APPENDIX 4

Aboriginal Cultural Heritage Assessment

Mackas Sand

Aboriginal Cultural Heritage Assessment of Alternate Haul Route to Lot 218 DP 1044608, Salt Ash

December 2011

Umwelt
Environmental Consultants

Aboriginal Cultural Heritage Assessment of Alternate Haul Route to Lot 218 DP 1044608, Salt Ash

Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Mackas Sand

Project Director:	Peter Jamieson		
Report No.	1646/R23/V5/FINAL	Date:	December 2011

Umwelt
Environmental Consultants

2/20 The Boulevarde
PO Box 838
Toronto NSW 2283

Ph: 02 4950 5322
Fax: 02 4950 5737
Email: mail@umwelt.com.au
Website: www.umwelt.com.au

TABLE OF CONTENTS

FIGURES

PLATES

APPENDICES

1.0 Introduction

Major Project Approval 08_0142 was granted to Mackas Sand for the extraction of sand from Lot 218 in DP 1044608 and Lot 220 in DP 1049608 (refer to **Figure 1.1**). Major Project Approval 08_0142 includes provision for Mackas Sand to access Lot 218 by creating a small access road to adjoin an existing access route through the Quality Sands and Ceramics sand quarry (as shown in **Figure 1.1**).

Mackas Sand is proposing to utilise a realigned public road (referred to as the Stockton Bight Track) to establish a formal access to Lot 2 DP 916061 and Lot 122 DP 753192, from which point the alternate haul route will allow access to Lot 218, as shown in **Figure 1.2**. In accordance with Section 75W of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), Mackas Sand is seeking a modification to Major Project Approval 08_0142 to incorporate the alternate haul route. Umwelt (Australia) Pty Limited (Umwelt) has been engaged by Mackas Sand to prepare the necessary environmental assessments for the proposed modification, including this Aboriginal Cultural Heritage Assessment.

1.1 Description of the Alternate Haul Route

The modification sought is to construct and utilise an alternate route to access the approved sand extraction area on Lot 218 in DP 1044608 (Lot 218), Salt Ash.

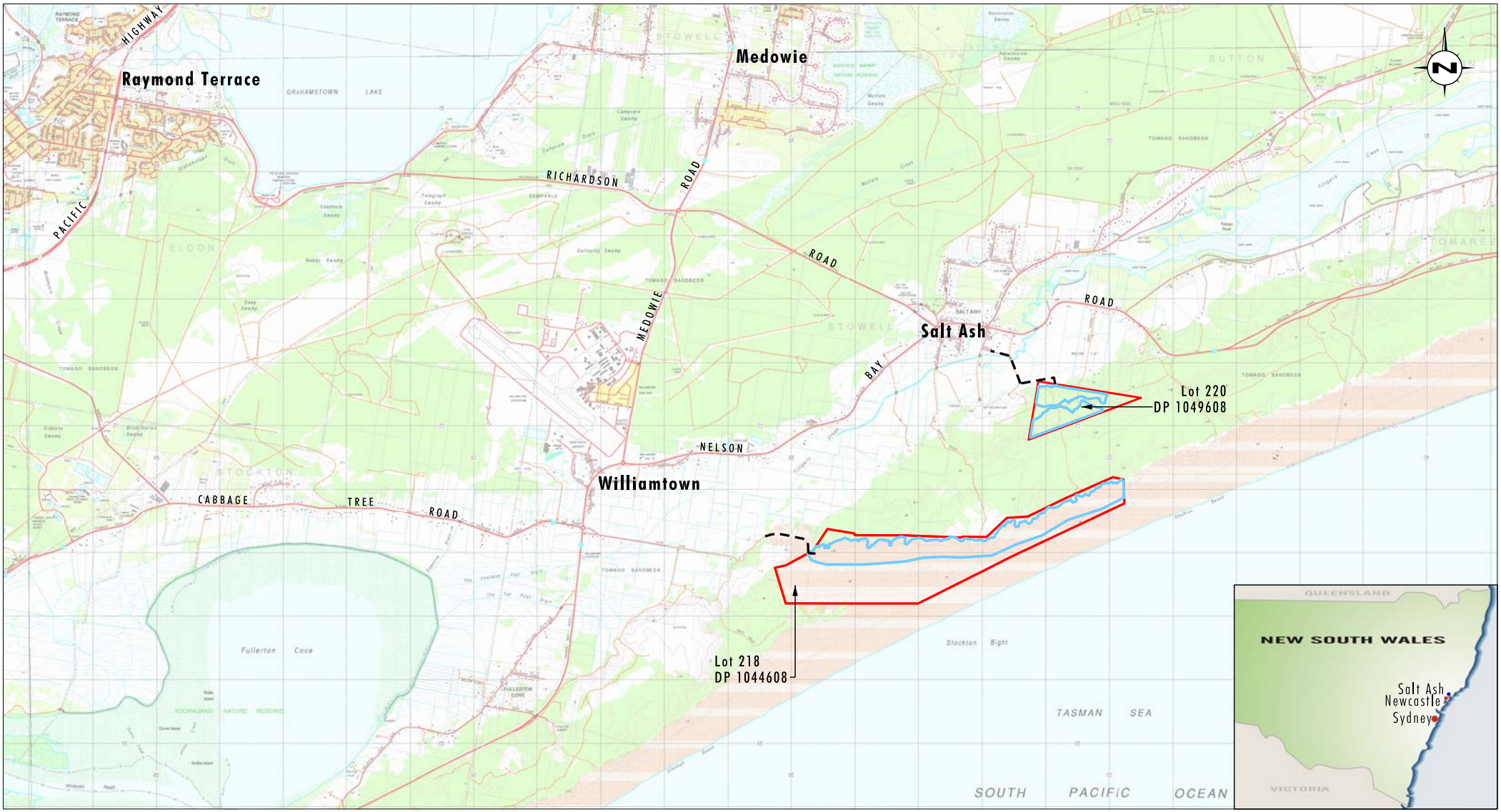
The approved access to Lot 218 extraction area is via a public road reserve (Stockton Bight Track) that passes through Pt 76 and part of Pt 101 from where it leaves Stockton Bight Track and traverses across Pt 101 and Pt 13 of DP 753192 to Lot 227 DP 1097995 (Lot 227) which provides access to Lot 218. Pt 101 and Pt 13 in DP 753192 are owned by members of the Towers family and Lot 227 is owned by Worimi Local Aboriginal Land Council (LALC).

The alternate access to the Lot 218 extraction area is via Stockton Bight Track which was realigned (as shown on **Figure 1.2**) by Port Stephens Council to provide physical access to Lot 2 DP 916061 and Lot 122 DP 753192. The realignment of Stockton Bight Track was gazetted on 1 September 2011. Lot 2 DP 916061 and Lot 122 DP 753192 are owned by B & R B Mackenzie FT Pty Ltd.

Two possible alignments (Route A and Route B as shown on **Figure 1.2**) for the access between Lot 122 and the approved extraction area on Lot 218 have been identified and assessed. Each route follows along the southern boundary of Lot 2 and Lot 122 and predominantly follows the alignment of an existing sand track. The entire southern boundary of Lot 122 has been identified as a Potential Archaeological Deposit (PAD).

The alternate haul route easement will be a gravelled surface of approximately 8 metres in width by up to approximately 2400 metres (including approximately 600 metres of previously approved access road) in length, depending on whether Route A or Route B is utilised. A turning bay of approximately 30 metres by 30 metres will be located at the base of the mobile dune on Lot 218. Where the alternate haul route follows an existing track, it will be necessary to widen the existing track. In order to allow for construction impacts, an easement of approximately 30 metres in width was assessed along the full length of the alternate haul route however it was subsequently determined that a total disturbance width of approximately 10 metres would be adequate to account for all impacts.

Construction of the proposed alternate haul route (including the turning bay) will involve establishing a trafficable surface that can sustain heavy vehicle traffic. The level of activity required to do this will vary along the proposed alternate haul route depending on factors such as the type of vegetation present, previous disturbance (including the level of existing



Source: Department of Lands, 2006

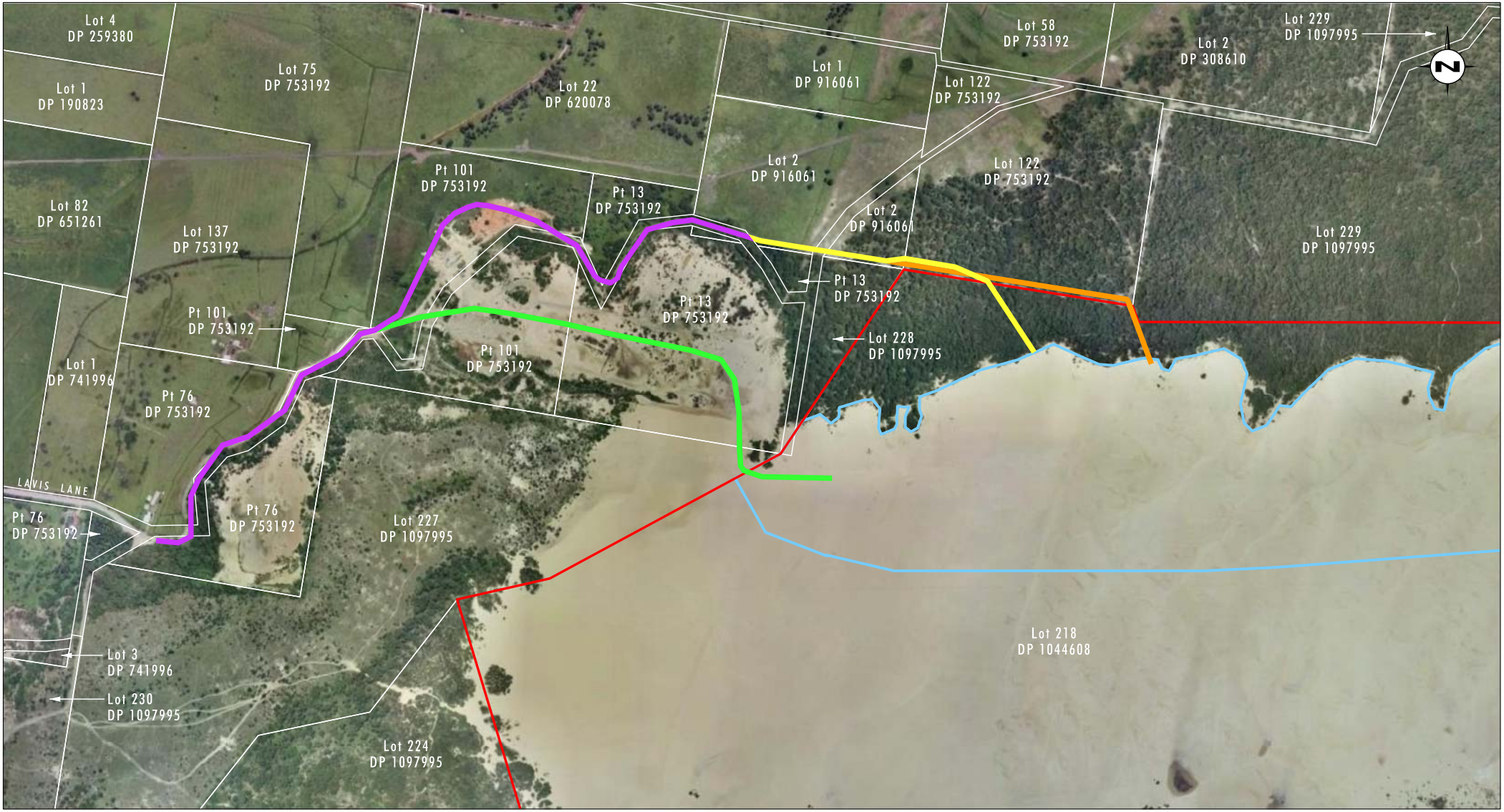
Legend

- Lot Boundaries
- Approval Areas
- Approved Access Roads

FIGURE 1.1

Location of Approval Areas

File Name (A4): R23_V1/1646_212.dgn



Source: Aerial: Google Earth, 2008

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Legend

- Lot 218 Boundary
- Lot 218 Approval Extraction Area
- Stockton Bight Track
- Previously Approved Access Route
- Alternate Route A
- Alternate Route B

FIGURE 1.2

Study Area

vegetation clearance), landform and slope angle. In general terms, these activities may include vegetation clearance, cutting and filling of areas to create a level surface and the introduction of road base (or similar) materials.

Modification is also sought in regard to minor changes to permissible maximum extraction depths on Lot 218 and Lot 220 however this change will not have an ecological impact beyond that already approved.

