pits were excavated in 5 metre intervals along 7 x 30 metre transects; the transects were located so as to coincide with areas of proposed impacts on Lots 1, 2, 4, 5, 6 and 7.

1.3 Results

A total of 14 stone artefacts were retrieved during the excavation. Artefacts were recovered from 9 of the 49 Test Pits; no artefacts were recovered from Survey Unit 3.

The distribution of artefacts across Survey Unit 7 is relatively consistent; artefacts are present in the majority of Test Pits and the density within each pit is low to very low. It is expected that an overall very low density distribution of artefacts extends relatively consistently across the entire Survey Unit.

In the case of Survey Unit 3, where no artefacts were recovered, it is expected that any artefacts that might be present would occur in a very patchy distribution. Isolated occurrences might occur at low or very low densities but overall the density is expected to be extremely low ($<1/10m^2$).

Survey Units 3 and 7 were initially targeted for subsurface testing on the basis of a predictive model of Aboriginal occupation for the local region. Generally, low gradient landforms adjacent estuarine environments are likely to be of moderate to high archaeological sensitivity, particularly if a source of fresh water is located nearby. It could be the absence of such a water source within the study area that explains the overall very low density of archaeological material recovered from the test excavation. It may also be that the isolated nature of Picnic Point contributed to the way in which Aboriginal people used it. The headland extends more than two kilometres north of the rest of the southern bank of the estuary (Figure 1); it is thus an area that would not normally have been traversed by people moving from the hinterland towards the littoral areas to the east. Given the access to the estuary and the potential food resources provided by the forest itself, it is still unusual that the headland was not a greater focus of activity.

What is more interesting than the overall very low density of artefacts at Picnic Point, is the apparent absence of artefacts in Survey Unit 3. As discussed above, this result is interpreted as being likely to represent an extremely low density of artefacts rather than a total absence of archaeological material throughout the Survey Unit. Essentially, Survey Unit 3 is nearly identical to Survey Unit 7 in terms of landform type, gradient, aspect,

vegetation, geology, distance to water and prior impacts. It is logical therefore to expect that both Survey Units would contain similar archaeological material.

Overall, the archaeological resource in the study area is assessed to be of low to very low archaeological significance.

1.4 Statutory Context

The Environmental Planning and Assessment Act 1979 (EP&A Act), its regulations, schedules and guidelines provides the context for the requirement for environmental impact assessments to be undertaken during land use planning (NPWS 1997).

Part 3A of the Environmental Planning and Assessment Act 1979
On 9 June 2005 the NSW Parliament passed the Environmental Planning and Assessment Amendment (Infrastructure and Other Planning Reform) Bill. The Act was assented to on 16 June 2005 and commenced on 1 August 2005. This amendment contains key elements of the NSW Government's planning system reforms and makes major changes to both plan-making and major development assessment.

A key component of the amendments is the insertion of a new Part 3A (Major Projects) into the EP&A Act. The new Part 3A consolidates the assessment and approval regime for all major developments which previously were addressed under Part 4 (Development Assessment) or Part 5 (Environmental Assessment).

Under the terms of Part 3A of the Environmental Planning and Assessment Act 1979 the following authorizations are not required for an approved project (and accordingly the provisions of an Act that prohibit an activity without such an authority do not apply):

- a permit under section 87 or a consent under section 90 of the National Parks and Wildlife Act 1974

1.5 Recommendations

The following recommendations are based on a consideration of the results of the testing program, the scientific significance assessment of Survey Units 3 and 7 and the relevant statutory constraints:

1. There are no archaeological constraints to the proposed subdivision at Picnic Point, Wonboyn Lake. The archaeological resource is assessed to be of low scientific significance only and therefore does not surpass significance thresholds which would act to preclude impacts.

2. No impact mitigation is considered to be warranted in the proposed impact areas.

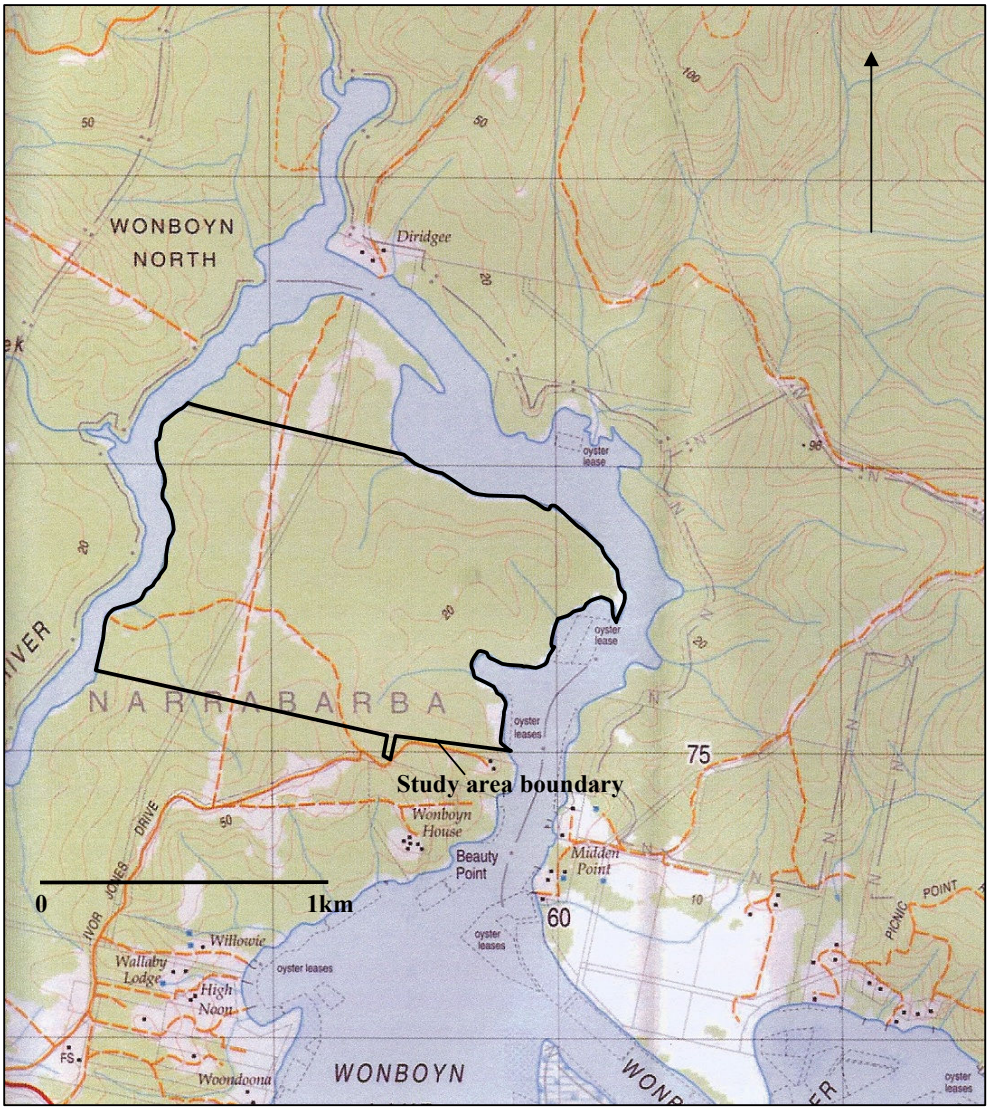

Figure 1. The location of the proposal area (Kiah 8823-1-S 2nd ed. CMA: AGD).

Acknowledgments

Gratitude is extended to the following people for their assistance in this project:

Jenny Titterton, The Planning Group
Lawrence Bamblett and Terry Scott, Eden Local Aboriginal Land Council
Maree Staight, RW Surveying and Valuations
Doug Hemmingway, Proponent

2. INTRODUCTION

This report documents the results of a program of subsurface test excavation undertaken by New South Wales Archaeology Pty Ltd at Picnic Point, Wonboyn Lake via Eden on the Far South Coast of New South Wales (Figure 1).

New South Wales Archaeology Pty Ltd was originally commissioned by The Planning Group in January 2007 to undertake an Aboriginal archaeological assessment of a proposed subdivision of Portion 14 and a boundary adjustment with adjoining Lot B DP33573 at Wonboyn.

It is proposed to subdivide the land measuring ca. 130 hectares into seven rural lots including six smaller lots and a large residual lot (also rural) containing the majority of the land. The smaller lots measure between 2.83 and 4.58 hectares in size while the seventh lot contains the residual land after subdivision. The majority of this lot would remain undisturbed with the exception of a dwelling envelope, proposed right of carriageway and fire trail.

During the preliminary archaeological assessment (Dibden 2007) three Aboriginal object recordings were made, one of which was located in an area of proposed impacts (SU7/L1). In addition, two Survey Units (SU3 and SU7) in which impacts are proposed were predicted to contain Aboriginal objects (stone artefacts and shell midden) in low to moderate density in a subsurface context.

Effective survey coverage encountered during the survey was very low and there was a correspondingly restricted opportunity to observe the full extent of the artefact distribution in the proposal area. Accordingly a program of subsurface test excavation was recommended to be undertaken in Survey Units 3 and 7. This report documents the results of that work.

The work has been undertaken under Part 3A of the Environmental Planning and Assessment Act 1979. The Director-General, NSW Department of Planning, issued The Planning Group with a list of requirements relating to the environmental assessment of the proposal. Following the submission to the Department of Planning of the Environmental Assessment, subsurface testing was requested within the identified areas of archaeological potential to be impacted by the proposed subdivision. In accordance with these requirements this report documents the results of that program of subsurface testing.

This report has been written by Julie Dibden and Rebecca Parkes.

In accordance with the NSW NPWS (1997) guidelines for archaeological reporting this report aims to document:

- the involvement in the project of the Aboriginal community;
- the methodology implemented during the study;
- a review of the previous investigation and any Aboriginal archaeological or heritage sites known to exist within the study area;
- the subsurface excavation results and significance assessment; and
- a series of recommendations based on the results of the investigation.

3. PARTNERSHIP WITH THE ABORIGINAL COMMUNITY

This project has been undertaken in accordance with the NSW Department of Environment and Climate Change (NSW DECC) Interim Guidelines for Aboriginal Community Consultation - Requirements for Applicants (IGACC) (NSW DEC 2004). The NSW DECC requires proponents to undertake consultation with the Aboriginal community "…as an integral part of the impact assessment" process (NSW DEC 2004).

The NSW DECC manages Aboriginal cultural heritage in NSW in accordance with the National Parks and Wildlife Act 1974. Part 6 of the Act provides protection for Aboriginal objects and Aboriginal Places. When an activity is likely to impact Aboriginal objects or declared Aboriginal Places approval of the Director-General of the NSW DECC under s90 or s87 of the NPW Act is required. The decision as to whether or not to issue s90 or s87 is based on the supply to the NSW DECC by a proponent of adequate information to enable the Director-General to make an informed decision (NSW DEC 2004).

When administering its approval functions under the NPW Act the NSW DECC requires applicants to have consulted with the Aboriginal community about the Aboriginal cultural heritage values (cultural significance) of Aboriginal objects and places present in the area subject to development (NSW DEC 2004).

The NSW DECC requires consultation with the Aboriginal community because it recognises the following:

- That Aboriginal heritage has a cultural and archaeological significance and that both should be the subject of assessment to inform its decision process;
- That Aboriginal people are the primary determinants of the significance of their heritage;
- That Aboriginal community involvement *should occur early* in the assessment process to ensure that their values and concerns can be taken into account and so that their own decision making structures can function;
- That the information arising from consultation allows consideration of Aboriginal community views about significance and impact and allows for management and mitigation measures to be considered in an informed way (NSW DEC 2004).

The community consultation process as outlined in the IGACC document aims to improve the assessment by providing the Aboriginal community with an opportunity to:

- Influence the design of the assessment of cultural and scientific significance;
- Provide relevant information about cultural significance values of objects/places;
- Contribute to the development of cultural heritage management recommendations; and
- Provide comment on draft assessment reports (NSW DEC 2004).

The role of the Aboriginal Community is outlined by the NSW DEC (2004) as follows:

- The Aboriginal community is the primary determinant of the significance of their heritage;
- The Aboriginal community may participate in the process via comment on the assessment methodology, contribution of cultural knowledge; and
- The Aboriginal Community may comment on cultural significance of potential impacts and/or mitigation measures.

In order to fulfil the consultation requirements as outlined in the IGACC document NSW Archaeology Pty Ltd, on behalf of the proponent, has adopted the following procedure:

1. Notification and Registration of Interests

   The proponent has actively sought to identify stakeholder groups or people wishing to be consulted about the project and has invited them to register their interest.

   Written notification about the project has been supplied to the following bodies:

   - The Eden Local Aboriginal Land Council
   - Bega Local Aboriginal Land Council
   - Merrimans Local Aboriginal Land Council
   - Bega Traditional Aboriginal Elders Council Inc

- Gadu Elders Group
- Mr Lionel P Mongta
- Native Title Services
- Bega Valley Shire Council
- Department of Environment and Conservation

In addition an advertisement has been placed in the Magnet newspaper (18th January 2007) providing notification of the cultural heritage study.

The final closing date of registration of interest was 21st February 2007.

The Eden LALC registered an interest in this project via telephone.

2. Preparation for the Assessment (design)

   A proposed methodology was sent to ELALC for review however no comments have been received.

3. Drafting, Review and Finalisation of the Cultural Heritage Assessment Report

   A copy of the original cultural assessment report was sent to ELALC; a copy of the draft subsurface test excavation report will likewise be provided to the ELALC for review and comment.

The study area falls within the boundaries of the Eden Local Aboriginal Land Council (ELALC) as defined under the *Aboriginal Land Rights Act 1983* (NSW). Lawrence Bamblett and Terry Scott, representatives from the ELALC participated in the subsurface testing program. All of the assessments in regard to archaeological sensitivity of Survey Units 3 and 7 and the appropriate management recommendations were formulated in consultation with Lawrence Bamblett and Terry Scott.

The ELALC will provide documentation to the proponent in which its views in regard to management of Aboriginal objects and the development will be made.

4. PROPOSED IMPACTS

The following information describes the nature of the proposed impacts. It also outlines how potential impacts would affect the landscape and heritage resources. Historic impacts from previous land use patterns and how they have affected the archaeology within the study are detailed below.

4.1 Previous Impacts

The proposal area and the property as a whole have been subject to relatively limited prior impacts. Previous landuse impacts are characterized by a degree of vegetation clearance, camping activities and construction of graded roads and a power line easement in the west (outside impact zones). The extent of prior impacts over the eastern part of the property where subdivision is proposed is considered to be minor. While previous impacts may have caused some disturbance to Aboriginal objects this is likely to be very localized and limited.

4.2 Proposed Impacts

The proponent plans to subdivide the proposal area into six rural lots and one residual rural lot (Figure 2). Impacts associated with this proposal include:

- Right of carriageway and associated fire trail access.
- Service easements.
- Driveways and service easements within individual lots.
- House site locations.

The six smaller lots range in size from 2.83 hectares to 4.58 hectares and equate to a total of 21.52 hectares. The proposed building envelope, right of carriageway and associated fire trail in the larger residual rural lot equates to a total impact area of approximately 4.2 hectares.

Probable impacts relating to the proposal would include removal of vegetation and grading and sealing of the right of carriageway and individual driveways; removal of vegetation and grading along the proposed fire trail; installation of power and telephone lines; preparation of building sites including limited vegetation clearance, excavation of footings and/or foundations and installation of septic systems.

These activities have the potential to impact upon any Aboriginal archaeological objects that may be present.

The proposed building envelope on Lot 2 coincides with the previously recorded artefact locale SU7/L1 (Dibden 2007). The building envelopes on Lots 1, 4, 5, 6 and 7 also correspond with survey units identified as having the potential to contain subsurface archaeological material at a low to moderate density (Survey Units 3 and 7). Accordingly, this project has aimed to test the proposed building envelopes on Lots 1, 2, 4, 5, 6 and 7. In addition, a section of the proposed access road on Survey Unit 3 was also identified for testing.

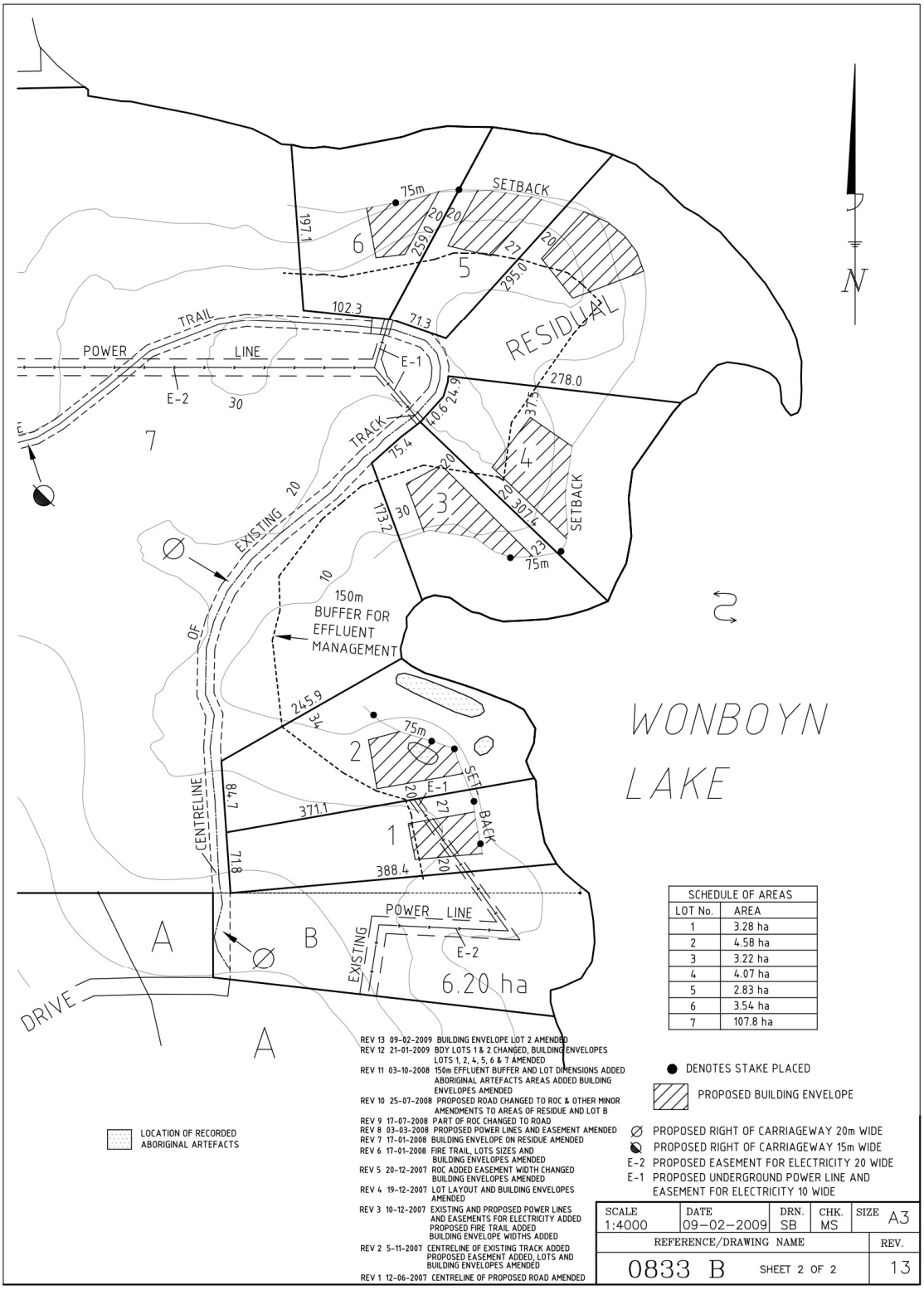

Figure 2. The proposed layout of the subdivision showing locations of previously identified Aboriginal objects (map supplied by client).

5. METHODOLOGY

5.1 Rationale for the Subsurface Excavation Program

In 2007 the proposal area was the subject of a preliminary archaeological assessment undertaken by New South Wales Archaeology Pty Ltd (Dibden 2007). During that survey three Aboriginal object recordings were made and Survey Units 3 and 7, which correspond to low gradient crests in close proximity to the lake, were identified as having the potential to contain archaeological material in low to moderate density.

Effective survey coverage encountered during the survey was very low and there was a correspondingly restricted opportunity to observe the full extent of the stone artefact distribution in the proposal area. Accordingly a program of subsurface test excavation was recommended to be undertaken in Survey Units 3 and 7. This report documents the results of that work.

The subsurface test excavation program has been conducted for the purposes of determining whether or not Aboriginal objects are present in a subsurface context and the nature and the integrity of the archaeological deposit in order to reliably formulate appropriate management and mitigation strategies in respect of the proposal.

As such the aim of the subsurface work has been to clarify the archaeological status of the study area in order to provide the proponent with more informed advice in regard to the nature of the Aboriginal archaeological evidence and ultimately the management of development impacts.

The test excavation program was undertaken under Part 3A of the Environmental Planning and Assessment Act 1979.

5.2 Excavation Methodology

A total of 49 test pits, each measuring 0.5m x 0.5m, were excavated in Survey Units 3 and 7 at Picnic Point, as defined by Dibden (2007). Pits were excavated in 5 metre intervals along 7 x 30 metre transects (test transect); the transects were located so as to coincide with areas of proposed impacts on Lots 1, 2, 4, 5, 6 and 7 (Figure 4).

Plate 1. Excavation in progress.