1.2 Background Information

An Aboriginal Cultural Heritage Management Plan (ACHMP) for the extraction areas was completed in consultation with the relevant Aboriginal parties and in accordance with Condition 29 of Major Project Approval 08_0142 (Umwelt 2009a). The ACHMP was approved by the Department of Planning on 9 November 2009. An Aboriginal Heritage Management Group (AHMG) was subsequently established in accordance with the ACHMP.

Section 5.1.2 of the ACHMP specifies

> Should Mackas Sand need to conduct activities resulting in vegetation clearance or ground disturbance outside the current approval areas, these activities will be discussed with the AHMG (including an on-call archaeologist, if required). The AHMG will provide advice regarding any requirements for additional cultural heritage inspections/investigations and/or the need to obtain appropriate permits or consents from DECCW prior to undertaking any such activities outside the current approval areas.

In accordance with Section 5.1.2 of the ACHMP, the AHMG (including an on-call archaeologist) were invited to conduct an inspection of part of the alternate haul route on Friday 12 February 2010. The inspection by the AHMG identified that construction and use of the alternate haul route may result in impacts to Aboriginal cultural heritage and the AHMG consequently recommended that the alternate haul route should be assessed in accordance with the relevant requirements and guidelines.

1.3 Relevant Cultural Heritage Legislation

Major Project Approval 08_0142 was granted to Mackas Sand under Part 3A of the EP&A Act and the proposed modification is sought under Section 75W of the EP&A Act.

1.4 EP&A Act

The EP&A Act regulates development activity in New South Wales. Part 3A of the EP&A Act (now repealed) previously applied to projects that were declared to be a 'Major Project' (in accordance with Section 75B of the EP&A Act) and the current approval was granted under Part 3A. The proposed modification will be considered under Section 75W of the EP&A Act and as the project approval was issued in accordance with Part 3A of the EP&A Act, the following provisions also apply to the proposed modification. Under Section 75U of the EP&A Act, it is not necessary to obtain a permit under Section 87 or a consent under Section 90 of the *National Parks and Wildlife Act 1974* (NPW Act) (as discussed below) in relation to activities approved under Part 3A of the EP&A Act. Projects approved under Part 3A of the EP&A Act are subject to conditions of approval issued by the Department of Planning (DoP – now Department of Planning and Infrastructure) and (where relevant) Aboriginal cultural heritage is addressed by appropriate conditions. Furthermore, Section 75J (5) of the EP&A Act states that conditions of approval for the carrying out of a

project may require the proponent to comply with obligations made in a statement of commitments submitted by the proponent as part of the development approval process.

In relation to Aboriginal cultural heritage assessments, current Department of Planning and Infrastructure guidelines indicate that consultation should be undertaken in accordance with the *Interim Community Consultation Requirements for Applicants* (DECCW 2004). This will be discussed further below.

1.4.1 NPW Act

The Office of Environment and Heritage (OEH – formerly the Department of Environment Climate Change and Water – DECCW) is primarily responsible for regulating the management of Aboriginal cultural heritage in New South Wales under the NPW Act (as amended October 2010). The NPW Act is accompanied by the National Parks and Wildlife Regulation 2009 (the Regulation), the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010) and other industry-specific codes.

The objectives of the NPW Act include:

> The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to: (i) places, objects and features of significance to Aboriginal people.

The NPW Act defines an Aboriginal object as

> any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales

Under Section 84 of the NPW Act, an Aboriginal Place must be declared by the Minister as a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.

In accordance with Section 86(1) of the NPW Act, it is an offence to harm or desecrate a known Aboriginal object, whilst it is also an offence to harm an Aboriginal object under Section 86(2). Similarly, Section 86(4) states that a person must not harm or desecrate an Aboriginal place. Harm to an object or place is defined as any act or omission that:

a) destroys, defaces or damages an object or place, or
b) in relation to an object – moves the object from the land on which it had been situated, or
c) is specified by the regulations, or
d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),

but does not include any act or omission that:

e) desecrates the object or place, or
f) is trivial or negligible, or
g) is excluded from this definition by the regulations.

Section 87(1) of the NPW Act specifies that it is a defence to prosecution under Section 86(1) and Section 86(2) if the harm or desecration of an Aboriginal object was authorised by an Aboriginal heritage impact permit (AHIP) and the activities were carried out in accordance with that permit. As discussed above, the provisions of Part 3A of the EP&A Act can overrule the requirement for an AHIP under the NPW Act, with these provisions applying to activities approved under Part 3A only. However, the other provisions of the NPW Act are still applicable.

Section 87(2,4) of the NPW Act establishes that it is a defence to prosecution under Section 86(2) (the strict liability offence) if due diligence was exercised to reasonably determine that the activity or omission would not result in harm to an Aboriginal object or if the activity or omission constituting the offence is a low impact act or omission (in accordance with Section 80B of the Regulation). The Regulation identifies that compliance with an industry specific code (or if such a code does not exist the generic OEH code) is taken to constitute due diligence in determining whether a proposed activity will harm an Aboriginal object. In addition, Section 3A of the Regulation specifies that an act carried out in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010) 'is excluded from the definition of harm' as provided in the NPW Act. This may include (but is not limited to) test excavations carried out in accordance with this code.

Consultation with the Aboriginal community is an integral part of identifying and assessing the significance of Aboriginal objects and/or places and determining and carrying out appropriate strategies to mitigate impacts upon Aboriginal heritage. Section 80C(1) of the Regulation establishes that, prior to making an application for an Aboriginal heritage impact permit, the applicant must undertake Aboriginal community consultation in accordance with Section 80C(2-11).

Furthermore, consultation in relation to the current project commenced on 27 February 2010 under the *Interim Community Consultation Requirements for Applicants* and the first survey of the area was conducted on 29 March 2010. In accordance with the transitional arrangements identified by OEH, consultation for this assessment was subsequently undertaken under the *Interim Community Consultation Requirements for Applicants.* However, in recognition of the change in consultation expectations, all consultation undertaken after November 2010 was generally in accordance with Section 80C (2-11) of the Regulation.

1.5 Report Structure

The key objective of the assessment is to assess the archaeological and Aboriginal cultural heritage significance of the alternate haul route and to provide appropriate mitigation and management strategies in relation to the route. In order to achieve this objective, the assessment involved:

1. undertaking detailed consultation with relevant Aboriginal parties in accordance with the *Interim Community Consultation Requirements for Applicants* (DECCW 2004) and subsequently in accordance with Section 80C(2-11) of the Regulation (**Section 2**);

2. reviewing the environmental and archaeological context of the Stockton Bight region and the alternate haul route specifically (refer to **Sections 3** and **4**) in order to develop a model with which to predict the likelihood that archaeological material (namely Aboriginal objects) will be associated with the alternate haul route (refer to **Section 5**) and to provide background information against which to assess the significance of any sites or PAD that may be associated with the alternate haul route;

3. undertaking a survey of the alternate haul route in consultation with the relevant Aboriginal parties (**Section 6**);

4. assessing the cultural heritage significance of the alternate haul route primarily based upon the scientific and Aboriginal cultural heritage significance of any associated archaeological sites or areas of PAD in addition to considering the broader cultural landscape that comprises the alternate haul route (**Section 7**);

5. reviewing the impacts of the alternate haul route in relation to the archaeological assessment (**Section 8**); and

6. providing appropriate recommendations to manage and mitigate impacts to cultural heritage associated with the alternate haul route (**Section 9**).

1.6 Project Team

This assessment report was prepared by Nicola Roche and reviewed by Jan Wilson and Peter Jamieson. The survey of the alternate haul route was conducted by Nicola Roche, Jamie Merrick, Lennie Anderson, Anthony Anderson and Chris Collison.

2.0 Aboriginal Party Consultation

As discussed in **Section 1.2**, an initial inspection of the alternate haul route was conducted by the AHMG on 12 February 2010. Following the inspection and the determination that the alternate haul route should be subject to detailed assessment, all consultation was conducted in accordance with the *Interim Community Consultation Requirements for Applicants* (2004) (the requirements) and subsequently Section 80C of the Regulation, as discussed in **Section 1.4.1**. Consultation undertaken in accordance with these requirements is discussed below and summarised in Table 1 of **Appendix A**.

The notification process involved the placement of a public advertisement in the Newcastle Herald on 27 February 2010 (refer to **Appendix A**). Letters providing notice of the proposed assessment and requesting information on known Aboriginal parties that may wish to be consulted regarding the assessment were sent to DECCW (now OEH), New South Wales Native Title Services, the Office of the Registrar of Aboriginal Owners, Worimi Local Aboriginal Land Council and Port Stephens Council on 3 March 2010 (refer to **Appendix A**). In addition, letters seeking registrations of interest for consultation regarding the assessment and providing a proposed methodology for the survey were sent on 3 March 2010 to the following Aboriginal parties previously involved in the assessment of Lot 220:

1. Worimi Local Aboriginal Land Council (WLALC);

2. Nur-Run-Gee Pty Ltd (Nur-Run-Gee);

3. Worimi Traditional Aboriginal Elders and Owners Group;

4. Mur-Roo-Ma Incorporated (Mur-Roo-Ma); and

5. Maaiangal Aboriginal Heritage Co-operative (Maaiangal).

All groups registered an interest in being consulted regarding the assessment with the exception of Worimi Traditional Aboriginal Elders and Owners Group. In addition, correspondence from DECCW (now OEH) identified Ms Viola Brown as an Aboriginal party who may wish to be consulted regarding the assessment. Ms Brown was contacted in writing on 22 March 2010 and subsequently registered her interest in being consulted regarding the assessment. Ms Brown and Ms Carol Ridgeway-Bissett (Maaiangal) indicated that they would not be participating in the survey of the alternate haul route.

At the time of the initial survey, there were some issues regarding land access and the route of the initial section of the alternate haul route and thus a larger area was surveyed to allow consideration of options. A second letter identifying the route of the initial section of the

alternate haul route and referencing the original proposed survey methodology was sent to the relevant Aboriginal parties on 6 May 2010.

The survey of the first section of the alternate haul route was conducted on 29 March 2010 by Jamie Merrick (WLALC), Chris Collison (Nur-Run-Gee) and Anthony Anderson (Mur-Roo-Ma) and the survey of the second section of the alternate haul route (including Route B) was conducted on 22 May 2010 by Jamie Merrick (WLALC), Lennie Anderson (Nur-Run-Gee) and Anthony Anderson (Mur-Roo-Ma). During each of the survey periods, Aboriginal party representatives were asked whether they had any additional cultural information to provide about the alternate haul route. All representatives involved in the survey indicated that they had participated in previous archaeological investigations in the area. Several representatives voiced concerns that the alternate haul route would result in additional impacts of a greater extent than would occur if the previously approved access road was utilised.

A copy of the draft of this assessment was provided to the relevant Aboriginal parties on 3 August 2010. It was requested that the Aboriginal parties provide any additional information relevant to the assessment of the alternate haul route and identify whether this information is suitable to be placed in the public domain. Furthermore, it was requested that Aboriginal parties provide comment on the cultural heritage significance of the alternate haul route and the proposed recommendations for the mitigation and management of impacts to cultural heritage. All comments received from Aboriginal parties are summarised below and included in full in **Appendix A**.

WLALC indicated that the draft report was an accurate assessment of the likely impacts to Aboriginal heritage associated with the alternate haul route and stated that the recommendations provided in **Section 9** 'do not, in any way, restrict or unfavourably effect this development.'

Nur-Run-Gee recommended that existing infrastructure within Lot 218 should be utilised and stated that 'Nur-Ru-Gee P/L does not support any further destruction to the cultural, environmental or physical landscape. Nur-run-Gee P/L is hesitant to support any variation to the original DA-08-0142 that will destroy any further landscape.' Consequently, Nur-Run-Gee agreed with the research design and methodology for further investigation provided in this report only 'if no other alternative is apparent.'

Mur-Roo-Ma stated that 'For the protection of our Aboriginal heritage and culture we strongly believe this proposed access road should not be passed, while there is access to the sand extraction face under DA-08-0412 approved by the planning department.' In relation to the recommendations provided in **Section 9** of this report, Mur-Roo-Ma provided general support and made the following recommendations:

- a permanent fence should be erected around Mackas Access 3 & 4 extending for a distance of no less than three metres around the site;
- Mackas Access 1 & 2 should also be fenced to ensure their protection; and
- impacts to A3 and the associated PAD should be avoided.

On behalf of Maaiangal, Carol Ridgeway-Bissett objected to the proposed modification on the grounds that it will result in impacts to Aboriginal cultural heritage and the cultural landscape, including flora and fauna. These comments were supported by Viola Brown.

Port Stephens Council subsequently adjusted the alignment of the Stockton Bight Track to differ slightly from that subject to the completed Aboriginal cultural heritage assessment but within the area subject to survey. In addition, Route A was identified as an additional

alteration to the alternate haul route. The relevant Aboriginal parties were notified of this on 28 September 2011 and were provided with a draft methodology for survey of the alterations to the alternate haul route (refer to **Appendix A**). The Aboriginal parties were requested to provide comment on the draft survey methodology. Nur-Run-Gee and Mur-Roo-Ma both responded in writing indicating that, while the draft survey methodology was acceptable, the alterations to the alternate haul route would result in harm to recorded sites that were previously not subject to harm.