The excavation was conducted by hand, utilising spades and hand trowels (Plate 1). Each pit was excavated in successive ten centimetre spits. Excavation was concluded when bedrock, dense clay, or sediments which are indicative of an environment of low archaeological potential were encountered. All excavated sediment was transferred into colour-coded and labelled buckets. All deposit recovered has been dry sieved through five millimetre mesh sieves. All material retrieved in sieves was subsequently hand sorted by a qualified archaeologist on a sorting table. All stone determined or suspected to be humanly modified was bagged according to individual Test Transect, Pit and Spit.

Test Pit stratigraphy was recorded using standard sedimentological descriptive terms and criteria (McDonald *et. al* 1998). Colour was described using a Munsell Soil Colour Chart (Munsell 1992). A stratigraphic description of soil texture, coarse fragments and structure was made. Texture, colour, sorting and presence/absence of soil features and indicators of disturbance were noted as samples were removed and cross-checked against the revealed soil profile. Sediment descriptions noted trends down the profile, and evidence of buried soils or layers. Weathering, soil peds and colour changes, which may indicate the age and history of the landform were also noted.

On completion of excavation in each Test Transect stratigraphy in all the Test Pits was examined and recorded. At least one section face of each excavated pit was cleaned by trowel, prior to recording and photography. Representative sections were then described and photographed.

Boundaries observed between visually different or texturally different deposit units were defined in terms of how sharp or gradual they were, that is, in terms of boundary distinctiveness (sharp, clear, gradual) and also boundary form (wavy, undulating, inclined etc.). Evidence for mixing or movement of sediment across boundaries was also noted.

5.3 Lithic Analysis Methodology

Stone artefacts excavated from the study area have been identified and analysed by Julie Dibden. The analysis has entailed inspection under low powered stereoscopic magnification and measuring and description according to technological attributes.

The stone artefact collection recovered during the test excavation is listed in Table 6 of this report.

Analysis of the data resulting from this identification and recording process has been conducted to address the following issues:

- Technological and behavioural activities represented by the lithic material;
- Artefact density and spatial distribution; and
- The organisation and use of stone resources in the area.

To undertake an investigation of these issues a basic profile of the artefact assemblage has been developed from the recorded data. Assemblage content was determined by recording and/or measuring a number of variables that are outlined below. Details of each artefact were entered into an Excel spreadsheet on a PC. Each artefact was designated an individual number which ranges from 1 to 14.

Provenance - Each artefact is categorized according to its retrieval location as follows:

Test Transect #: Each Test Transect has been ascribed an individual number; numbers are sequential and range from 1 to 7.

Test Pit #: Each Test Pit has been ascribed an individual number; numbers are sequential and range from 1 to 7.

Spit #: Each Spit located within a Test Pit has been ascribed an individual number; numbers are sequential and range from 1 to 4. Spit 1 is closest to the ground surface; Spit 2 is below Spit 1 and so on.

Type - Classification of artefacts was based on technical and breakage criteria. The following types have been identified in the assemblage:

Flake: A sharp edged piece of stone detached from a core by the application of force. Flakes are characterised (and identified) by a number of features which may include a platform, bulb of percussion, a bulbar scar, ripple marks and fissures on the ventral surface and negative flake scars on the dorsal surface.

Flaked piece: A flaked piece is an artefact that exhibits features such as negative flake scars but does not have any other features that would allow differentiation between a flake, a retouched flake or core.

Flake Fragment: A piece of stone clearly being a portion of a flake but without features which enable categorizing as proximal, medial, distal or longitudinal portions.

Proximal: Flake portion being the platform and fracture initiation part.

Longitudinal break: Flake portion broken from the proximal to distal end including conal split flakes. Longitudinal breaks can occur during flaking if flakes are very thin and fragile or in a post-depositional context through trampling and other processes.

Core Fragment: A broken piece of a core.

Colour – The purpose of recording the colour of raw material is to assist during analysis in identifying source material (if possible), related objects within an episode or episodes of stone reduction and to infer heat treatment. Quartz is described as milky or translucent, depending on the opacity and quality of the material.

Raw material – The following raw materials were identified to be present in the assemblage:

Quartz: The mineral quartz is crystalline silica with a hardness value of 7 (Mohs's hardness scale). Given this property quartz flakes possess highly durable sharp edges (Holdaway and Stern 2004). However given that quartz possesses internal flaws and cleavage planes it typically flakes in an unpredictable manner.

Quartzite: Quartzite is formed by the cementing together of siliceous grains through pressure or chemical processes.

Silcrete: This rock is formed by the impregnation of a sedimentary layer with silica; it consists of quartz grains in a matrix of either amorphous or fine-grained silica. The flaking qualities of silcrete are dependent on the size of the quartz grains (Holdaway and Stern 2004).

Volcanic: Of igneous origin.

Weight

Each artefact has been weighed on an electronic Shinko Denshi DJ-600 scale to 0.01grams.

Artefact dimension

Maximum size class has been coded as follows:

2 = 10 -19.9mm	4 = 30 -39.9mm
3 = 20 - 29.9mm	5 = 40 - 49.9m

Initiation type – The type of primary fracture initiation including the following:

Hertzian: (conchoidal fracture) Formed when stone is struck by a hammer forming a ring crack; the ring crack forms a cone that bends backward towards the surface of the core (Holdaway and Stern 2004).

Cortex type – The type of cortex (weather worn surface) on an artefact is listed. The following cortex type was identified in the assemblage:

Pebble: A water worn surface.

Comments are made inclusive of the following:

Percentage of cortex present, specific descriptions of various attributes and features, and associations between artefacts.

On flakes the estimate of percentage of cortex refers to the dorsal surface only.

5.4 Methodology for Other Artefacts

Items of shell and European material, that is, artefacts dating to the last 200 years of human occupation, were recovered during hand sorting and were bagged and catalogued. The provenance of each item was recorded in terms of Transect, Pit and Spit. In the case of shell, the species type and weight were recorded. With European artefacts the artefact type, colour and material were recorded in a similar manner to that employed for the lithic analysis. Additional descriptive notes were also recorded where appropriate. A list of shell and European artefacts retrieved from the subsurface testing program is provided in Table 9.

6. PREVIOUS ABORIGINAL OBJECT RECORDINGS

During the initial survey (Dibden 2007) the study area was divided into 10 Survey Units (Figure 3). The area surveyed totalled approximately 16 hectares in area. Three Aboriginal object recordings were made during the survey. Survey Unit 7/Locale 1 contained one artefact and a small area of midden debris; Survey Unit 8/Locale 1 contained 13 stone artefacts and Survey Unit 8/Locale 2 comprised a single stone artefact.

Ground exposures visually inspected were estimated to have measured 0.4039 hectares in area. Of that ground exposure area archaeological visibility (the potential artefact bearing soil profile) was estimated to have been 0.0158 hectares. Effective Survey Coverage (ESC) was therefore calculated to have been 0.04% percent of the total survey area. Effective Survey Coverage achieved during the site inspection was assessed to have been very low. This resulted in a limited opportunity to record Aboriginal objects such as stone artefacts. Given this the assessment of the archaeological status of the study area could not be reliably based on the presence or absence of artefacts recorded during the field survey.

A prediction of potential artefact density in a subsurface context was made in respect of each of the 10 Survey Units. Eight Survey Units were predicted to possess very low to low stone artefact densities (Survey Units 1, 2, 4, 5, 6, 9 and 10). This assessment was based primarily on a consideration of the moderate to steep gradients in those Survey Units.

Survey Units 3, 7 and 8 were predicted to contain artefacts in a patchy distribution with an average density of low/moderate. These landforms comprise gently inclined ground surfaces and are likely to have been utilised sporadically as campsites. Survey Unit 8 will not be impacted by the proposed subdivision; as such no subsurface testing was undertaken in this area.

Survey Units 3 and 7 were predicted to possess artefacts and/or midden deposits in low to moderate densities. These landforms are low gradient spur crests leading down to the Wonboyn Lake foreshore. Given that the lake probably would have provided fresh water in the upper stretches to the west and would certainly have been a source of various aquatic foods, the adjacent low gradient crests were predicted to have been utilised for encampments.

Test Transects 1-5 were located in areas of proposed impacts in Survey Unit 3; Test Transects 6 and 7 were situated within the proposed building envelopes in Survey Unit 7 (Figure 4).

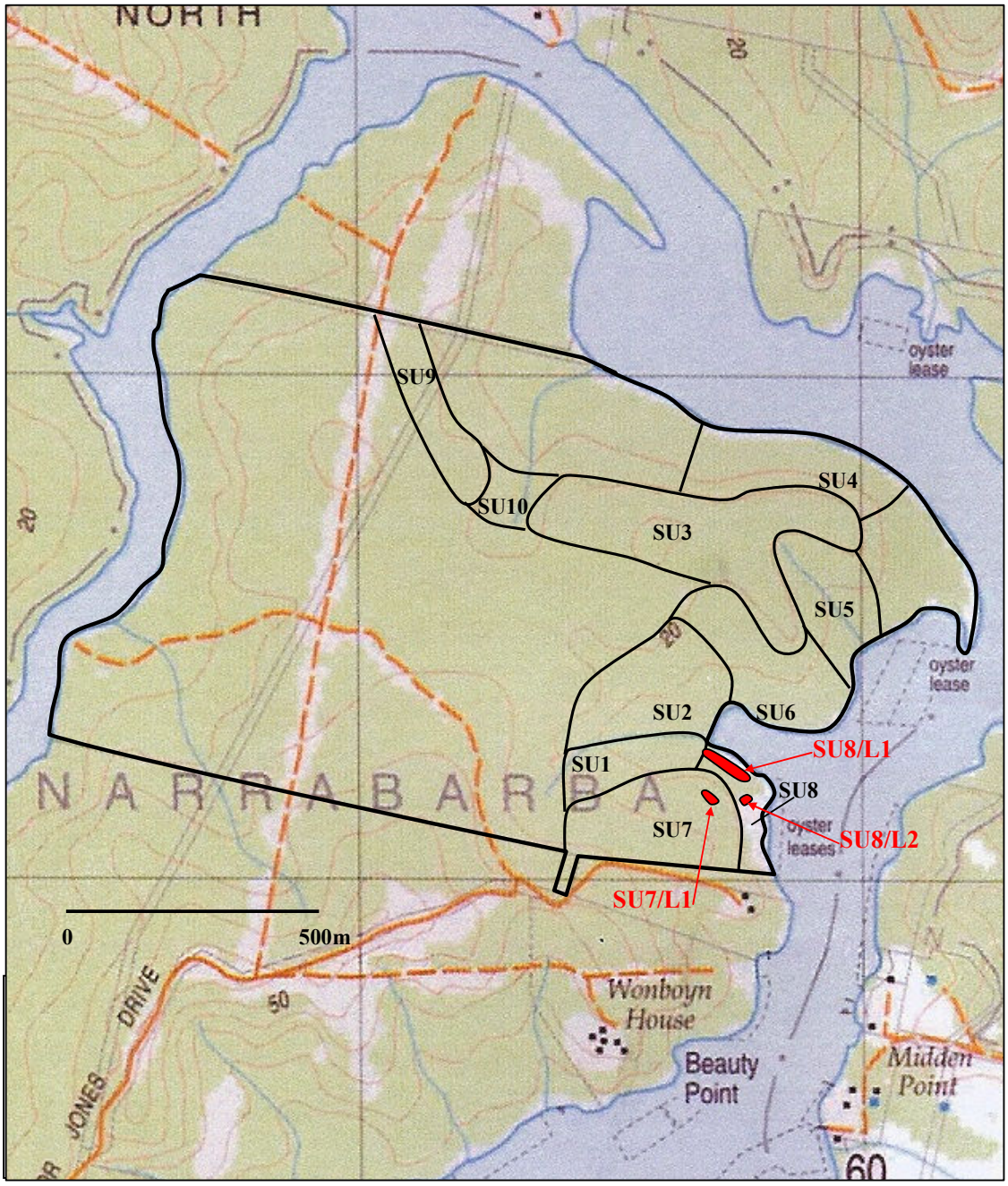

Figure 3. Location of survey units and previously recorded Aboriginal Objects (Kiah 8823-1-S 2nd ed. CMA: AGD).

7. EXCAVATION RESULTS

Five transects were excavated in Survey Unit 3 and two were excavated in Survey Unit 7. Survey Units had been defined on the basis of a combination of environmental variables which are assumed to relate to Aboriginal usage of the area (Dibden 2007). These areas are termed *archaeological terrain units* and in this study have been defined on the basis of a combination of landform element, gradient and aspect (*cf* Kuskie 2000: 67). Survey areas are defined as individual units that are bounded on all sides by different archaeological terrain units. The rationale for employing this definition relates to its utility in regard to predicting the archaeological potential of landforms; archaeological terrain units are "…discrete, recurring areas of land for which it is assumed that the Aboriginal land use and resultant heritage evidence in one location may be extrapolated to other similar locations" (Kuskie 2000: 67).

Given this theoretical assumption, it is predicted that the archaeological material recovered from the individual transect/s excavated in Survey Units 3 and 7 is likely to be representative of that which is distributed across the entirety of each of the respective Survey Units.

7.1 Excavation Data

A total of seven Test Transects (refer to Appendix 1 for details of individual transects) comprising 49 Test Pits were excavated within Survey Units 3 and 7 at Picnic Point, Wonboyn Lake (Figure 4). The landforms being tested correspond to low gradient crests adjacent the lake foreshores; eucalypt forest extends across both of the Survey Units that were tested. The forest is dominated by eucalypts, with a mid and under storey of acacia, banksia and bracken fern. The soils are sandy and tend to be acidic. The topsoil is characterised by grey to grey brown loamy sand, while the soils below tend towards pale grey to yellow grey sand or silty sand above a decomposing bedrock layer. Prior impacts include some vegetation clearance, animal burrows and vehicle tracks.

A summary of Test Transect locational data is set out below in Tables 2 and 3. The location of each Test Transect is shown on Figure 4.

Survey Unit	Impacts	Description of landform, soils and prior impacts	Test transects
3	Building envelopes, access road and service easements	Spur crest; easterly/open aspect; 0-4º gradient; eucalypt forest; scattered to dense bracken fern; scattered banksias and casuarina; relatively shallow grey brown to grey loamy sand and silty sand over decomposing bedrock; prior impacts include clearing, vegetation clearance, animal burrows and vehicular tracks.	T1 T2 T3 T4 T5
7	Building envelopes, access road and service easements	Spur crest; northeasterly/open aspect; 0-6º gradient; eucalypt forest; scattered to dense bracken fern; scattered banksias and casuarina; relatively shallow grey brown to grey loamy sand and silty sand over decomposing bedrock; prior impacts include clearing, vegetation clearance, animal burrows and vehicular tracks.	T6 T7

Table 1. Summary of Survey Units tested including details of proposed impacts and Test Transects excavated.

Transect #	Grid references (Hand GPS: WGS 84)		
	End	Easting	Northing
1	Southwest	759898	5875737
	Northeast	759924	5875748
2	Northeast	760003	5875702
	Southwest	759992	5875678
3	East	759793	5975736
	West	759765	5975735
4	East	759719	5975694
	West	759691	5975694
5	Northwest	759895	5875487
	Southeast	759908	5875453
6	Southwest	759646	5875182
	Northeast	759666	5875208
7	Northwest	759718	5875060
	Southeast	759748	5875045

Table 2. Location of Test Transects.

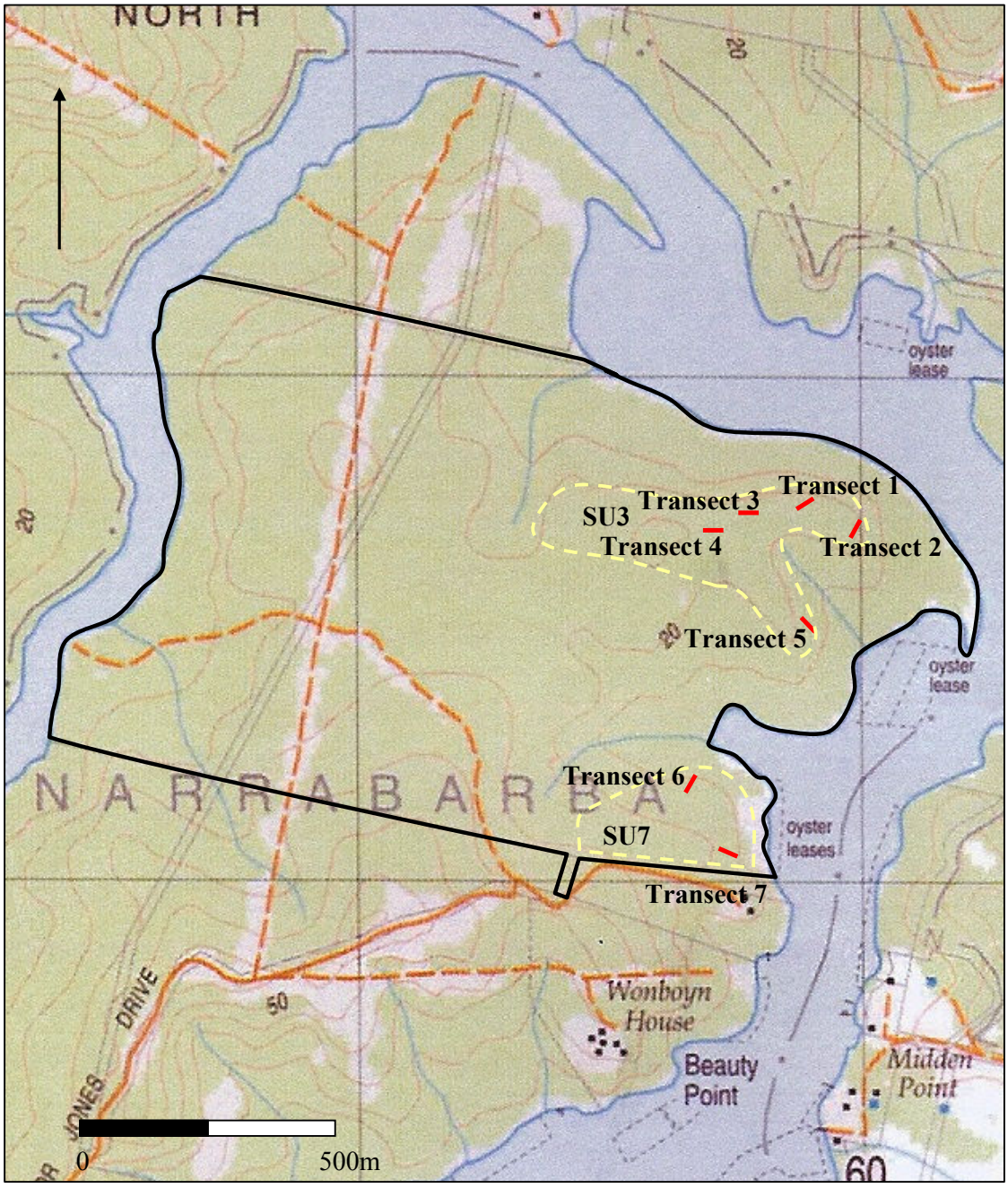

Figure 4. Location of the seven Test Transects at Picnic Point (Kiah 8823-1-S 2nd ed. CMA: AGD).

The test transects were excavated so as to obtain a representative sample of the archaeological resources from across the areas subject to building envelopes and an access road in Survey Units 3 and 7. Transects 1-3 and 5-7 correspond to building envelopes, while Transect 4 was situated within an area where a new section of access track is proposed.

A summary of results is listed below:

- A total area of 12.25 conflated square metres has been excavated.
- A total of 3.24 cubic metres of soil has been sieved.
- A total of 14 artefacts have been retrieved.
- Artefacts were recovered from 2 of the 7 Test Transects excavated.

The subsurface testing program comprised excavation of seven Test Transects across low gradient crests adjacent Wonboyn Lake. Local geology is sandstone with some shale and siltstone also present. Sandstone gravels and shatter occur throughout the majority of the excavated deposits, particularly at the lower levels; quartz gravels also occur in some instances.

The soils were characterised by a relatively shallow profile comprising dark grey to grey-brown loamy sand to a depth of around 10-20cm, overlying various brown to grey-brown sands and clayey sand grading into sandy clay/decomposing bedrock at a depth of around 20-40cm (Plates 2 and 3; details of soil profiles are contained in Appendix 1). Generally the lower spits were characterised by a transition to a very compact sand or clay sand with high levels of sandstone shatter. While there was often a clear colour differentiation between the more humic topsoils and the sandy subsoils, the colour differentiation between these sands and the decomposing bedrock below was not always as clearly marked. Soil pH was tested in each transect with samples taken from various depths throughout the soil profiles. As a whole the soils are slightly acidic, varying between a pH of 4.0 to 6.0.

Plate 2. South section in Transect 1, Pit 5; base of Spit 4.

Plate 3. North section in Transect 3, Pit 5; base of Spit 2; note the shallow soil profile.

Plate 4. North section in Transect 6, Pit 1; base of Spit 3; showing example of more subtle changes in soil colour.

Pit depths varied between 18 and 40 centimetres. Usually the decomposing bedrock was encountered between 20 and 30 centimetres; the boundary with this layer was usually regular to gently undulating. The lower levels of stratigraphy were also characterised by increasing quantities of large sandstone gravels and pieces of shatter up to 20-30 centimetres across.

The study area has been subject to relatively minor prior impacts; these impacts include some vegetation clearance, vehicle tracks, animal burrows and other bioturbation from tree roots. The effect of these processes, in particular bioturbation, is that there has been some mixing of soil horizons. This means that there is little vertical integrity and similarly the horizontal integrity of archaeological deposits is likely to be compromised.

7.2 Artefact distribution

In this section the spatial distribution of the stone artefacts recovered from the Test Transects is examined. The aim is to determine whether there is an even spread of artefacts or a variable distribution. The relative artefact density between Test Pits and Test Transects is explored.