The final survey of the altered sections of the alternate haul route (including Route A) was conducted on 10 October 2011. Following this, a meeting was held with survey participants on 27 October 2011 to continue in-field discussion of potential mitigation and management options.

The Aboriginal cultural heritage assessment was modified with reference to the alterations described above. The modified draft Aboriginal cultural heritage assessment was provided to all relevant Aboriginal parties for review and comment in November 2011.

It was requested that the registered Aboriginal parties provide written comment on the modified draft report. In accordance with Section 80C of the Regulation it was particularly requested that each party comment on the following:

1. whether there are any Aboriginal objects of cultural value to Aboriginal people in the area;

2. whether there are any places of cultural value to Aboriginal people in the area; and

3. the proposed methodology for mitigation and salvage activities associated with sites/PAD subject to harm by the alternate haul route.

All reports and comments received from the Registered Aboriginal Parties are summarised below and presented in full in **Appendix A**.

Mur-Roo-Ma again stated that the subject area is part of the Stockton Bight landscape and is of high significance to the local Aboriginal community and that Mur-Roo-Ma generally supports the management and mitigation recommendations provided in the draft report. However, due the lack of visible definition of the section of Alternative Route A leading from Lot 122 to the sand extraction face during the survey, Mur-Roo-Ma recommended that this section of the route should be demarcated to determine if it impacts on the high ground or if it is located on the lower (swampy) ground. If the route is on the higher ground, Mur-Roo-Ma recommended the completion of excavations.

In relation to the remainder of the alternative access routes, Mur-Roo-Ma reiterated the recommendation that the PAD area associated with site A3 should not be impacted. Furthermore, due to the identified impacts to sites Mackas Access 1-4, Mur-Roo-Ma strongly opposes the construction of an alternative access route. The previous recommendation that an alternate access road that will require impacts to Aboriginal heritage and flora and fauna should not be approved 'while there is access to the sand extraction face under DA-08-0142 approved by the planning department' that will not result in any additional impacts to Aboriginal heritage, flora and fauna.

Nur-Run-Gee reiterated previous comments, stating that 'selecting another haul road than the one is already established is going to endanger our Cultural items'. Whilst providing general agreement with the methodologies as proposed in the draft report, Nur-Run-Gee 'emphatically disagree and will not support another haul road proposal that endangers Cultural and Environmental material when there is already a suitable haul road in place.'

WLALC stated that the recommendations provided in **Section 10** are 'a true and accurate record of the outcomes and findings of the Assessment Report.'

Both Carol Ridgeway-Bissett and Viola Brown reiterated their previous objections to the proposed modification.

3.0 Environmental Context

Environmental factors such as the availability of fresh water and other resources influence the choices people make about how they use the landscape and also affect the likelihood that archaeological evidence will be present and detectible. Consequently, it is essential to consider the environmental context of the alternate haul route.

A detailed summary of the landscape history of the Stockton Bight area is provided in Umwelt (2009b: 3.1-3.3) and outlines the broader context for the formation of the Stockton Bight dual barrier system. The alternate haul route is located at the interface between stabilised dunes of Holocene age and the Inter-Barrier Depression. The initial section of the alternate haul route is located within the Inter-Barrier Depression before joining the former dune system within an area that has been significantly modified as a result of sand extraction activities. The alternate haul route then runs along the modified lower slopes of high dunes before again crossing a small portion of the Inter-Barrier Depression on to a level to very gently inclined low elevation dune that extends out into the Inter-Barrier depression. Route A and Route B both run along this low elevation dune, with Route A turning south-east after approximately 500 metres. From this point, Route A extends along a very gently inclined lower-slope to swale interface. Route B extends from the near level dune down to a small depression before ascending a steeply inclined slope formed by the mobile sands.

As discussed in Umwelt (2009b:3.3-3.4), the alternate haul route is located in an area with a very rich resource base. The area provided direct access to the swamp resources of the Inter-Barrier Depression whilst also being within two kilometres of the current beachfront and marine resources. Furthermore, the Coastal Sand Apple – Blackbutt vegetation community that populated the dunes would have provided a very broad variety of animal and plant resources (Umwelt 2009b:3.4).

In discussing environmental factors, it is essential to consider how changes in the environment have affected the integrity and visibility of any archaeological material that may have been present. The primary consideration in relation to the alternate haul route is disturbance resulting from construction of the new sections of alternate haul route, use of existing access tracks and previous sand extraction activities. The alternate haul route intersects with a large crushed tile storage area within which the original dune surface has been removed and impacted to such a degree that it is likely that any archaeological material it may have contained has been destroyed. Furthermore, the areas of existing access track that will be incorporated into the alternate haul route have been cleared of vegetation and continually disturbed by vehicle traffic. These activities will have resulted in impacts to any surface archaeological materials that may be present and also may have affected the integrity of sub-surface deposits (if present).

In summary, the alternate haul route is located within an environmental context that would have been rich in resources utilised by Aboriginal people and whilst it has been subject to disturbance as a result of previous land uses the extent of these impacts are variable across the area.

4.0 Archaeological Context

As discussed in the ACHMP (Umwelt 2009a) and in the Mackas Sand Aboriginal Cultural Heritage Assessment (Umwelt 2009b), a large number of archaeological investigations have been conducted in the local area, resulting in the identification of a large number of archaeological sites and the development of a clear understanding of the distribution and nature of sites.

Figure 4.1 identifies two sites located in proximity to the alternate haul route. Site A3 (AHIMS #38-4-0649) was originally recorded by ERM (2003) as a series of exposures containing stone artefacts and shell on an elevated area bordering the Inter-Barrier Depression. ERM (2003) stated that it was not possible to determine the full extent of the site due to vegetation coverage.

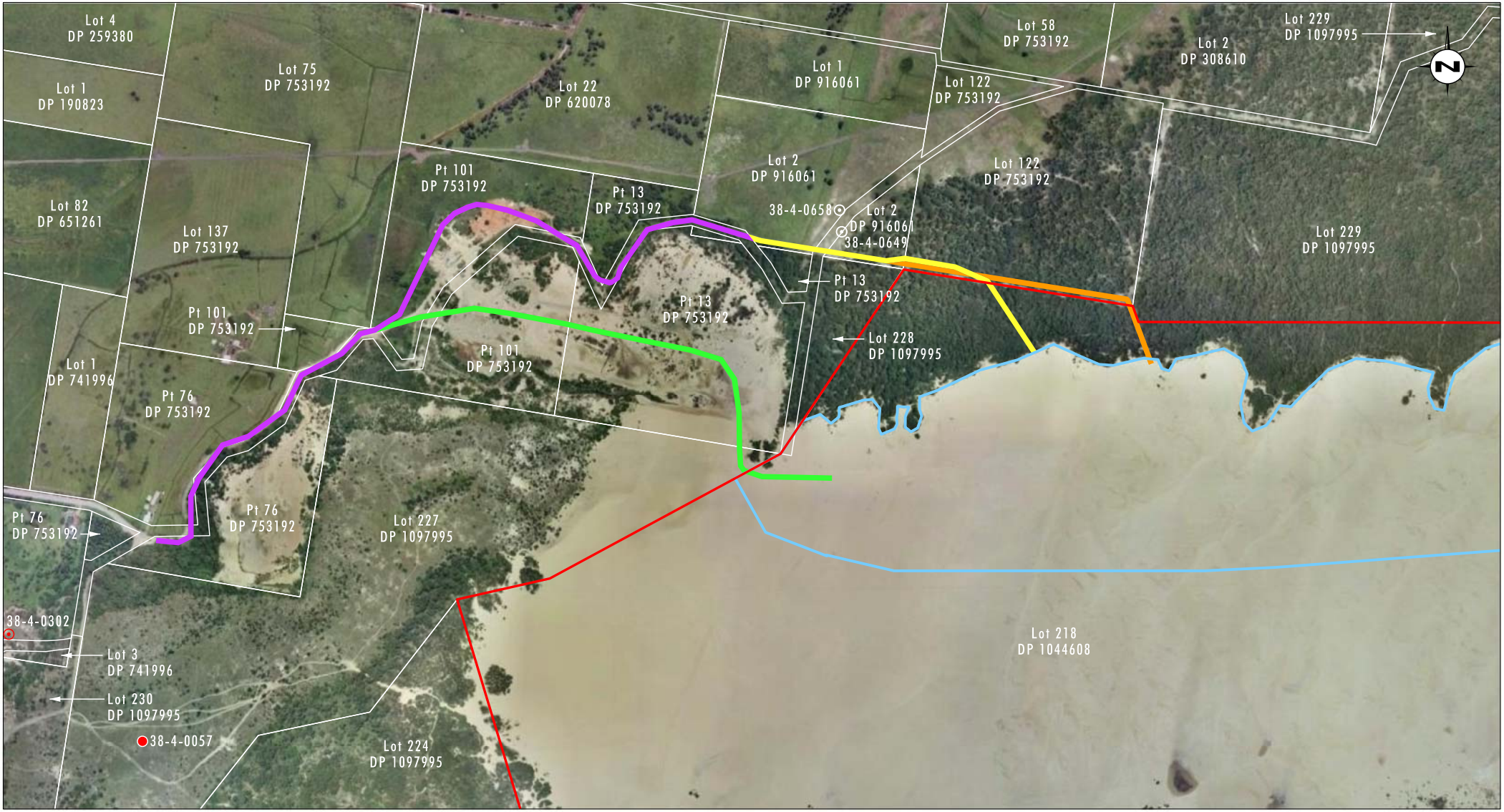
The site was subsequently re-recorded by Umwelt (2004:5.1) as a large scatter of fragmented shell (primarily pipi shell) and stone artefacts present in exposures on a crest of a northeast-southwest trending low dune extending into the Inter-Barrier Depression. Umwelt (2004:5.1) identified a greater distribution of surface artefacts extending to the north-east of the originally recorded location of A3 and extended the boundary of the site to encompass an area that was previously considered to be a Potential Archaeological Deposit. Site A3 was defined as the shoreline and low dunes bordering the Inter-Barrier Depression, with the densest concentrations of artefacts found on the low dunes.

Umwelt (in prep) subsequently undertook salvage works at A3 under Section 90 Consent #1884. These works involved excavations at six locations (two areas of four metres by four metres and four areas of two metres by two metres), detailed surface recording and the sieving of loose sand in an area of disturbance. The salvage program resulted in the recovery of 4437 artefacts (refer to **Table 4.1**), including a large sandstone grindstone. Approximately six kilograms of pipi shell were also salvaged, with less than ten grams of estuarine species (oyster and mud whelk) recovered. In addition, a probable hearth feature was excavated within A3. The feature was lenticular in profile and contained large quantities of charcoal and a fine ash lens. Artefacts were present within the soil profile both directly above and directly below the feature. The feature was excavated and a sample of charcoal was submitted to the University of Waikato Radiocarbon Dating Laboratory for radiocarbon dating. The sample (Wk-20910) returned a date of 3224 +/- 40BP.

Table 4.1 – A3 Artefacts

Location	# of artefacts
A3 loose sand	828
A3 excavation 5	941
A3 excavation 6	673
A3 excavation 7	372
A3 excavation 8	55
A3 excavation 9	600
A3 excavation 10	968
Total	**4437**

Sections of Route A and Route B intersect with the southern end of A3, approximately 500 metres south-west of the excavated locations described above.



Source: Aerial: Google Earth, 2008

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Legend

- Lot 218 Boundary
- Lot 218 Approval Extraction Area
- Stockton Bight Track
- Previously Approved Access Route
- Alternate Route A
- Alternate Route B
- Artefact Scatter
- Midden
- Midden / Artefact Scatter

FIGURE 4.1

Location of AHIMS Registered Sites

5.0 Predictive Model

Based on the environmental and archaeological contextual information discussed above, the following predictions can be made for the alternate haul route.

- It is highly unlikely that Aboriginal objects will be present within the portions of the alternate haul route that are located within the Inter-Barrier Depression. Whilst the Inter-Barrier Depression would have served as an extremely valuable resource, the very swampy nature of this area dictates that it was not suitable for the types of activities associated with the deposition of Aboriginal objects in readily detectible quantities.

- It is also highly unlikely that Aboriginal objects will remain extant in the portion of the alternate haul route that intersects with the highly disturbed crushed tile storage area. The former dune surface has been removed across this area and any Aboriginal objects that may have been present are likely to have been removed/destroyed as part of this process.

- Aboriginal objects (in the form of stone artefacts and midden shell) are likely to be present within the remainder of the alternate haul route, with the enhanced visibility and exposure within the existing access tracks increasing the likelihood that these objects will be detectible.