Test Transect Number	**Test Pit Number**							
	1	**2**	**3**	**4**	**5**	6	**7**	**Total**
Transect 1	-	-	-	-	-	-	-	0
Transect 2	-	-	-	-	-	-	-	0
Transect 3	-	-	-	-	-	-	-	0
Transect 4	-	-	-	-	-	-	-	0
Transect 5	-	-	-	-	-	-	-	0
Transect 6	1	-	-	2	3	2	2	10
Transect 7	1	1	-	1	1	-	-	4
							Total	14

Table 3. Number of artefacts recovered from each Test Pit and Test Transect.

Spatial distribution and artefact density

A total of 14 stone artefacts were retrieved during the excavation. Nine of the 49 Test Pits contained artefacts. Artefacts were recovered from both transects in Survey Unit 7; no artefacts were recovered from Survey Unit 3. In Survey Unit 7 five of the seven Test Pits in Transect 6 and four of the seven Test Pits in Transect 7 contained artefacts. This result indicates that artefacts are relatively widely distributed in a subsurface context across Survey Unit 7. It would however appear that something quite different is occurring in Survey Unit 3.

The complete absence of artefacts in any of the five Test Transects in this area is unusual, particularly given the topographic context. Nevertheless, this result does not necessarily indicate that there are no artefacts at all within Survey Unit 3. It is more likely to be indicative of an extremely low density distribution (i.e. less than 1 artefact per $10m^2$).

A summary of Test Transect artefact data is presented in Table 4. The average artefact density across the test excavation area, calculated by dividing the total number of artefacts by the total area excavated (12.25 sq m), is 1.14 artefacts per square metre. The average artefact density according to volume of soil sieved, calculated by dividing the total number of artefacts by the total cubic area excavated (3.24 cu. m), is 4.32 artefacts per cubic metre. Artefact density in individual Test Transects where artefacts are present varies from 5.71 artefacts per square metre in Transect 6, to only 2.28 artefacts per square metre in Transect 7. Overall artefact density within Survey Unit 7 is very low ($4/m^2$ or $17.28/m^3$).

Test Transect Number	Number of Test Pits with Artefacts	Total Artefacts	Total Area m^2	Total Volume m^3	Artefacts Density per m^2	Artefact Density per m^3	Highest # per Pit (Highest density per m^2)
1	0	0	1.75	0.6175	-	-	-
2	0	0	1.75	0.5	-	-	-
3	0	0	1.75	0.4175	-	-	-
4	0	0	1.75	0.4725	-	-	-
5	0	0	1.75	0.4225	-	-	-
6	5	10	1.75	0.435	5.71 Low density	22.99	3 ($12/m^2$)
7	4	4	1.75	0.375	2.28 Very low density	10.67	1 ($4/m^2$)
Total	9	14	12.25	3.24	1.14 ave	4.32 ave	-

Table 4. Summary of Test Transect artefact data. (Artefact density is defined as follows: <5/sq. m. = Very Low; 5 - <20/sq. m. = Low; 20 – 50/sq. m. = Low/moderate; and >50/sq. m. = Moderate – see Dibden 2006).

The distribution of artefacts across Survey Unit 7 appears to be relatively consistent, that is, artefacts are present in the majority of Test Pits and the density within each pit is low to very low. It is expected that an overall very low density distribution of artefacts extends relatively consistently across the entire Survey Unit.

In the case of Survey Unit 3, where no artefacts were recovered, it is expected that any artefacts that might be present would occur in a very patchy distribution. Isolated occurrences might occur at low or very low densities but overall the density is expected to be extremely low.

		Spit 1	Spit 2	Spit 3	Spit 4	Total
Test Transect 1 Total		*0*	*0*	*0*	*0*	*0*
Test Transect 2 Total		*0*	*0*	*0*	-	*0*
Test Transect 3Total		*0*	*0*	*0*	-	*0*
Test Transect 4 Total		*0*	*0*	*0*	-	*0*
Test Transect 5 Total		*0*	*0*	*0*	-	*0*
Transect	**Pit**	**Spit 1**	**Spit 2**	**Spit 3**	**Spit 4**	**Total**
6	**1**	0	0	1	-	1
6	**4**	1	1	-	-	2
6	**5**	1	1	1	-	3
6	**6**	0	1	1	-	2
6	**7**	1	1	-	-	2
Test Transect 1 Total		*3*	*4*	*3*	-	*10*
7	**1**	1	0	-	-	1
7	**2**	0	1	-	-	1
7	**4**	0	1	-	-	1
7	**5**	1	0	-	-	1
Test Transect 2 Total		*2*	*2*	-	-	*4*
	Spit Totals	**5**	**6**	**3**	**0**	**14**

Table 5. Crosstabulation of artefact numbers per Test Transect and Spit (dashes indicate instances where Spits were not excavated).

Vertical distribution

Each of the 50 x 50 cm Test Pits were excavated by removing 10 cm thick spits. The depth of each excavated Test Pit was dependent upon the nature of the sediments. Excavation was terminated at a depth of between 18 and 40 cm when a decomposing bedrock layer was reached. This was generally indicated by a very compact clayey sand and/or the presence of high quantities of sandstone shatter. The bottom spit, usually Spit 2 or 3 was therefore of variable depth.

The majority of artefacts (N=11, 78.6%) were recovered from Spits 1 and 2; three artefacts (21.4%) were recovered from a Spit 3 context and none were recovered from below Spit 3 (Table 5). These results indicate that Spits 1 and 2 correspond to the main culturally formed horizon, which predominantly coincides with the grey loamy/silty sand. Nevertheless, disturbance from bioturbation, particularly tree roots, was common across the majority of Test Pits. Bioturbation is likely to have caused significant changes to the vertical distribution of artefacts. In most cases this would have caused movement of artefacts down through the soil profile, which would explain the presence of some artefacts at or near the interface with the decomposing bedrock.

As a whole, the proposal area displays a relatively shallow cultural deposit that is generally restricted to the upper 20 centimetres.

7.3 Stone Artefact Analysis

A total of 14 artefacts were recorded during this analysis (Table 6). This section discusses archaeological interpretations of that artefact assemblage. It should however be noted that as a result of the small sample size these interpretations may not be an accurate representation of the entire artefact assemblage present within the study area.

All artefacts recovered are representative of flaking technology. This result is not uncommon however it should be viewed at least in part as a sample size issue rather than a true rareness of other artefact types such as hatchet heads, hammer stones etc.

#	Transect	Pit	Spit	Material	Colour	Type	Initiation	Cortex	Size	Weight	Comments
1	6	1	3	volcanic	grey	proximal	hertzian	nil	2	0.59	
2	6	4	1	quartz	translucent	flake	hertzian	nil	2	0.18	
3	6	4	2	silcrete	brown	longitudinal break	hertzian	nil	3	6.34	
4	6	5	1	quartz	translucent	flake	hertzian	nil	2	0.59	
5	6	5	2	silcrete	brown	core fragment		nil	4	9.2	flake fragment with 2 blade scars extending laterally from dorsal ridge
6	6	5	3	quartz	milky	flaked piece		nil	2	0.64	
7	6	6	2	silcrete	brown	flake	hertzian	nil	2	1.52	
8	6	6	3	quartz	milky	flake fragment		nil	2	0.27	
9	6	7	1	silcrete	brown	flake fragment		nil	3	2.01	
10	6	7	2	quartz	milky	flake fragment		nil	2	0.43	
11	7	1	1	silcrete	brown	flake fragment		nil	2	0.37	
12	7	2	2	quartzite	grey	flake	hertzian	pebble	5	12.01	40% cortex
13	7	4	2	silcrete	brown	flake	hertzian	nil	2	0.35	
14	7	5	1	quartz	translucent	flake	hertzian	nil	2	0.39	

Table 6. Details of the artefacts recovered from the Test Transects at Picnic Point.

The artefact collection is entirely composed of flaking debitage (flaking *debris*). Table 7 lists the artefact categories recorded for the purposes of this analysis. The vast majority of items recovered are either flakes or flake portions. One white brown silcrete core fragment was also recorded. There are no items with evidence of retouch or usewear.

Four raw materials are represented in the collection: quartz, quartzite, silcrete, and a volcanic material (Table 7). Quartz and silcrete are the two dominant materials.

	Material				
Type	**Quartz**	**Quartzite**	**Silcrete**	**Volcanic**	**Total**
Core fragment			1		1 (7.1%)
Flake	3	1	2		32 (50.0%)
Flake fragment	2		2		4(28.6%)
Flaked piece	1		0		1 (7.1%)
Longitudinal break			1		1 (7.1%)
Proximal				1	1 (7.1%)
Total	6 (42.9%)	1 (7.1%)	6 (42.9%)	1 (7.1%)	14

Table 7. Cross tabulation of artefact assemblage by type and material.

	Size Class			
Material	**2**	**3**	**4**	**5**
quartz	6			
quartzite				1
silcrete	3	2	1	
volcanic	1			
Grand Total	10 (71.4%)	2 (14.2%)	1 (7.1%)	1 (7.1%)

Table 8. Crosstabulation of raw material and size class.

Artefact size can be used as an indicator of *in situ* manufacture of artefacts. It is widely accepted that "Small artifacts, especially micro artefacts, on occupation surfaces often indicate primary refuse" (Schiffer 1987:267). The size class of artefacts is listed in Table 8. Over two thirds of artefacts in the collection are relatively small; that is, most artefacts (N=10, 71.4%) are less than 20 mm is size. Based on the small size of artefacts there is little doubt that artefact manufacture took place within Survey Unit 7.

The density of artefacts evidenced is indicative of infrequent and short term use, probably the result of either overnight camping or even a much shorter stay associated with manufacture of tools and/or processing of food. Given that a range of different materials are present it is possible that this location was utilized by Aboriginal people on more than one occasion. However, given the very low artefact density it is unlikely to have been a focus of activity or a place that was commonly returned to.

7.4 European Artefact Analysis

Very minor quantities of shell and European materials were recovered from the subsurface testing (Table 9). All of the items were recovered from the upper 20cm of the soil profile. The items in question are three fragments of glass from Spits 1 and 2 in Transect 6-Pit 7 and a fragment of oyster from Transect 6-Pit 6-Spit 1. While it is noted that during the initial survey a small area of shell midden in association with a stone artefact was recorded in close proximity to Transect 6, it is unclear whether the isolated fragment of shell recovered during excavation is associated with that midden. It is also possible that the oyster shell is associated with the glass fragments in the adjacent test pit and that both relate to modern camping/picnic activities.

The overall absence of midden material from the Test Pits is in part a reflection of the infrequent Aboriginal use of the study area. The fact that an area of midden was identified during survey in Survey Unit 7 while none was positively identified from the excavation conducted across that landform, indicates that midden material occurs in a very patchy distribution.

#	Transect	Pit	Spit	Type	Weight
1	6	6	1	oyster fragment	0.27
2	6	7	1	2 thin green glass fragments	0.45
3	6	7	2	1 thin green glass fragment (same as above)	0.28

Table 9. List of shell and European artefacts in the assemblage

7.5 Summary

- A total area of 12.25 conflated square metres has been excavated.

- A total of 3.24 cubic metres of soil has been sieved.
- Very minor quantities of shell and European materials were recovered from Pits 6 and 7 in Transect 6.
- A total of 14 lithic artefacts have been retrieved.
- Stone artefacts were recovered from 9 of the 49 excavation pits.
- No artefacts were recovered from Survey Unit 3.
- The stone artefacts represent flaking debitage and include flakes, flaked pieces and core fragments made from a range of raw materials including quartz, silcrete, quartzite, and volcanic rock. No retouched items or artefacts with usewear were found.
- The average artefact density across the test excavation area, calculated by dividing the total number of artefacts by the total area excavated, is 1.14 artefacts per square metre;
- The average artefact density according to volume of soil sieved, calculated by dividing the total number of artefacts by the total cubic area excavated, is 4.32 artefacts per cubic metre;
- Artefact density varies from 2.28 artefacts per square metre in Transect 7 to 5.71 artefacts per square metre in Transect 6.
- Artefact density in individual pits ranges from 4 artefacts per square metre to 12 artefacts per square metre.

Discussion

The results of this excavation indicate that the utilisation of a range of raw materials is evidenced, although quartz and silcrete are clearly the predominant materials, which may be indicative of local quartz and silcrete sources. On the basis of artefact size and the presence of a core fragment it appears that at least some artefacts were being produced on site. All of the stone artefacts are representative of choncoidal flaking technology. The majority of the material is flaking debitage; no retouched items or artefacts with usewear were recovered.

It should be noted that as a result of the small sample size the interpretations of the excavation results may not be an entirely accurate representation of the entire artefact assemblage present within the study area.

The distribution of artefacts across Survey Unit 7 is relatively consistent; artefacts are present in the majority of Test Pits and the density within each pit is low to very low. It is expected that an overall very low density distribution of artefacts extends relatively consistently across the entire Survey Unit. In the case of Survey Unit 3, where no artefacts were recovered, it is expected that any artefacts that might be present would occur in a very patchy distribution. Isolated occurrences might occur at low or very low densities but overall the density is expected to be extremely low (<1/10m^2).

Taking into account the artefact distribution and assemblage composition it is probable that the spur crest that corresponds to Survey Unit 7 was utilised sporadically for relatively short-term activities. This might have included processing and consumption of various flora and fauna, manufacture of tools and possibly overnight encampments. Given the relatively low number of stone artefacts, general absence of midden material and the lack of evidence for hearths it is unlikely that this was a favoured spot for extended encampments. This conclusion is also supported by the nature of the artefact distribution, which is indicative of short stays that were probably repeated on an infrequent basis.

Survey Units 3 and 7 were initially targeted for subsurface testing on the basis of a predictive model of Aboriginal occupation for the local region. Generally, low gradient landforms adjacent estuarine environments are likely to be of moderate to high archaeological sensitivity, particularly if a source of fresh water is located nearby. It could be the absence of such a water source within the study area that explains the overall very low density of archaeological material recovered from the test excavation. It may also be that the isolated nature of Picnic Point contributed to the way in which Aboriginal people used it. The headland extends more than two kilometres north of the rest of the southern bank of the estuary; it is thus an area that would not normally have been traversed by people moving from the hinterland towards the littoral areas to the east. Given the access to

the estuary and the potential food resources provided by the forest itself, it is still unusual that the headland was not a greater focus of activity. It however appears that the northern shore of the estuary might have been a more favoured location due to the presence of fresh water supplies in the form of semi-permanent and ephemeral creeks that flow into Wonboyn Lake.

What is more intriguing than the overall very low density of artefacts at Picnic Point is the apparent absence of artefacts in Survey Unit 3. As discussed above, this result is interpreted as being likely to represent an extremely low density of artefacts rather than a total absence of archaeological material throughout the Survey Unit. Essentially Survey Unit 3 is nearly identical to Survey Unit 7 in terms of landform type, gradient, aspect, vegetation, geology, distance to water and prior impacts. It is logical therefore to expect that both Survey Units would contain similar archaeological material. The unusual excavation results therefore warrant some discussion.

A series of five transects were planned in Survey Unit 3 for the following reasons:

- Predicted archaeological sensitivity (based on the model of Aboriginal occupation for the local region);
- Overall similarity to Survey Unit 7, where better visibility was encountered during preliminary survey work and artefacts and midden were identified (Dibden 2007);
- The location of four building envelopes and a new section of access track that overlapped with this Survey Unit.

The apparent absence of archaeological material in Survey Unit 3 is partly due to the fact that Picnic Point as a whole demonstrates lower than expected rates of Aboriginal occupation. In the context of the fact that this headland is somewhat removed from major transit routes to the coast, it may be that Aboriginal use of this landscape increased with distance to the north, thus explaining the difference between archaeological signatures in Survey Unit 7 and Survey Unit 3.

In any case, the excavation results from the headland at Picnic Point indicate that this area is of low to very low archaeological sensitivity. It appears to be an area that was used very infrequently and only for short periods of time.

8. SIGNIFICANCE ASSESSMENT

The information provided in this report and the assessment of significance of Aboriginal objects provides the basis for the proponent to make informed decisions regarding the management and degree of protection which should be undertaken in regard to the Aboriginal heritage located within the proposal area.

8.1 Significance Assessment Criteria

The NPWS (1997) defines significance as relating to the meaning of sites: "meaning is to do with the values people put on things, places, sites, land".

The following significance assessment criteria is derived from the relevant aspects of ICOMOS Burra Charter and NSW Department of Urban Affairs and Planning's 'State Heritage Inventory Evaluation Criteria and Management Guidelines'.

The recorded Aboriginal objects are assessed below under the following categories of significance:

- cultural value to contemporary Aboriginal people,
- archaeological value,
- aesthetic value,
- representativeness, and
- educational value.

Aboriginal cultural significance

The Aboriginal community will value a place in accordance with a variety of factors including contemporary associations and beliefs and historical relationships. Most heritage evidence is valued by Aboriginal people given its symbolic embodiment and physical relationship with their ancestral past.

The local Aboriginal community considers their heritage sites and the broader Aboriginal landscape to be of high significance.

Archaeological value

The assessment of archaeological value involves determining the potential of a place to provide information which is of value in scientific analysis and the resolution of potential archaeological research questions. Relevant research topics may be defined and addressed within the academy, the context of cultural heritage management or Aboriginal communities. Increasingly, research issues are being constructed with reference to the broader landscape rather than focusing specifically on individual site locales. In order to assess scientific value sites are evaluated in terms of nature of the evidence, whether or not they contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a part of a larger site complex. Increasingly, a range of site types, including low density artefact distributions, are regarded to be just as important as high density sites for providing research opportunities.

Representativeness

Representative value is the degree to which a "class of sites are conserved and whether the particular site being assessed should be conserved in order to ensure that we retain a representative sample of the archaeological record as a whole" (NPWS 1997). Factors defined by NPWS (1997) for assessing sites in terms of representativeness include defining variability, knowing what is already conserved and considering the connectivity of sites.

Educational value

The educational value of cultural heritage is dependent on the potential for interpretation to a general visitor audience, compatible Aboriginal values, a resistant site fabric, and feasible site access and management resources.

Aesthetic value

Aesthetic value relates to aspects of sensory perception. This value is culturally contingent.

8.2 Significance Value of the Aboriginal Objects in the Study Area

Most Aboriginal heritage sites have cultural value to the local Aboriginal community given that they provide direct physical and symbolic linkages to their ancestral past and to the landscape. The Eden Local Aboriginal Land Council value and seek to manage Aboriginal heritage within the local area.

The scientific significance of the Aboriginal objects recorded in the proposal area is listed below. It is noted that the cultural value and scientific significance may differ.

Picnic Point Survey Unit 3:

No artefacts were recovered from Survey Unit 3 at Picnic Point. This survey unit is assessed to be of very low research potential. It is accordingly assessed to be of very low archaeological significance.

Picnic Point Survey Unit 7:

Survey Unit 7 at Picnic Point has been found to contain a very low density artefact distribution. There appears to be some evidence of disturbance in this area, largely due to bioturbation, which has resulted in mixing of soil horizons and loss of vertical integrity. There appears to have also been some minor loss of horizontal integrity. Given the very low artefact density the survey unit is assessed to be of low research potential. It is accordingly assessed to be of low archaeological significance.

9. STATUTORY INFORMATION

The Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act), its regulations, schedules and guidelines provides the context for the requirement for environmental impact assessments to be undertaken during land use planning (NPWS 1997).

Part 3A of the Environmental Planning and Assessment Act 1979

On 9 June 2005 the NSW Parliament passed the Environmental Planning and Assessment Amendment (Infrastructure and Other Planning Reform) Bill. The Act was assented to on 16 June 2005 and commenced on 1 August 2005. This amendment contains key elements of the NSW Government's planning system reforms and makes major changes to both plan-making and major development assessment.

A key component of the amendments is the insertion of a new Part 3A (Major Projects) into the EP&A Act. The new Part 3A consolidates the assessment and approval regime for all major developments which previously were addressed under Part 4 (Development Assessment) or Part 5 (Environmental Assessment).

Part 3A applies to all major State government infrastructure projects, developments previously classified as State significant and other projects, plans or programs of works declared by the Minister. The amendments aim to provide a streamlined assessment and approvals regime and also to improve the mechanisms available under the EP&A Act to enforce compliance with approval conditions of the Act.

Under the terms of Part 3A of the Environmental Planning and Assessment Act 1979 the following authorizations are not required for an approved project (and accordingly the provisions of an Act that prohibit an activity without such an authority do not apply):

- a permit under section 87 or a consent under section 90 of the National Parks and Wildlife Act 1974

10. RECOMMENDATIONS

The following recommendations are made on the basis of:

- The results of the investigation as documented in this report.
- An analysis of the excavation results.
- Consideration of the nature of the proposed impacts.

It is recommended that:

1. There are no archaeological constraints to the proposed subdivision at Picnic Point, Wonboyn Lake. The archaeological resource is assessed to be of low scientific significance only and therefore does not surpass significance thresholds which would act to preclude impacts.

2. No impact mitigation is considered to be warranted in the proposed impact areas.

11. REFERENCES

Dibden, J 2007 *Proposed 7 Lot Rural Subdivision of Portion 14 and Boundary Adjustment of Lot B in DP 33573 at Picnic Point, Wonboyn Lake, via Eden NSW: Aboriginal Archaeological Assessment* . A report to The Planning Group.

Dibden, J. 2006 *Proposed Commercial, Residential and Industrial Subdivision Lot 4 DP1077434, Lot 1510 DP 1977898 & Lot 2432 DP 793758 South Bega NSW Subsurface Test Excavation*. A report to Planning Initiatives.

Holdaway, S. and N. Stern 2004 *A Record in Stone. The Study of Australia's Flaked Stone Artefacts. Melbourne*. Museum Victoria and AIATSIS.