- Within the sections of alternate haul route located on the lower slopes of steeply inclined dunes, it is predicted that surface objects and sub-surface deposits will be relatively limited in both density and areal extent. In contrast, it is predicted that the near level low elevation dune extending into the Inter-Barrier Depression and containing site A3 may contain both surface and sub-surface deposits extending over a relatively large area at relatively high densities.

- The majority of visible Aboriginal objects will have been subject to disturbance as a result of access track creation and use however additional deposits with a higher degree of integrity may be present outside the existing access tracks and/or below the surface of existing access tracks.

6.0 Survey Methodology and Results

The survey of the alternate haul route was conducted over three days due to issues with land access, the route of the initial section of the alternate haul route and alterations to the alternate haul route. The majority of the alternate haul route was surveyed on 29 March 2010, including a broader survey area to allow for the consideration of options. The initial section of access track intersecting with the tile dump was surveyed on 21 May 2010. Survey participants are listed in **Table 6.1**.

Table 6.1 – Survey Participants

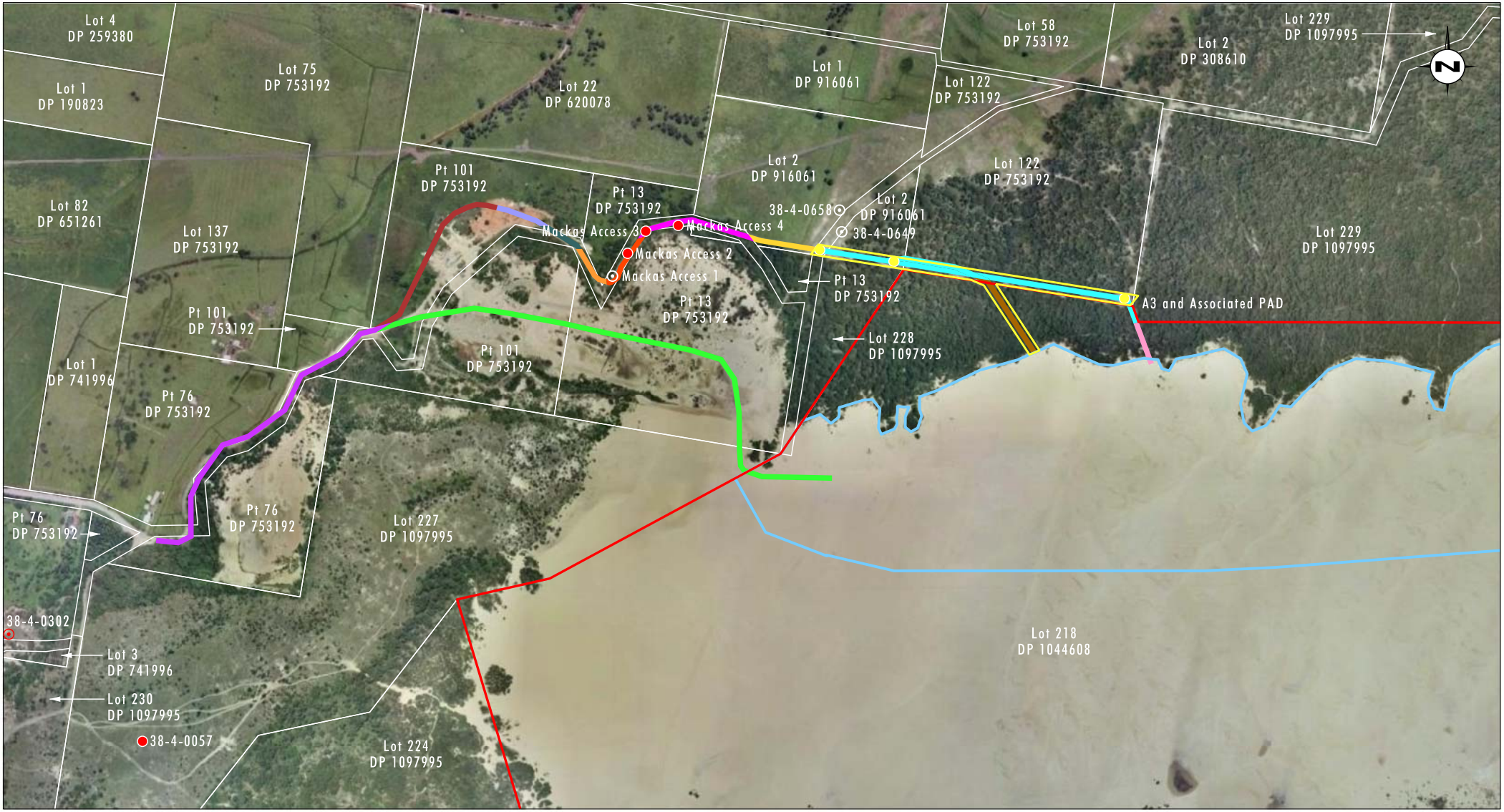
Date	Name	Organisation
29/03/10	Anthony Anderson	Mur-Roo-Ma
	Chris Collison	Nur-Run-Gee
	Jamie Merrick	Worimi LALC
	Nicola Roche	Umwelt
21/05/10	Anthony Anderson	Mur-Roo-Ma
	Lennie Anderson	Nur-Run-Gee
	Jamie Merrick	Worimi LALC
	Nicola Roche	Umwelt
10/10/11	Anthony Anderson	Mur-Roo-Ma
	Chris Collison	Nur-Run-Gee
	Jamie Merrick	Worimi LALC
	Nicola Roche	Umwelt

The inspection methodology and results are provided below.

6.1 Survey Methodology

The alternate haul route was surveyed on foot with the exception of the sections of the alternate haul route that are located within the Inter-Barrier Depression (refer to **Figure 6.1**). These areas were inspected from the adjoining sections of the alternate haul route and the initial section leading into the tile dump was walked by the archaeologist. In consultation with the Aboriginal party representatives listed above, it was discussed that these areas were too wet and boggy and heavily vegetated to adequately survey. Furthermore, as discussed in **Section 5**, it was predicted that these areas had limited archaeological potential, a prediction that was supported by the Aboriginal party representatives.

A corridor approximately 30 metres in width was assessed for the remainder of the alternate haul route, with a focus on areas with enhanced ground surface visibility namely the existing tracks and associated exposures and areas of higher visibility associated with site A3.



Source: Aerial: Google Earth, 2008

0 100 250 500m
1:10 000

Legend

- Lot 218 Boundary
- Lot 218 Approval Extraction Area
- Stockton Bight Track
- Previously Approved Access Route
- Site Boundary A3
- Visible Midden Material within A3
- Artefact Scatter
- Midden
- Midden / Artefact Scatter
- Transect 1
- Transect 2
- Transect 3
- Transect 4a
- Transect 4b
- Transect 5
- Transect 6
- Transect 7
- Transect 8
- Transect 9

Transects 1, 4, 6 Not Formally Surveyed

FIGURE 6.1

Survey Transects and Identified Sites

Survey data and sites were recorded using a hand-held GPS, maps, compass and standardised field recording forms. Information recorded during the survey included:

- the nature of the landforms and vegetation;
- the levels of visibility and exposure within the surveyed area;
- the effects of erosion and disturbance on both areas;
- the availability of Aboriginal resources;
- any archaeological sites that may be present (with recording to comply with DECCW standards and requirements);
- the likelihood that potential archaeological deposits may be present within the alternate haul route; and
- any information provided by Aboriginal parties regarding the cultural significance of the area.

Visibility was recorded in terms of the percentage of ground surface upon which artefacts may be sighted. Exposure was also recorded as the percentage of the survey transect in which disturbance has removed or exposed the upper soil layer to permit the detection of artefacts (if any) that were formerly located in a sub-surface context (NSW NPWS 1997:18). In accordance with NPWS's *Cultural Heritage Guidelines* (NSW NPWS 1997), the description of survey coverage includes the transect area and the estimate of exposure and visibility within that transect. Effective coverage was then calculated by multiplying the transect area by the percentage of exposure and visibility within the transect (i.e. effective coverage = area by % exposure by % visibility).

6.2 Results

The alternate haul route was divided into ten transects, of which two (Transects 1, and 6) were not formally surveyed (refer to **Figure 6.1**). General information was recorded for the non-surveyed areas, which consisted of low-lying inundated landforms containing standing water at the time of the survey. No areas of exposure or enhanced visibility were noted in these areas. In total, these areas comprised 8400 m^2 or 16% of the alternate haul route.

The remaining seven transects are described in **Table 6.2**. All listed coordinates are in MGA (WGS84). It is noted that Transect 7 is partially included in Route A and wholly included in Route B. Given that the area was surveyed in its entirety, the entire length of Transect 7 is used in calculating effective coverage.

6.2.1 Effective Coverage

The level of effective coverage within the alternate haul route was low at 2.4% of the area subjected to pedestrian survey, which equates to 2.16% of the alternate haul route. This reflects the heavy vegetation coverage outside previously cleared areas and the fact that approximately 16% of the alternate haul route is located within the Inter-Barrier Depression/adjoining minor depressions. Thus, an increase in survey effort would not have improved the level of effective coverage. This heightens the need to apply the predictive model to the results of the survey in order to assess the likelihood that potential archaeological deposits will be present. This is discussed further in **Table 6.2**.

Table 6.2 – Pedestrian Transects

Tr. #	Area (m^2)	Geomorphic Unit/Landforms Category	General Description	Exposure Types	% exp	% vis	Effective Coverage (m^2)
2	3000 (100x30)	Modified (former dune surface)	Transect 2 was entirely modified. Although general ground surface visibility was high at 60%, no natural ground surface was visible as a result of modifications and the introduction of materials. Disturbance factors include cutting and filling of original ground surface, introduced materials and vehicle movements. No sites were present within Transect 2.	No exposed natural surface	0	60	0
3	2400 (80x30)	Lower slope from dune (variable inclination but generally moderate to steep)	Transect 3 follows an existing vehicle track with an average width of two metres. In sections the track is cut into the slope of the dune and in others appears to have been filled to create a level surface. The track is relatively frequently used and visibility within the track is relatively good. Visibility and exposure within the remaining portion of the transect is severely limited by regrowth vegetation. Use of the track by vehicles has resulted in limited exposure of mid to dark grey sands, with the majority of exposures containing light grey well sorted sands. No sites were present within Transect 3.	Vehicle track	10	40	96
4a	4200 (140X30)	Modified (former lower slope from dune but inclination unclear)	Transect 4a continues along the existing vehicle track with comparable levels of visibility, exposure and disturbance. This transect runs through a section of dune that has been modified and flattened as a result of previous sand extraction activities. Based on the adjoining landforms, it is likely that the proposed access track is located on the former lower slope from the dune but it is not possible to determine the inclination. No sites were present within Transect 4a.	Vehicle track	10	40	168
4b	4500 (150X30)	Modified and lower slope from dune (generally moderate to steep)	Transect 4b continues along the same vehicle track and has comparable levels of visibility, exposure and disturbance as the previous transects. The initial section of transect 4b is modified as transect 4a. However from approximately 395032 6368359 the access track has been cut into the lower slope of a steeply inclined dune. Site Mackas Access 1 was located in the modified section of transect 4a and Mackas Access 2 was located on the steeply inclined lower dune slope.	Vehicle track	10	40	180

Table 6.2 – Pedestrian Transects (cont)

Tr. #	Area (m^2)	Geomorphic Unit/Landforms Category	General Description	Exposure Types	% exp	% vis	Effective Coverage (m^2)
5	7350 (245X30)	Lower slope from dune (variable inclination)	Transect 5 follows the same vehicle track as Transect 3, with comparable levels of visibility, exposure and disturbance. Visibility outside the vehicle track area is limited by vegetation, with thick Coastal Sand-Apple Blackbutt present across much of the transect. Variability in slope inclination is greater within Transect 5. From approximately E395081 N6368429 to E395094 N6368441 (the area immediately bordering the depression in Transect 4), the dune slope outside the vehicle track is moderately inclined. This section of moderately inclined dune slope contains site Mackas Access 3. An area of near level lower section of dune slope that forms a bench (modified) in an otherwise steeply inclined slope also occurs immediately overlooking the Inter-Barrier Depression at E395148 N6368452 and is associated with site Mackas Access 4. Within the remaining section, the existing track intersects with dune slopes of moderate to steep inclination.	Vehicle track	10	40	294
7	Total 19,350 (645X30) Route A 15,000 (500X30)	Low elevation dune with localised depressions within dune surface	Transect 7 follows a less well formed and less frequently used vehicle track of approximately two metres in width that extends along a small section (approximately 65 metres in length) of cleared paddock formerly used for cattle grazing. The remainder of Transect 7 is located within mature Coastal Sand-Apple Blackbutt woodland, with areas of melaleuca sp. swamp forest in localised depressions. It follows the same vehicle track for approximately 530 metres to the lot boundary before turning south-east and extending for approximately 50 metres into Lot 218 along a separate existing track of approximately one metre in width. An area of additional vegetation clearance outside the existing vehicle track is present at the south-east boundary of Lot 122 and incorporates an exposed area of approximately 30 metres by 20 metres. Levels of visibility and exposure within the existing tracks and the additional areas of vegetation clearance were relatively good. However, visibility outside these areas was impeded by leaf litter and ground cover vegetation. Exposed archaeological material within A3 was recorded at three locations within Transect 7 and for the reasons discussed in **Section 6.22**, is considered to extend throughout Transect 7.	Vehicle track	5	40	387