Kuskie, P. 2000 *An Aboriginal Archaeological Assessment of the Proposed Mount Arthur North Coal Mine, Near Muswellbrook, Hunter Valley, New South Wales*. Unpublished report to Dames and Moore.

McDonald, R. Isbell, R, Speight, J. Walker, J. and M. Hopkins 1998 *Australian Soil and Land Survey Field Handbook*. CSIRO Australia.

Munsell Colour 1992 *Munsell Soil Color Charts*. Revised Edition. Macbeth : New York.

New South Wales National Parks and Wildlife Service 1997 (Working draft) Guidelines for Archaeological Survey Reporting in NSW NPWS *Aboriginal Cultural Heritage Standards and Guidelines Kit.*

New South Wales Department of Environment and Conservation 2004 *Interim Guidelines for Aboriginal Community Consultation - Requirements for Applicants*.

Schiffer, M. B. 1987 *Formation Processes of the Archaeological Record*. University of Utah Press, Salt Lake City. USA.

APPENDIX 1: TEST TRANSECT AND EXCAVATION PIT DATA

Transect 1

This transect was located within the building envelope on Lot 5; it was aligned southwest (Pit 1) to northeast (Pit 7).

Plate 5. Transect 1 looking southwest.

Overview of trends in soil colour and pH:
Grey loamy sand: 7.5YR 5/1, pH 4.0
Pale yellow/grey sand: 10YR 7/4, pH 6.0
Decomposing bedrock/compact sand: 10YR 6/8, pH 5.0

Summary of artefacts recovered:
No artefacts recovered from this transect

Details of soil profiles in each pit:

Transect 1			
Pit	**N$^{o.}$ of Spits**	**Total Depth**	**Description**
1	4	40cm	Loose grey loamy sand with a clear, regular transition to a pale yellow sand at 10-12cm; there is then a clear and somewhat irregular to wavy boundary (26/38cm) with a yellow-brown clay sand below. The sand becomes increasingly compact with depth. Sub-angular and sub-rounded sandstone gravels and shatter occur throughout the pit but tend to increase in size and quantity with depth. There is negligible quartz. Root disturbance appears to be restricted to the top 20cm.
2	4	35cm	Dark grey humic loamy sand with sparse charcoal and a clear and regular transition at 5cm to a grey sand with moderate gravels and sparse charcoal. At around 13 to 25cm there is an irregular and diffuse transition to a pale yellow-brown sand that grades into a yellow brown clay sand towards the base of the pit. Moderate to high gravel content throughout the pit, including pieces of sandstone shatter <10cm in size.

3	4	40cm	Dark grey loamy sand with high humic content, very low gravels and moderate amounts of charcoal; diffuse and wavy transition to a grey sand at about 5-11cm. This layer contains low levels of gravel; it has a clear and regular boundary with a yellow-brown clay sand at 32-33cm. This lower level contains very high levels of tabular sandstone shatter (<20cm in size); the sand becomes increasingly compact and clayey with depth.
4	4	38cm	Dark grey humic loamy sand with a regular and diffuse transition to a pale yellow grey sand at about 9-12cm. There is then a clear transition to a yellow0brown clay sand at 25cm, which becomes increasingly compact and clayey with depth. Tree root disturbance is evident across the eastern half of the pit, particularly in the upper 20cm.
5	4	38cm	Dark grey humic loamy sand with low gravel content and extensive disturbance from tree roots; diffuse and irregular boundary at 20-24cm with a yellow-grey sand containing moderate gravel levels. There is then a clear and regular transition to a yellow-brown clayey sand at 34cm, this becomes increasingly compact and clayey with depth and contains high level of gravel.
6	3	30cm	Dark grey humic loamy sand, very loose, with a diffuse and regular transition to a grey loamy sand at 4cm. The grey sand has a high gravel content from around 13-21cm; there is then a diffuse and regular transition to a pale yellow-grey sand that grades into a clay sand at the base of the pit. Gravel size and quantities increase with depth in the lower half of the pit.
7	3	26cm	Dark grey humic loamy sand with a regular and diffuse transition to a grey loamy sand at around 4-7cm. A grey loamy sand with a low gravel content then extends to a depth of 16/17cm, where there is a regular but somewhat clear transition to a pale yellow grey sand with a very high gravel content (Gravel and shatter <20cm). At around 24-26cm a consistent bedrock layer appears.

Transect 2

This transect was located within the building envelope on Lot 7; it was aligned southwest (Pit 1) to northeast (Pit 7).

Plate 6. Transect 2 looking southwest.

Overview of trends in soil colour and pH:
Dark grey/brown humic loamy sand: 10YR 5/1, pH 4.0
Grey sand: 10YR 5/2, pH 4.5
Decomposing bedrock/compact sand: 10YR 6/6, pH 4.5

Summary of artefacts recovered:
No artefacts recovered from this transect

Details of soil profiles in each pit:

Transect 2			
Pit	**N$^{o.}$ of Spits**	**Total Depth**	**Description**
1	3	25cm	Grey loamy sand to a depth of 5-8cm, where there is a clear and wavy transition to a pale yellow-grey sand with increasing levels of gravel. At 23/25cm there is a clear and regular transition to a yellow-brown clay sand that is very compact.
2	3	28cm	Dark grey humic loamy sand with low levels of large sub-angular and sub-rounded gravels and sparse charcoal; there is then a clear and regular transition to a grey loamy sand at 6cm. This loamy sand continues to a depth of around 12-14cm, where there is a diffuse and wavy transition to a pale yellow-grey sand with sparse charcoal. At 26cm there is a clear and regular transition to a yellow-brown clay sand. Very high gravel levels encountered in the lower half of the pit. Evidence of tree root disturbance extends throughout the pit.
3	3	27cm	Grey loamy sand to a depth of 6-7cm, where there is a diffuse and wavy transition to a pale grey sand with sparse charcoal. This pale grey sand continues to a depth of 19-24cm, where there is a clear and wavy transition to a yellow brown clay sand that grades into a sandy clay by the base of the pit. Tree root disturbance continues down to 25cm.
4	3	29/30cm	Dark grey humic loamy sand – loose root zone – continues to 6-9cm; there is then a clear and wavy transition to a grey sand with sparse charcoal that continues to around 16-18cm, where there is a clear and irregular transition to a pale yellow grey sand with increasing gravel levels. At around 26-27cm there is a clear transition to a yellow-brown clay sand grading into a sandy clay. Tree roots extend throughout but decrease with depth.
5	3	30cm	Dark grey humic loamy sand to a depth of 6-8cm, where there is a clear and slightly wavy boundary with a grey sand with sparse charcoal and increasing gravel levels. At around 25-28cm there is then a clear and regular transition to a yellow brown clay sand that becomes increasingly clayey and compact with depth.
6	3	30cm	Grey loamy sand grades into a pale yellow grey sand at a depth of 16cm; this then grades into a yellow brown sandy clay at ca. 30cm. Increasing gravel levels with depth.
7	3	30cm	Dark grey humic loamy sand with a diffuse but regular transition to a grey sand at 5cm; there is then a clear and regular boundary with a pale yellow grey sand at 13cm. The pale sand contains very high levels of large gravels and sandstone shatter. At the base of the pit a consistent decomposing bedrock layer was encountered

Transect 3

This transect was located within the building envelope on Lot 6; it was aligned east (Pit 1) to west (Pit 7).

Plate 7. Transect 3 looking west.

Overview of trends in soil colour and pH:
Dark grey/brown humic loamy sand: 10YR 3/2, pH 4.5
Grey sand: 10YR 5/1, pH 4.5
Pale yellow/grey sand: 10YR 7/4, pH 5.0
Decomposing bedrock/compact sand: 10YR 7/8, pH 4.5

Summary of artefacts recovered:
No artefacts recovered from this transect

Details of soil profiles in each pit:

Transect 3			
Pit	**N$^{o.}$ of Spits**	**Total Depth**	**Description**
1	3	29cm	Dark grey humic loamy sand to a depth of 3-5cm, where there is a clear and gently wavy transition to a grey sand with sparse charcoal and moderate levels of gravel; there is then a clear and regular boundary with a pale yellow grey sand at around 16-18cm; this layer contains high levels of large sandstone gravels; it grades into a yellow-brown clay sand at the base of the pit. Tree roots extend throughout all layers.
2	3	27/30cm	Grey humic loamy sand and leaf litter to a depth of 3cm, where there is a diffuse and regular transition to a pale yellow-brown sand that then grades into a yellow-brown clay sand with very high levels of large gravels and pieces of sandstone shatter. Tree roots throughout.
3	2	20cm	Dark grey humic loamy sand to a depth of 2cm; there is then a clear and regular transition to a grey sand with moderate gravel content. At 8-13cm there is a diffuse transition to a pale yellow-grey sand with high to very high levels of gravel. At a depth of ca.20cm this grades into the decomposing bedrock layer characterised by a yellow-brown clay sand.
4	2	18/20cm	Dark grey-brown humic loamy sand – very thin layer – to a depth of 1cm; there is then a clear and regular transition to a grey sand that continues to a depth of 14cm, where there is an diffuse but regular transition to a pale yellow grey sand that becomes increasingly compact with depth. Gravel levels also increase with depth and at the base of the pit the yellow-brown decomposing bedrock layer is clear.
5	2	18cm	Dark grey-brown humic loamy sand to a depth of 1-2cm; there is then a clear and regular transition to a grey sand that grades into a yellow grey sand. At 14-15cm there is a clear wavy transition to an orange clay sand with high gravels content indicative of the decomposing bedrock.
6	2	18/20cm	Dark grey-brown humic loamy sand to a depth of 1-2cm; there is then a clear and regular transition to a grey sand that grades into a yellow grey sand. At 16cm there is a clear wavy transition to an orange clay sand with high gravels content indicative of the decomposing bedrock.
7	3	30cm	Dark grey brown humic loamy sand and leaf litter to a depth of 5cm, there is then a clear and regular boundary with a grey sand with high levels of gravel. This grades into a yellow grey sand at around 18cm. This sand becomes increasingly compact and at the base of the pit there is shale and sandstone shatter indicative of the decomposing bedrock layer.

Transect 4

This transect was located along a section of the proposed access road; it was aligned east (Pit 1) to west (Pit 7).