Table 6.2 – Pedestrian Transects (cont)

Tr. #	Area (m^2)	Geomorphic Unit/Landforms Category	General Description	Exposure Types	% exp	% vis	Effective Coverage (m^2)
8	1950 (65X30)	Moderately inclined dune slope and face of mobile transgressive dune	Transect 8 adjoins the southern end of Transect 7 and continues along the same existing vehicle track to the face of the mobile transgressive dune. The track averages one metre in width, with the exception of the intersection with another track running approximately east-west, where the area of exposure is broadened. Areas of vegetation clearance along the access tracks are the only areas of visibility and exposure, with heavy vegetation cover in the surrounds.	Vehicle tracks	5	20	20
9	4,650 (155X30)	Gently inclined lower slope of low elevation dune	Transect 9 adjoins Transect 7 and extends south-east from the existing cleared track along a heavily vegetated lower slope of a low inclination dune. The slope also borders a swamp formed as windblown sand has blocked water movements within a swale. Areas of visibility and exposure were limited to minor animal tracks, with heavy vegetation cover in the surrounds.	Animal tracks	5	5	12
Total	**47,400**						**1157 (2.4%)**

6.2.2 Archaeological Sites

Five archaeological sites (including one previously identified site) were identified during the survey and are shown in **Figure 6.1**. In accordance with Section 91 of the NPW Act, DECCW site cards have been submitted for all recorded sites.

6.2.2.1 Mackas Access 1

Mackas Access 1 is located on an existing vehicle track adjoining an existing sand extraction area, as shown in **Plate 1**. The landscape surrounding Mackas Access 1 has been significantly modified in association with previous sand extraction activities and ongoing use of the vehicle track. Prior to these impacts, it is likely that Mackas Access 1 was located on a gently inclined lower dune slope that extended into the Inter-Barrier Depression.

Surface artefact distribution within the site extends over approximately 20 metres by 1.5 metres (the width of the track). The site contains relatively high quantities of very fragmented and weathered pipi shell, with the highest density of shell fragments being confined to an area of approximately 75 centimetres by 50 centimetres. More sparsely distributed pipi fragments are present across an area of approximately 2 metres by 1.5 metres. Two loci containing stone artefacts were also present. Locus A contains seven flakes, two broken flakes, two cores and one flaked piece whilst Locus B contains a core and a flake (refer to **Plate 2**). All stone artefacts have been manufactured from Nobbys Tuff. Exposed soils within the vehicle track consist of mid grey fine sand with frequent charcoal flecks and fragments. Introduced materials in the form of broken tile and road base are also present within the site and presumably have been introduced as a result of vehicle movements.

Visibility within the site area was excellent as a result of vehicle movements. Similar levels of visibility and exposure are present within the vehicle track that continues outside the area described above and no surface artefacts were present. However, this may reflect the rapid movement of sand and its potential to conceal sub-surface deposits. The remaining adjoining gently inclined dune slopes (where modification has not removed the original landform) have the potential to contain similar deposits in a sub-surface context and thus are mapped as part of the Mackas Access 1 site area.

6.2.2.2 Mackas Access 2

Mackas Access 2 is located immediately adjacent to a vehicle track on a very steeply inclined dune slope. The track cuts into the toe of the dune slope and Mackas Access 2 is exposed approximately 3 metres from the track (refer to **Plate 3**) and approximately 20 metres from the Inter-Barrier Depression. The artefacts are concentrated within an area of approximately 20 centimetres by 20 centimetres within which visibility was good, with visibility in the surrounding area severely constrained by vegetation cover. Exposed soil within Mackas Access 2 consisted of mid grey fine sand with a high component of organic material.

Mackas Access 2 contains a flake and a core, both made of Nobbys tuff. The core is a single platform core that has been manufactured from a large cobble of Nobbys tuff. Striations are also present on one surface of the core, indicating that it has been used for grinding (refer to **Plate 4**).

As discussed above, Mackas Access 2 is located on the lower portion of a very steeply inclined dune slope and the possibility of the artefacts having moved down the slope as a result of colluvial processes was recognised in the field. An inspection of the adjoining higher section of dune slope and the crest of the dune revealed the presence of sparsely

PLATE 1
View along Mackas Access 1. Facing north-east

PLATE 2
Artefacts within Mackas Access 1

PLATE 3
Mackas Access 2 at left of shot. Facing south

PLATE 4
Core with pebble cortex (showing striations) within Mackas Access 2

distributed shell fragments and an additional flake of Nobbys tuff within an area extending a maximum of 15 metres upslope from Mackas Access 2. This area was not inspected or recorded in detail. However, in view of the presence of similar artefacts upslope and the ongoing colluvial movement of material on this steep slope, it is considered likely that the artefacts within Mackas Access 2 originated from the crest of the dune and have been moved to their present location by natural processes. For this reason, it is considered that Mackas Access 2 is not directly associated with the access track. Furthermore, given that the artefacts at this location are likely to be derived from a context outside the defined survey area, for the purposes of this recording the site is considered to consist of these artefacts alone.

6.2.2.3 Mackas Access 3

Mackas Access 3 is located on a moderately inclined lower slope of a high dune adjoining an existing vehicle track. The artefacts identified at Mackas Access 3 are clustered in an exposure at the base of a small eucalypt, as shown in **Plate 5**. The landscape surrounding Mackas Access 3 has been significantly modified by the creation and ongoing use of the vehicle track, with the section of track adjoining Mackas Access 3 appearing to have been created by filling the toe of the dune slope where it formerly adjoined the Inter-Barrier Depression, rather than being cut into the dune slope as in other areas. Assuming this is the case, Mackas Access 3 would originally have been on a moderately inclined slope slightly above the Inter-Barrier Depression.

Surface artefact distribution within the site is confined to an area of approximately 2 metres by 1.5 metres within the exposure surrounding the tree root. Visibility within the exposure was excellent in comparison to visibility in the highly vegetated adjoining dune slope. Soil within the exposure consists of a light to mid grey fine sand with a high component of organic material. Artefacts within the exposure include a silcrete flake (with possible tranchet retouch) and a flake of fine-grained volcanic material (possibly ground but also very highly weathered), as shown in **Plate 6**. Four flakes and four broken flakes of Nobbys Tuff were also present.

Visibility within the adjoining sections of the moderately inclined lower dune slope was severely constrained by vegetation. However, based on the proximity of this landform to the Inter-Barrier Depression, it is considered that additional artefacts may be present but are sub-surface or concealed by vegetation. For this reason, Mackas Access 3 is defined as extending along the moderately inclined lower dune slope within the inspected area.

6.2.2.4 Mackas Access 4

Mackas Access 4 is located on a near level lower section of dune slope that forms a bench in an otherwise steeply inclined slope of a high dune bordering the Inter-Barrier Depression (refer to **Plate 7**). The existing access track cuts in beneath the bench and a power-pole is located towards the eastern end of the bench. There is no exposed rock or other material that would indicate that the bench is a natural formation and it is almost certainly the result of modifications associated with the power-pole. Two loci containing artefacts are present within the site. Locus A is an exposure of approximately four metres by two metres whilst Locus B is an exposure of approximately two metres by two metres at the base of the power pole. Exposed soil within both loci consists of a light to mid grey sand with a high organic component.

Nine artefacts of Nobbys tuff (five broken flakes, three flakes and a broken backed artefact – refer to **Plate 8**) are present within Locus A. In addition, a fragment of very heavily weathered long bone was also present (refer to **Plate 9**). Locus B contains two flakes and one broken flake of Nobbys tuff and flaked piece of ignimbrite.

PLATE 5
Exposure containing artefacts within Mackas Access 3. Facing east-south-east

PLATE 6
Artefacts from Mackas Access 3

PLATE 7
View along level bench at Mackas Access 4. Facing east

PLATE 8
Broken backed artefact within Mackas Access 4

PLATE 9
Bone fragment within Mackas Access 4

PLATE 10
View along exposure at western end of A3

As discussed above, the site has been significantly disturbed as a result of access track and power-line construction. It is likely that the loci within the site have been exposed as a result of these activities. Visibility within the area surrounding Mackas Access 4 was low due to vegetation cover. However, based on the proximity of the lower dune slope to the Inter-Barrier Depression, it is considered that additional artefacts may be present but not currently detectible. Mackas Access 4 is therefore defined as extending along this section of lower dune slope within the alternate haul route.

6.2.2.5 A3 (AHIMS #38-4-0649)

As discussed in **Section 4**, previously recorded site A3 is present within the alternate access route and was identified during the survey. Within the surveyed area, A3 consists of a low elevation dune finger extending into the Inter-Barrier Depression and is closest to the Inter-Barrier Depression within the western section of Transect 7.

The western extent of A3 consists of an area of exposure associated with an existing vehicle access track and that has been cleared of vegetation and used for grazing purposes. Grazing of the area by cattle has resulted in exposure of light to mid grey sand and has inhibited vegetation regrowth, resulting in a high level of visibility (refer to **Plate 10**). Locus A is largely defined by this area of visibility and exposure and contains a moderately dense scatter of fragmented pipi shell within an area of approximately 30 metres east-west by 30 metres north-south (width of the alternate access route). Within Locus A the density of shell fragments averaged approximately five fragments per square metre but in some sections was as high as 30-40 fragments within a square metre. The dispersal and fragmentation of the shell has been significantly accelerated by the presence of cattle within the area. One stone artefact (a large fragment of broken sandstone with a ground surface pictured in **Plate 11**) was present within this area. An additional fragment of pipi shell (Locus B) is also present approximately 100 metres east of Locus A.

Locus C is located within an area of vegetation clearance located on the eastern boundary of Lot 2 towards the end of Transect 7. It consists of a low density scatter of highly fragmented pipi shell within an area of approximately 20 metres east-west by 30 metres north-south (width of alternate haul route). Use of this area by vehicles and horses or cattle has resulted in similar conditions of exposure and visibility to those within Locus A.

As discussed in the description of Transect 7, visibility within the low dune containing these three loci was relatively low due to vegetation coverage. In considering the potential for other artefactual material to be present but not visible within this context, it is necessary to consider the landform as a whole. Whilst the distance from this landform to the Inter-Barrier Depression increases from west to east along the alternate haul route, the landform contains localised swales associated with melaleuca swamp and within which water would be periodically available at the surface and permanently (or near permanently) available just below the ground surface. Therefore, the entirety of this landform constitutes a level surface with ready access to fresh water and swamp resources. For this reason, A3 is mapped as extending across the entirety of this landform within the alternate haul route area. Based on previous recordings A3 also extends well outside the boundary of the alternate haul route along the interface between the dune and the Inter-Barrier Depression however this was not inspected as part of the current survey.

6.2.3 Potential Archaeological Deposit

As discussed throughout the site descriptions provided above, the detection and identification of archaeological material is closely related to levels of exposure and visibility, that is, archaeological material that is obscured by vegetation or is beneath the ground surface will not be recorded during an archaeological survey. For the purposes of archaeological assessment and cultural heritage management, the likelihood that artefacts

PLATE 11
Broken fragment of ground sandstone within A3

may be present below the ground surface has important archaeological and legislative implications for any proposed land use, hence the definitions of site boundaries provided above. In terms of the archaeological assessment, it is also necessary to consider whether any sites or areas with sub-surface archaeological material should be identified as potential archaeological deposit.

The term 'potential archaeological deposit' (PAD) can be defined in a number of different ways. However, the primary archaeological importance of sub-surface deposits is the possibility that they will provide information that can be used to interpret changes in the archaeological record through time and space. Consequently, for the purposes of this assessment, a landform or area will only be designated as a PAD if it meets one or more of the following criteria:

1. it should be likely that the PAD will contain enough archaeological material to allow for statistically viable detailed analysis and comparison of the artefact assemblage both within and between sites;

2. the PAD should not have been significantly disturbed and should retain a degree of archaeological integrity; and

3. it is predicted that the PAD should contain materials that can be dated, either in relative or absolute terms.

As discussed in **Section 6.2**, a relatively large proportion of the alternate haul route is located within the Inter-Barrier Depression, a context that certainly would have been used by Aboriginal people but not for activities likely to generate detectable quantities of artefacts (such as camping, manufacturing stone artefacts and preparing and consuming meals). This portion of the alternate haul route does not constitute a PAD.

Within Transects 2, 3, 4a, 4b and 5, the alternate haul route incorporates an existing access track that has been constructed at the interface of the Inter-Barrier Depression and varying inclination lower slopes of high dunes. The majority of these slopes are steeply to moderately inclined and would not be expected to be associated with large concentrations of artefacts. The relatively high degree of slope inclination also results in significant colluvial movement of soils (including any artefacts they may contain). Furthermore, disturbance associated with construction and on-going use of the existing vehicle track has significantly comprised the integrity of the area and is also likely to have impacted on the integrity of any sub-surface deposits that may be present in proximity to the existing access track. Transect 8 similarly consists of landforms not typically associated with large concentrations of artefacts, namely a moderately inclined dune slope and a depression. For this reason, no areas of PAD were identified in Transects 2, 3, 5 and 8 and there are no areas of PAD associated with sites Mackas Access 3 and 4. Mackas Access 2 is in a secondary context, with artefacts at this location likely to have originated from the dune crest rather than representing occupation of the steeply inclined dune slope by Aboriginal people. For this reason, there is no PAD associated with the portion of Mackas Access 2 within the alternate haul route. However, it is noted that, although these sites do not meet the formal criteria for a PAD, there is the potential that additional artefacts may be present in the dune slope above these sites.

In contrast, Mackas Access 1 is located in a modified area that previously is likely to have been a relatively gently inclined lower slope immediately adjoining the Inter-Barrier Depression. Prior to disturbance, this area would have been suitable for occupation by Aboriginal people and evidence of this occupation (in the form of stone artefacts or shell) may exist below the depth of current disturbance. Consequently, Mackas Access 1 is considered as an artefact scatter with associated PAD.

A3 (comprising all of Transect 7) consists of a low dune with access to the Inter-Barrier Depression at its eastern end and localised swales containing swamp resources along its length. With the exception of two areas affected by vegetation clearance and use by livestock, disturbance within the remainder of A3 is limited to the existing narrow access track. Previous excavations within sections of A3 outside the alternate haul route have demonstrated that this landform is associated with high density deposits of stone artefacts and shell and a probable hearth feature. The presence of scattered shell at three loci within the alternate haul route indicates that similar sub-surface deposits may be present within the alternate haul route section of A3. For these reasons, A3 is defined as a site that has both surface loci and PAD.

Transect 9 is located on a gently inclined dune slope immediately bordering a swamp located between the Inter-Barrier Depression and coastal zone. Whilst this swamp is likely to be significantly more developed now due to the encroachment of mobile sands, this area would have been suitable for occupation by Aboriginal people and evidence of this occupation (in the form of stone artefacts or shell) may exist but is not currently visible. For this reason, Transect 9 is identified as a PAD, albeit with lower potential than A3.

6.3 Summary

The survey identified a total of five sites, two of which are associated with PAD. All of the five sites are within or immediately adjacent to the alternate haul route. Mackas Access 2, Mackas Access 3 and Mackas Access 4 are located within a highly disturbed landform context that is not typically associated with large concentrations of artefacts. Consequently, although additional artefacts may be present (but not detectible) within these sites, they do not meet the criteria for PAD. In contrast, the landform containing A3 has been demonstrated to contain relatively high density sub-surface deposits and is a context known to have been extensively utilised by Aboriginal people in this region. For this reason, A3 is identified as a site with associated PAD. Furthermore, although the landform containing Mackas Access 1 has been significantly modified, it was previously a landform considered likely to contain evidence of occupation by Aboriginal people and this evidence may still remain below the depth of disturbance, thereby satisfying the definition of PAD. Similarly, Transect 9 also meets the criteria for PAD.

7.0 Significance Assessment

The assessment of cultural significance is critical in establishing mitigation and management strategies for cultural heritage (refer to Pearson and Sullivan 1995:21). Cultural significance is defined by the Burra Charter in terms of aesthetic, scientific, historic and social values. In NSW Aboriginal cultural heritage is typically assessed according to its social and scientific significance (in accordance with the NSW NPWS 1997) and these are defined below.

7.1 Aboriginal Cultural Significance

In assessing Aboriginal heritage, social significance is primarily equated with the significance placed on cultural (and sometimes natural) heritage by Aboriginal people and is often referred to as Aboriginal cultural significance. Aboriginal people value their heritage for a range of reasons, some of which are unique and some of which may be shared with non-Aboriginal people. Thus, Aboriginal people may consider a site containing archaeological material important for reasons related to its archaeological value but may also see the site as a tangible aspect of their culture that provides a direct link to Aboriginal

people in the past. In contrast, sites, places or landscapes may also be of significance to Aboriginal people for reasons not linked to the presence of tangible archaeological materials such as the presence of places of spiritual importance, significant resources or important natural features.

As Aboriginal cultural significance relates to the values of a site, place or landscape to Aboriginal people, it must be determined by Aboriginal people. Aboriginal parties have previously indicated that Stockton Bight is of very high Aboriginal cultural significance due to its social, spiritual, aesthetic and educational value to the Aboriginal community (refer to ERM 2006). As part of the previous Aboriginal Cultural Heritage Assessment of Lot 220 (Umwelt 2009b), this area was considered to have high Aboriginal cultural significance.

A draft copy of this report was provided to all relevant Aboriginal parties and it was requested that comment be provided regarding the Aboriginal cultural significance of the sites and area of PAD associated with the alternate haul route and on the significance of the alternate haul route as a whole. Mur-Roo-Ma stated that the project area is of high significance to the local Aboriginal community.

7.2 Archaeological Significance

The Burra Charter defines the archaeological significance of an Aboriginal site, object or place according to its potential to address research questions and provide greater insight into Aboriginal society and chronological changes in how Aboriginal people utilised the landscape and its resources (Australian ICOMOS Incorporated 2000:12). The major concepts underlying archaeological significance relate to the rarity and representativeness of a site, its integrity, intactness and overall research potential. Each of these concepts is relatively self-explanatory, however the concept of representativeness warrants further discussion. Representativeness is closely linked with rarity and relates to the degree to which a site encapsulates the typical aspects of sites of its type at a local, regional and, in some cases, national level. In simple terms, representative value should be considered in terms of whether a site embodies the essential characteristics of sites of that type in the locality and region and whether sites of that type remain extant in a context that will allow for their continued conservation. The criteria for the assessment of archaeological significance are provided below.

7.2.1 Archaeological Significance Assessment Criteria

The criteria applied to the assessment of archaeological significance are listed in **Table 7.1**.

Table 7.1 – Criteria for Assessment of Archaeological Significance

Criterion	Low	Moderate	High
Rarity	The location of the site within the landscape, its type, integrity, contents and/or potential for sub-surface artefacts, are common within the local and regional context.	The location of the site within the landscape, its type, integrity, contents and/or potential for sub-surface artefacts, are common within the regional context but not the local context.	The location of the site within the landscape, its type, integrity, contents and/or potential for sub-surface artefacts, are rare within the local and regional context.
Representativeness	This site, when viewed in relation to its type, contents, integrity and location in the landscape, is common within a local and regional context and sites of similar nature (or in better condition) are already set aside for conservation within the region.	This site, when viewed in relation to its type, contents, integrity and location in the landscape, is uncommon within a local context but common in a regional context and sites of similar nature (or in better condition) are already set aside for conservation within the region.	This site, when viewed in relation to its type, contents, integrity and location in the landscape, is uncommon within a local and regional context and sites of similar nature (or in better condition) are not already set aside for conservation within the locality or region.
Integrity	Stratigraphic integrity of the site has clearly been destroyed due to major disturbance/loss of topsoil. The level of disturbance is likely to have removed all spatial and chronological information.	The site appears to have been subject to moderate levels of disturbance, however, there is a moderate possibility that useful spatial information can still be obtained from sub-surface investigation of the site, even if it is unlikely that any useful chronological evidence survives.	The site appears relatively undisturbed and there is a high possibility that useful spatial information can still be obtained from sub-surface investigation of the site, even if it is still unlikely that any useful chronological evidence survives. (In cases where both spatial and chronological evidence is likely to survive the site will gain additional significance from high scores for rarity and representativeness).
Connectedness	There is no evidence to suggest that the site is connected to other sites in the local area or the region through: • their chronology (rarely known); and • their site type (e.g. connectedness could be argued between an axe quarry, a nearby set of axe grinding grooves and an adjacent site exhibiting evidence of axe reduction).	There is some evidence to suggest that the site is connected to other sites in the local area or the region through: • their chronology (rarely known); and • their site type (e.g. connectedness could be argued between an axe quarry, a nearby set of axe grinding grooves and an adjacent site exhibiting evidence of axe reduction).	There is good evidence to support the theory that the site is connected to other sites in the local area or the region through: • their chronology (rarely known); and • their site type (e.g. connectedness could be argued between an axe quarry, a nearby set of axe grinding grooves and an adjacent site exhibiting evidence of axe reduction).

7.2.2 Assessment of Archaeological Significance

In relation to the alternate haul route, the assessment of archaeological significance has two components: the archaeological significance of sites and PADs (if any) associated with the alternate haul route; and the archaeological significance of the landscape encompassed by the alternate haul route as a whole. The application of the archaeological significance criteria to sites and PADs is relatively straightforward however the assessment of the significance of the alternate haul route as a landscape warrants further discussion. A cultural landscape can be defined as the connection between Aboriginal heritage (including sites and features and their relationships) and the natural elements of the landscape such as landscape history, topography and flora and fauna. Using this approach, archaeological material comprises one element of a cultural landscape and the significance of this landscape may be separate from that of the sites or features that it contains (ERM 2006:101).

7.2.2.1 Mackas Access 2, 3 and 4

Mackas Access 2, 3 and 4 are small low density artefact scatters located on lower dune slopes bordering the Inter-Barrier Depression. Based on the landform context of these sites it is considered likely that any additional archaeological material that may be present will also consist of relatively sparse low density stone artefacts and shell. These sites have been impacted by the construction and on-going use of an existing vehicle access track. In addition, Mackas Access 4 has been subject to significant modification in association with a power-pole located in the site, whilst the artefacts within Mackas Access 2 are likely to originate from the crest above the steeply inclined dune slope. As discussed in Umwelt (2009b), sites of this type with similar level of integrity and potential for additional sub-surface deposits are common within Stockton Bight. There is no evidence to directly connect these sites to any other sites in the surrounding area, except as part of a broader cultural landscape. Whilst these sites contain artefacts that are relatively rare within the local context (namely a backed artefact, a core of Nobbys tuff with pebble cortex and grinding striations, a flake of volcanic material that had possibly been ground and a fragment of long bone), artefacts of this type are already known from the archaeological record. Thus, Mackas Access 2, 3 and 4 have low archaeological significance in relation to rarity, representativeness, integrity, connectedness and overall research potential.

7.2.2.2 Mackas Access 1

Mackas Access 1 is a small scatter of stone and shell present in a disturbed context that would formerly have been a landform type commonly associated with relatively high concentrations of archaeological material in this locality. The surface artefacts within this site are relatively low in density and have been impacted by the construction and on-going use of the existing vehicle access track. However, it is not possible to determine the extent of sub-surface disturbance at the site and it is possible that sub-surface deposits of higher density or size may remain and may retain some integrity. Consequently, Mackas Access 1 has low archaeological significance in relation to rarity, representativeness and connectedness but moderate archaeological significance in relation to integrity and research potential. It therefore has low to moderate archaeological significance overall.

7.2.2.3 Transect 9 PAD

The Transect 9 PAD does not contain any visible archaeological material. Therefore any assessment of its significance is based purely on potential. On the assumption that if this PAD contains archaeological material, it would be comparable to that found in the local area, the Transect 9 PAD has low archaeological significance in relation to rarity, representativeness and connectedness but moderate archaeological significance in relation

to integrity and research potential. It therefore has low to moderate archaeological significance overall.