Overview of trends in soil colour and pH:
Dark grey/brown humic loamy sand: 10YR 5/2, pH 4.0
Grey sand: 10YR 7/2, pH 4.5
Decomposing bedrock/compact sand: 10YR 7/6, pH 4.5

Summary of artefacts recovered:
No artefacts recovered from this transect

Details of soil profiles in each pit:

Transect 4			
Pit	**N$^{o.}$ of Spits**	**Total Depth**	**Description**
1	3	30cm	Dark grey brown humic loamy sand with a clear and regular transition at 3-4cm to a grey sand with sparse charcoal; there is then a diffuse and regular transition to a pale yellow-grey sand at 12cm; this grades into a darker and more compact sand with high levels of gravel and shatter indicative of decomposing bedrock. Moderate levels of sub-angular quartz gravels and tree roots throughout.
2	3	30cm	Dark grey brown humic loamy sand to a depth of 7-10cm where there is a diffuse and irregular transition to a grey sand; this then grades into a yellow to yellow-grey compact sand/decomposing bedrock layer. Tree roots and moderate levels of quartz gravels throughout.
3	3	30cm	Grey-brown humic loamy sand grading into a grey to yellow grey sand at around 10-12cm; this sand becomes increasingly compact with depth and the quantity and size of sandstone gravels and shatter also increases. The base of the pit corresponds to the decomposing bedrock layer. Moderate levels of quartz throughout; tree root disturbance restricted to the upper 20cm.
4	3	30cm	Dark grey brown humic loamy sand to a depth of 9cm, diffuse and regular transition; grey sand with a clear and irregular transition to a pale yellow grey sand with high gravel content at 20cm; this grades into a yellow grey compact sand/clay sand by a depth of around 25cm, which then becomes increasingly compact with depth. Minimal disturbance from tree roots; low levels of quartz; high levels of sandstone gravels and shatter.
5	3	26cm	Thin layer of dark grey brown humic loamy sand (1cm); clear transition to grey sand with lots of tree root disturbance; regular but diffuse transition to pale yellow-grey sand at 13cm that then grade into and increasingly compact yellow brown sand with increasing levels of sandstone gravels and shatter.
6	2	20cm	Dark grey brown humic loamy sand to a depth of around 5-8cm, where there is a diffuse and regular transition to a pale grey to yellow grey sand that becomes increasingly compact with depth. Moderate quartz gravels throughout; increasing levels of sandstone gravels and shatter with depth.
7	3	23cm	Dark grey brown humic loamy sand to a depth of around 3cm, where there is a diffuse and regular transition to a pale grey to yellow grey sand that becomes increasingly compact with depth. At a depth of ca. 20cm the sand has graded into a yellow-brown compact layer (decomposing bedrock). Moderate quartz gravels throughout; increasing levels of sandstone gravels and shatter with depth.

Plate 8. Transect 4 looking east.

Transect 5

This transect was located within the building envelope on Lot 4; it was aligned northwest (Pit 1) to southeast (Pit 7).

Plate 9. Transect 5 looking southeast.

Overview of trends in soil colour and pH:
Dark grey-brown humic loamy sand: 10YR 51, pH 4.5
Grey sand/silty sand: 10YR 6/1, pH 5.0
Decomposing bedrock/compact sand: 10YR 6/3, pH 4.5

Summary of artefacts recovered:
No artefacts recovered from this transect

Details of soil profiles in each pit:

Transect 5			
Pit	**N°. of Spits**	**Total Depth**	**Description**
1	2	20cm	Dark grey brown humic loamy sand with a clear and irregular transition to grey sand at 8-14cm; this then grades into a yellow grey silty sand that becomes increasingly compact and has increasing levels of gravel and sandstone shatter.
2	3	28cm	Grey loamy sand with sparse charcoal and low gravels, clear regular transition to a grey to yellow grey sand at 15cm; this layer contains high levels of gravel and sub-angular sandstone shatter (<25cm); at a depth of ca. 25cm there is a clear transition to a yellow-grey compact sand/clay sand that appear to be the decomposing bedrock layer.
3	3	26cm	Dark grey-brown humic loamy sand to a depth of 4cm, where there is a clear and regular boundary with a grey silty sand with high gravel content; the gravel content increases with depth and at ca.22cm there is a diffuse and regular transition to a yellow-grey compact sand (decomposing bedrock).
4	2	20cm	Dark grey-brown humic loamy sand to a depth of 2cm; clear and regular transition to a grey silty sand with sparse charcoal and high gravel content; there is then a diffuse and irregular boundary at ca. 14-15cm, below which is a yellow-grey compact sand with high levels of gravel and shatter (<20cm).
5	2	20cm	Dark grey brown humic loamy sand continues to a depth of 7-12cm, where there is a diffuse and irregular boundary with a pale grey to compact sand that grades into a yellow grey compact sand/clay sand with increasing gravel levels (decomposing bedrock).

6	3	28cm	Humic leaf fitter to a depth of 4cm, below which is a grey silty sand with sparse charcoal; there is then a diffuse and regular boundary with a yellow grey sand at 9-10cm; this becomes increasingly compact, darker in colour and has increasing levels of gravel and shatter.
7	3	27cm	Brown humic leaf litter to a depth of 4cm where there is a clear and regular boundary with a grey silty sand with high gravel content; there is then a regular and diffuse boundary with a yellow grey sand at ca. 16cm; this sand becomes increasingly compact and has increasing levels of sandstone gravels and shatter.

Transect 6

This transect was located within the building envelope on Lot 2, it was aligned southwest (Pit 1) to northeast (Pit 7).

Plate 10. Transect 6 looking northeast.

Overview of trends in soil colour and pH:
Dark grey-brown humic loamy sand: 10YR 4/1, pH 5.0
Grey silty sand: 10YR 5/2, pH 5.5
Decomposing bedrock/compact sand: 10YR 6/3, pH 5.5

Summary of artefacts recovered:
Pit 1: 1 artefact, Pit 4: 2 artefacts, Pit 5: 3 artefacts, Pit 6: 2 artefacts, Pit 7: 2 artefacts

Details of soil profiles in each pit:

Transect 6			
Pit	**N°. of Spits**	**Total Depth**	**Description**
1	3	30cm	Dark grey brown humic loamy sand to a depth of 4cm where there is a clear and regular boundary with a grey silty sand; this continues with sparse charcoal to a depth of 17cm, where there is a regular and diffuse transition to a yellow grey-brown sand grading into a compact sand/clay sand with increasing gravel content (decomposing bedrock).
2	3	27cm	Grey brown sandy loam with sparse charcoal to a depth of 9cm; clear boundary with a yellow grey-brown sand that grades into a yellow-brown and increasingly compact sand with noticeable increases in gravel content from ca.20cm.

3	3	27cm	Dark grey brown humic loamy sand to a depth of around 3-9cm, where there is a clear but irregular boundary (appears to be the result of bioturbation) with a grey silty sand; this continues to a depth of 17cm, where there is a regular and diffuse boundary with a yellow grey sand that becomes increasingly compact (decomposing bedrock).
4	2	20cm	Dark grey brown humic loamy sand to a depth of 5cm, where there is a clear and regular transition to a grey to yellow grey silty sand that grades into a more yellow compact sand at the base of the pit (decomposing bedrock). Increasing gravel levels with depth.
5	3	25cm	Dark grey-brown humic loamy sand to a depth of 3cm; clear regular transition to a grey silty sand with moderate levels of gravel; at ca. 15cm there is a clear transition to a yellow grey silty sand that grades into a compact sand with increasing gravel content. Moderate quartz gravels; high levels of sandstone shatter (<10cm) at base.
6	3	25cm	Dark grey-brown humic loamy sand to a depth of 4cm, where there is a clear and regular boundary with a grey silty sand with moderate levels of gravel; there is then a regular and diffuse transition to a yellow-grey compact sand at ca.17cm. This becomes increasingly compact and has increasing gravel content with depth; the base of the pit clearly corresponds to decomposing bedrock.
7	2	20cm	Dark grey-brown humic loamy sand to a depth of 4cm, where there is a clear and regular boundary with a grey silty sand with moderate levels of gravel; there is then a regular and diffuse transition to a yellow-grey compact sand at ca.11cm. This becomes increasingly compact and has increasing gravel content with depth; the base of the pit clearly corresponds to decomposing bedrock.

Transect 7

This transect was located within the building envelope on Lot 1, it was aligned northwest (Pit 1) to southeast (Pit 7).

Plate 11. Transect 7 looking northwest.

Overview of trends in soil colour and pH:
Grey brown humic loamy sand: 10YR 4/1, pH 5.5
Grey sand/silty sand: 10YR 5/2, pH 5.0
Decomposing bedrock: 10YR 6/6, pH 4.5

Summary of artefacts recovered:
Pit 1: 1 artefact, Pit 2: 1 artefact, Pit 4: 1 artefact, Pit 5: 1 artefact

Details of soil profiles in each pit:

Transect 7			
Pit	**N$^{o.}$ of Spits**	**Total Depth**	**Description**
1	2	20cm	Dark grey-brown humic loamy sand with leaf litter to a depth of 3cm; clear and regular boundary with a grey sand that grades into a yellow-grey compact sand with high gravel content.
2	2	20cm	Loose grey brown humic loamy sand to a depth of ca. 3-4cm where there is a clear and regular transition to a grey sand with minimal gravels; there is then a clear transition to a grey sand with very high gravel content, grading into a yellow-brown sand with numerous pieces of sandstone shatter (<20cm).
3	3	22cm	Humic leaf litter to a depth of 2cm, where there is then a clear transition to a grey sand/silty sand with low gravel content; diffuse and irregular transition to a yellow-grey sand with high gravel content at 12-14cm; followed by a clear transition to a compact yellow-brown sand at 22cm (decomposing bedrock).
4	2	20cm	Humic leaf litter to a depth of 2cm, where there is then a clear transition to a grey-brown silty sand with low gravel content; diffuse and regular transition to a pale yellow-grey sand with high gravel content at 7cm; followed by a clear transition to a compact yellow-brown sand at 18cm (decomposing bedrock).
5	2	19cm	Thin layer of humic leaf litter (1cm); clear transition to a grey silty sand with low gravel content; regular and diffuse transition to a yellow-grey compact sand at 10-13cm; this becomes increasingly yellow and increasingly compact with depth.
6	3	24cm	Humic leaf litter to a depth of 3cm; clear regular transition to a dark grey silty sand with low gravel content; clear and irregular transition to a pale yellow grey compact sand with gravels at 14-16cm; this becomes increasingly yellow in colour and increasingly compact with depth. Base of pit clearly corresponds to decomposing bedrock.
7	3	25cm	Humic leaf litter to a depth of 4cm; clear regular transition to a dark grey silty sand with a few small roots; clear and regular transition to a yellow grey sand with gravels at 14cm, followed by a clear transition to a yellow-grey/brown compact sand at 19cm that becomes increasingly compact and yellow in colour. Base of pit corresponds to decomposing bedrock.

Eden Local Aboriginal Land Council

M.B.G. Keeping Place
Jigamy Farm

Ph: 02 - 6495 7177
Fax: 02 - 6495 7433

15.04.09

Julie Dibden
New South Wales Archaeology Pty Limited
PO Box 2135
Central Tilba
NSW 2546

RE: proposed rural subdivision at picnic point

Wonboyn Lake, NSW subsurface test excavation.

Eden LALC has sighted your report as above named and agree with the recommendations included there in.

The LALC have forwarded an invoice for payment for work carried out by the LALC heritage staff as our agreed arrangement.
Should you require any further details relating to the above please contact me at the LALC office on (02) 64957177

Yours sincerely