7.2.2.4 A3

When viewed in its entirety, A3 is an extensive midden extending over a low elevation dune to the shoreline of the Inter-Barrier Depression. Archaeological investigations within A3 approximately 500 metres to the north-east of the alternate haul route have resulted in the recovery of very high numbers of stone artefacts and large quantities of shell (predominantly pipi). Whilst the majority of A3 that is located within the alternate haul route is not directly adjacent to the shoreline of the Inter-Barrier Depression, there are localised swales present along this low dune that would have provided a comparable resource base. It is therefore considered likely that the same potential for sub-surface deposits should be considered to apply to A3 (and the associated PAD) as a whole. Sites of this size with extensive deposits of high density shell and stone are not common within the local context and can contribute significantly to current understandings of how Aboriginal people used this area. The density of materials at this site indicates that it was used extensively for activities generally associated with camping such as the preparation of stone artefacts and the consumption of shellfish transported from the beachfront. In addition, the presence of a partial grindstone (in addition to the large grindstone previously salvaged from A3) indicates that Aboriginal people were processing plant materials in this area. Grinding of plant resources is an activity that is not commonly identified within the archaeological record in this area and one that suggests longer-term occupation of this area. This is further supported by the presence of a probable hearth identified in the section of A3 to the north-east of the alternate haul route. This raises the possibility that datable materials (such as a hearth) may also be present within the portion of the site associated with the alternate haul route. Disturbance within the section of A3 within the alternate haul route was limited to vegetation clearance and livestock activity at two locations and vegetation clearance along an existing vehicle track, with the portion of the A3 outside this track containing mature native vegetation. On these grounds, A3 is assessed as having moderate to high archaeological significance in relation to its rarity, representativeness, integrity, connectedness and overall research potential.

7.2.2.5 Alternate Haul Route

The landscape associated with the alternate haul route is located at the interface between stabilised dunes of Holocene age and the Inter-Barrier Depression, an area that would have been regularly utilised by Aboriginal people to access the rich resource base. Sections of the alternate haul route outside the existing access track and other areas of disturbance contain vegetation communities and associated resources very similar to those that would have been present during periods associated with the deposition of cultural materials. Sections of the alternate haul route therefore provide a cultural landscape within which the landscape history, flora, fauna and archaeological material associated with this portion of Stockton Bight can be experienced as a whole. However, the remaining sections of the alternate haul route have been significantly impacted by previous disturbance activities. Consequently, the alternate haul route has low to moderate significance as a landscape.

8.0 Impacts in Relation to the Archaeological Assessment

As discussed in **Section 1.1**, the construction of the alternate haul route will require the establishment of a suitable level surface of approximately 8 metres in width along the length of the alternate haul route, with a turning bay of approximately 30 metres by 30 metres located in the area adjoining Lot 218 and an overall potential construction width of 10 metres. This will involve widening of the existing vehicle tracks (where present) to create a road that can sustain heavy traffic and considerable vegetation clearance to create the turning bay.

Where feasible (with reference to environmental constraints and construction requirements) the alternate haul route will be constructed by cutting and filling of areas to create a level surface adjoining the existing access track. This will require clearance of native vegetation. It may then be necessary to introduce road base (or similar) materials to create a stable surface.

In relation to site A3, the moderate to high level of significance of this site dictates that, where possible, every attempt should be made to mitigate impacts to this site. Consequently, Mackas Sand has indicated that the alternate haul route will extend from the existing fenceline in order to minimise the amount of additional vegetation clearance required. Furthermore, within A3, the alternate haul route will be constructed by laying geotextile material over the natural ground surface and introducing additional fill material (i.e. not sand from other sections of the alternate haul route) over the geotextile to provide a suitable road surface. This will be done in a progressive fashion so that all heavy vehicle movement associated with road construction and subsequent use is confined to the area in which geotexile and fill have already been introduced. Consequently, it will not be necessary to undertake significant ground disturbance works within A3 and sub-surface deposits will be protected from impacts associated with construction and use of the alternate haul route. Given that Mackas Access 1 and the Transect 9 PAD have a moderate to low level of archaeological significance based on the potential for sub-surface deposits with some degree of integrity, Mackas Sand has indicated that the alternate haul route will be constructed using the low ground disturbance method described above within the area surrounding Mackas Access 1 (from approximately MGA 394987 6368361 to MGA 395025 6368348) and Transect 9.

Sites Mackas Access 2, 3 and 4 are located at the base of a steep to moderately inclined dune slope. In order for Mackas Sand to construct the alternate haul route within the designated easement, it will be necessary to cut the road into the dune slope containing these sites. This will involve impact to both the exposed artefacts within sites and the adjoining dune slope which was assessed as having the same potential to contain relatively low densities of additional cultural material. However, the cutting of the slope may also result in exposure of former stabilised soil surfaces at considerable depth.

9.0 Archaeological Recommendations

The following mitigation and management recommendations have been developed in light of the archaeological context of the region; the findings of the survey; the potential impacts of the proposed development and current cultural heritage legislation. These recommendations are provided from an archaeological perspective, with Aboriginal party recommendations provided separately in **Section 10**.

9.1 General Recommendations

1. Mackas Sand should ensure that its employees and contractors are aware that it is an offence under Section 90 of the *National Parks and Wildlife Act 1974* to knowingly impact an Aboriginal object without the consent of the Director-General of DECCW or unless otherwise approved under Part 3A of the *Environmental Planning and Assessment Act 1979*.

2. If Project Approval 08_0142 is modified to incorporate the alternate haul route, the Mackas Sand ACHMP should also be modified to include the alternate haul route, with all recommendations included in this assessment to be incorporated into the revised ACHMP and the provisions of the ACHMP will apply to the alternate haul route.

3. All further investigations (surface collection, test excavation or salvage excavation) will be conducted in accordance with the approved methodologies provided in the Mackas Sand ACHMP (Umwelt 2009a: Appendix 2).

4. Any Aboriginal objects (such as stone artefacts or shell fragments) salvaged in relation to the recommendations provided in **Sections 9.2** and **9.3** below will be subject to analysis and interpretation in accordance with the methodology provided in Section 5.10 of the Mackas Sand ACHMP (Umwelt 2009a).

5. The arrangements for care and control of any salvaged Aboriginal objects will be as specified in Section 5.11 of the Mackas Sand ACHMP.

6. Should any unexpected sub-surface deposits (other than human skeletal material) be identified during construction and use of the alternate haul route, they will be managed in accordance with Section 5.8 of the Mackas Sand ACHMP (Umwelt 2009a).

7. Should human/possible human skeletal material be identified during construction and use of the alternate haul route, it will be managed in accordance with Section 5.9 of the Mackas Sand ACHMP (Umwelt 2009a).

9.2 Mackas Access 2, 3 and 4

8. In consultation with the AHMG (as established under the Mackas Sand ACHMP), Mackas Sand should demarcate the road boundary prior to road construction and any surface artefacts within demarcated area should be collected in consultation with the AHMG.

9. Vegetation clearance within the dune slope bordering these sites will occur as a staged process in accordance with the following methodology:

    - understorey vegetation and all trees smaller than approximately 50 centimetres diameter at chest height will be removed by earth-moving equipment or similar and placed outside the newly cleared area so that all of the newly cleared area is visible. At this stage, the AHMG will be invited to undertake an inspection of the newly cleared area;
    - following the initial inspection, the remaining large trees will be cleared by machinery (in accordance with ecological tree clearance procedures) and the AHMG will be invited to inspect the additional area of ground disturbance resulting from large tree clearance at a time determined in consultation with the AHMG; and
    - during vegetation clearance inspections (as discussed above), any Aboriginal objects such as stone artefacts and shell) will be collected.

10. In recognition of the potential for stabilised soil surfaces to be present at depth, it is recommended that the AHMG be provided with the opportunity to monitor cutting of the dune slope. If high densities of shell, bone fragments or a stabilised soil surface are exposed during this process, the AHMG may request test excavation be undertaken in accordance with the approved methodology.

11. It is noted that the additional recommendations regarding this activity were provided by Aboriginal party representatives (refer to **Section 10**).

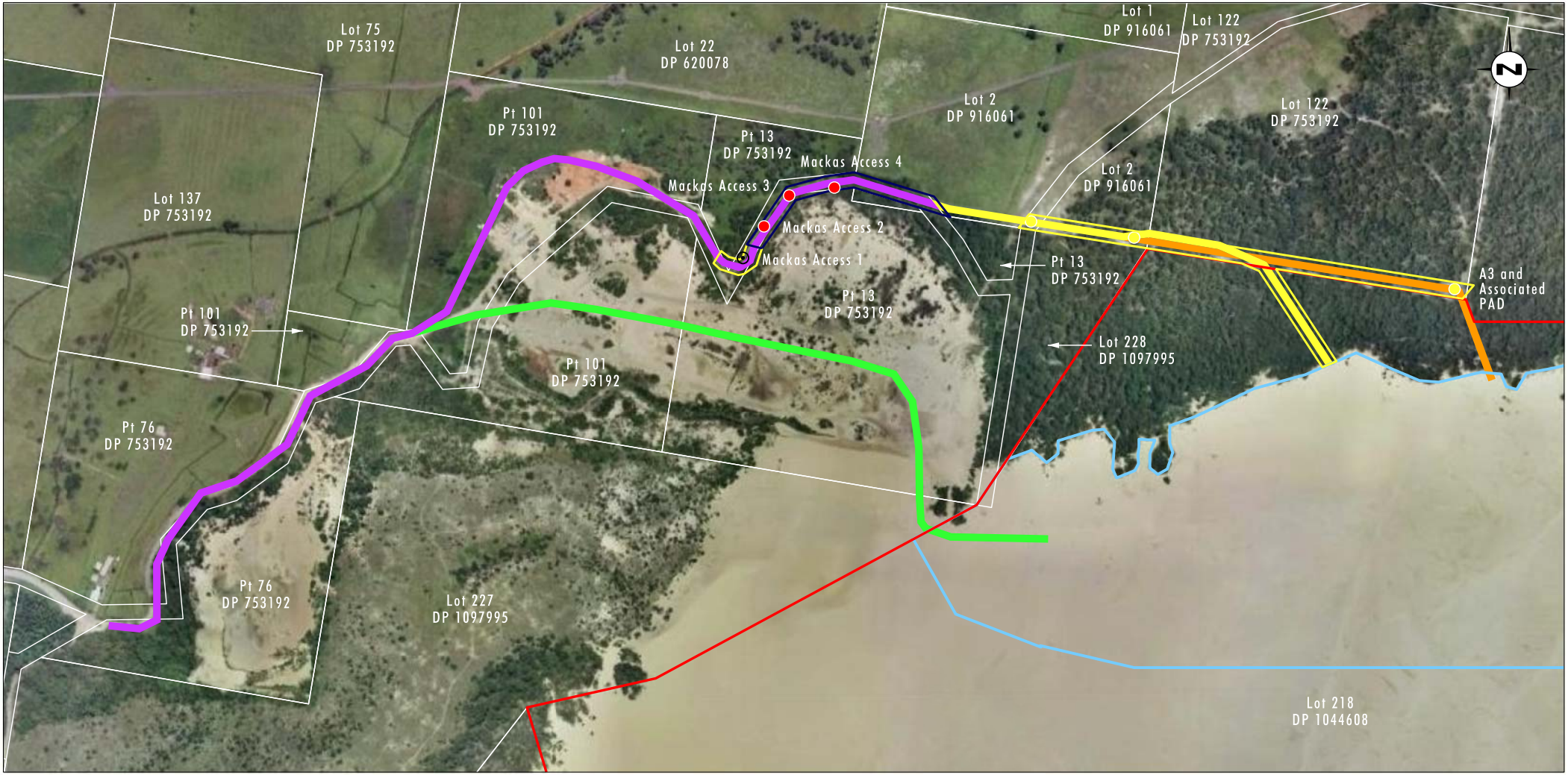
9.3 Mackas Access 1, A3 and Transect 9 PAD

12. Prior to the commencement of access road construction, the boundaries of the road within Mackas Access 1 and A3 should be clearly demarcated (as shown in **Figure 9.1**) in order to prevent accidental impacts outside the road corridor. Demarcation should be undertaken in consultation with the AHMG and during demarcation any Aboriginal objects present within the demarcated area will be subject to surface collection.

13. Vegetation clearance within A3 and Mackas Access 1 (if required) will occur as a staged process in accordance with the following methodology:

    - understorey vegetation and all trees smaller than approximately 50 centimetres diameter at chest height will be removed by earth-moving equipment or similar and placed outside the newly cleared area so that all of the newly cleared area is visible. At this stage, the AHMG will be invited to undertake an inspection of the newly cleared area;
    - following the initial inspection, the remaining large trees will be cleared by machinery (in accordance with ecological tree clearance procedures) and the AHMG will be invited to inspect the additional area of ground disturbance resulting from large tree clearance at a time determined in consultation with the AHMG; and
    - during vegetation clearance inspections (as discussed above), any Aboriginal objects such as stone artefacts and shell) will be collected in accordance with the approved methodology incorporated in the ACHMP (Umwelt 2009a: Appendix 2, Attachment 3).

14. Following vegetation clearance, construction of the alternate haul route within A3 and Mackas Access 1 will proceed in accordance with the description provided in **Section 8**.



Source: Aerial: Google Earth, 2008

0 100 200 400m
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Legend

- Lot 218 Boundary
- Lot 218 Approval Extraction Area
- Stockton Bight Track
- Previously Approved Access Route
- Alternate RouteA
- Alternate Route B
- Visible Midden Material within A3
- Artefact Scatter
- Midden

Road boundary must be demarcated prior to road construction and any surface artefacts within demarcated area should be collected in consultation with AHMG. AHMG given opportunity to inspect after initial vegetation clearance (underscrubbing) and following removal of large trees and to collect any surface artefacts exposed at this time. Road will then be constructed with introduced fill over geotextile to ensure no subsurface impacts.

Road boundary must be demarcated prior to road construction and any surface artefacts within demarcated area should be collected in consultation with AHMG. AHMG given opportunity to inspect after initial vegetation clearance (underscrubbing) and following removal of large trees and to collect any surface artefacts exposed at this time. AHMG given opportunity to monitor cutting of dune. If high densities of stone artefacts, shell or bone fragments or a former stabilised soil surface be exposed, AHMG may request test excavation in accordance with approved methodology

FIGURE 9.1

Archaeological Management Recommendations for Road Construction

File Name (A4): R23_V1/1646_262.dgn

10.0 Aboriginal Party Recommendations

The specific recommendations provided by each of the relevant Aboriginal parties are listed below. This information is based on comments provided by Aboriginal parties, as detailed in **Section 2** and **Appendix A**.

10.1 Recommendations provided in Response to previous Draft Assessment

1. WLALC stated that the recommendations provided in **Section 9** above 'do not, in any way, restrict or unfavourably effect this development.'

2. Nur-Run-Gee recommended that existing infrastructure on Lot 218 should be utilised and is hesitant to support any variation to Project Approval 08_0142. However, provided that no other alternative to construction of the alternate haul route is available, Nur-Run-Gee agreed with the recommendations provided in **Section 9** and the associated research design and methodology.

3. Mur-Roo-Ma recommended that the previously approved access to the sand extraction face should be utilised and the alternate haul route should not be approved. However, on the understanding that this recommendation may not be followed, Mur-Roo-Ma also recommended that:

    - a permanent fence should be erected around Mackas Access 3&4 extending for a distance of no less than three metres around the site;
    - Mackas Access 1&2 should also be fenced to ensure their protection; and
    - impacts to A3 and the associated PAD should be avoided.

4. Both Maaiangal and Viola Brown recommended that the proposed modification is not approved because of its impacts on Aboriginal cultural heritage and the cultural landscape, including flora and fauna.

10.2 Recommendations provided in relation to the Alterations to the Alternate Haul Route

5. During in-field consultation and a brief discussion with representatives of WLALC and Nur-Run-Gee (as also authorised to represent Mur-Roo-Ma), it was recommended that during monitoring of the cutting of the dune slope in the vicinity of Mackas Access 2, 3 and 4, the AHMG should be provided with the opportunity to sieve the excavated sand in order to recover any artefacts that may be present.

6. On behalf of Nur-Run-Gee, Lennie Anderson recommended that culverts be put in place in sections of access road constructed on geotextile. These culverts should be put in locations where natural watercourses occur so that the flow of water is not blocked by the alternate haul route.

11.0 References

Australian ICOMOS Incorporated, 2000. The Burra Charter: the ICOMOS charter for conservation of places of cultural significance with associated guidelines and code on the ethics of coexistence. Australian ICOMOS, Canberra.

Department of Environment and Conservation, 2004. Interim Community Consultation Requirements for Applicants.

Environmental Resources Management (Australia) Pty Ltd (ERM), 2003. Electricity Supply Upgrade from Tomago to Tomaree Environmental Impact Statement. Annex D Indigenous Cultural Heritage Assessment. Report to EnergyAustralia.

Environmental Resources Management (Australia) Pty Ltd (ERM), 2006. Stockton Bight Remaining Lands Cultural Heritage Significance Assessment. New South Wales National Parks and Wildlife Service, Nelson Bay.

National Parks and Wildlife Service (NSW NPWS), 1997. Aboriginal Cultural Heritage: Standards and Guidelines Kit. NPWS, Hurstville.

Pearson, M. and Sullivan, S, 1995. Looking after heritage places: the basics of heritage planning for managers, landowners and administrators. Melbourne University Press, Melbourne.

Umwelt (Australia) Pty Limited, 2004. Research Design and Methodology to Accompany NPWS Section 87 and Section 90 Permit Applications for Stage 2 Investigations and Site Conservation Works for the Tomago to Tomaree Electricity Supply Upgrade Project. Report to EnergyAustralia.

Umwelt (Australia) Pty Limited (Umwelt), 2009a. Aboriginal Cultural Heritage Management Plan for Sand Extraction Operations from Lot 218 DP 1044608 and Lot 220 DP 1049608, Salt Ash. Report to Mackas Sand.

Umwelt (Australia) Pty Limited (Umwelt), 2009b. Environmental Assessment of Sand Extraction Operations from Lot 218 DP 1044608 and Lot 220 DP 1049608, Salt Ash Report to Mackas Sand.

Umwelt (Australia) Pty Limited (Umwelt), In prep. Results of Archaeological Investigations associated with the Tomago to Tomaree Electricty Supply Upgrade Project. Report to EnergyAustralia.

APPENDIX A

Aboriginal Stakeholder Consultation

Appendix A – Aboriginal Party Consultation

Date	Type of Consultation	Authorities/Aboriginal Parties Contacted	Outcome
27/02/10	Advertisement providing notification of assessment and opportunity to registration interest in on-going consultation	Advertisement placed in Newcastle Herald	
03/03/10	Letter providing notification of assessment and request to identify Aboriginal parties	Department of Environment, Climate Change and Water	Viola Brown identified as an additional potential registrant
		Office of the Registrar of Aboriginal Owners	
		Port Stephens Shire Council	
		NSW Native Title Services	
		Worimi Local Aboriginal Land Council	
03/03/10	Letter providing notification of assessment, invitation to register interest in on-going consultation and proposed survey methodology	Worimi Local Aboriginal Land Council	Interest registered
		Nur-Run-Gee Pty Ltd (Nur-Run-Gee)	Interest registered
		Worimi Traditional Aboriginal Elders and Owners Group	Les Ridgeway previously indicated would no longer be involved in cultural heritage assessments
		Mur-Roo-Ma Incorporated (Mur-Roo-Ma)	Interest registered
		Maaiangal Aboriginal Heritage Cooperative	Interest registered. Carol indicated that, due to lack of insurance coverage, she would not be participating in the survey but will remain a registered party for consultation purposes
29/03/10	Initial survey of proposed access road	Worimi Local Aboriginal Land Council	Jamie Merrick participated in survey
		Nur-Run-Gee	Chris Collison participated in survey
		Mur-Roo-Ma	Anthony Anderson participated in survey

Date	Type of Consultation	Authorities/Aboriginal Parties Contacted	Outcome
6/05/10	Letter providing notification of assessment, invitation to register interest in on-going consultation and proposed survey methodology	Viola Brown	Interest registered in on-going consultation
21/05/10	Survey of additional portion of proposed access road	Worimi Local Aboriginal Land Council	Jamie Merrick participated in survey
		Nur-Run-Gee	Lennie Anderson participated in survey
		Mur-Roo-Ma	Anthony Anderson participated in survey
03/08/10	Draft (initial) Aboriginal cultural heritage assessment provided to relevant Aboriginal parties for review and comment	Worimi Local Aboriginal Land Council	Comment provided in writing
		Nur-Run-Gee Pty Ltd (Nur-Run-Gee)	Comment provided in writing
		Mur-Roo-Ma Incorporated (Mur-Roo-Ma)	Comment provided in writing
		Maaiangal Aboriginal Heritage Cooperative	Verbal comment provided
		Viola Brown	Verbal comment provided
28/09/11	Letter providing notification of alteration to proposed access road and provision of proposed additional survey methodology	Worimi Local Aboriginal Land Council	No comment provided
		Nur-Run-Gee Pty Ltd (Nur-Run-Gee)	Comment provided in writing
		Mur-Roo-Ma Incorporated (Mur-Roo-Ma)	Comment provided in writing
		Maaiangal Aboriginal Heritage Cooperative	No comment provided
		Viola Brown	No comment provided

Date	Type of Consultation	Authorities/Aboriginal Parties Contacted	Outcome
10/10/11	Survey of altered sections of proposed access road	Worimi Local Aboriginal Land Council	Jamie Merrick participated in survey
		Nur-Run-Gee	Chris Collison participated in survey
		Mur-Roo-Ma	Anthony Anderson participated in survey
27/10/11	Discussion of survey results and potential mitigation/management strategies with survey participants	Worimi Local Aboriginal Land Council	Jamie Merrick participated in discussion
		Nur-Run-Gee	Lennie Anderson participated in discussion
		Mur-Roo-Ma	Anthony Anderson was unavailable to participate in discussion but authorised Lennie Anderson to also represent views of Mur-Roo-Ma
8/11/11	Draft Aboriginal cultural heritage assessment provided to relevant parties for review and comment	Worimi Local Aboriginal Land Council	Comment provided in writing
		Nur-Run-Gee Pty Ltd (Nur-Run-Gee)	Comment provided in writing
		Mur-Roo-Ma Incorporated (Mur-Roo-Ma)	Comment provided in writing
		Maaiangal Aboriginal Heritage Cooperative	Verbal comment provided
		Viola Brown	Verbal comment provided

Umwelt (Australia) Pty Limited
2/20 The Boulevarde
PO Box 838
Toronto NSW 2283

Umwelt
Environmental Consultants

Ph. 02 4950 5322
Fax. 02 4950 5737

ABN 18 059 519 041

Our Ref: 1646a/PJ/ARG/NR/280911

28 September 2011

Worimi Local Aboriginal Land Council
Andrew Smith & Kyle Finlay
PO Box 56
TANILBA BAY NSW 2319

POSTED

Dear Andrew & Kyle

Re: Mackas Sand Approval DA-08-0142 – Alteration to previously proposed access road and provision of proposed survey methodology

As you are aware, development consent DA-08-0142 was granted to Mackas Sand for the extraction of sand from Lot 218 in DP 1044608 and Lot 220 in DP 1049608. An Aboriginal Cultural Heritage Management Plan (ACHMP) was completed in consultation with the relevant Aboriginal stakeholders and in accordance with Condition 29 of DA-08-0142. The ACHMP was approved by the Department of Planning on 9 November 2009. An Aboriginal Heritage Management Group (AHMG) was then established in accordance with the ACHMP.

Following from this, Mackas Sand proposed a modification to the development consent to allow for the establishment of an alternate access road to Lot 218 from Lavis Lane. The proposed access road was the subject of an Aboriginal cultural heritage assessment that was completed and provided to you in November 2010. Mackas Sand has since been in discussions with Port Stephens Council and the relevant landholders to determine a finalised route for the access road. In addition, recent ecological surveys of the previously assessed access road identified two species of threatened orchids along the proposed accessed road where Lot 122 and Lot 218 intersect. Mackas Sand is therefore proposing to alter the previously assessed access road. The proposed alterations would involve following a section of existing track in PT13 (shown as Alteration 1 in **Figure 1**) and reducing the length of the road in Lot 122 to enter the dune face further west within Lot 218 (shown as Alteration 2 in **Figure 1**). As shown in **Figure 1**, Alteration 1 was surveyed during the previous assessment whilst Alteration 2 has not been previously surveyed.

In accordance with the requirements of the Department of Planning and Infrastructure (DP&I), the Aboriginal cultural heritage assessment of the proposed modifications will be undertaken in accordance with the *Department of Environment and Conservation (now the Office of Environment and Heritage - OEH) Interim Community Consultation Requirements for Applicants*. Mackas Sand has commissioned Umwelt (Australia) Pty Limited (Umwelt) to complete the Aboriginal archaeological component of this assessment. Umwelt is aware that your group has an interest in being consulted regarding cultural heritage in this area. This letter is to notify your organisation of the proposed alterations to the previously assessed access road and to outline the assessment process (as outlined below).

1. Assessment Process

The modification to the existing development consent will be sought under Section 75W of the *Environmental Planning and Assessment Act 1979* and this will require the submission of an environmental assessment to DP&I. The requirements for the environmental assessment are determined by DP&I. The presence of sites and PAD along the proposed access road (including the Alteration 1, as shown in **Figure 1**) indicates that the environmental assessment should address Aboriginal cultural heritage issues through the completion of an Aboriginal Cultural Heritage Assessment.

The Aboriginal Cultural Heritage Assessment needs to satisfy all of the relevant requirements and guidelines. Only Aboriginal people can provide information on Aboriginal cultural values and this forms a major component of the assessment. It is therefore essential that consultation with the relevant Aboriginal stakeholders is undertaken throughout the course of the Aboriginal Cultural Heritage Assessment and that you feel that you are being fully informed about all aspects of the assessment. With this in mind, please find below a brief summary of the major stages in the assessment. Please note that the specified dates may be subject to change and are provided as an indication only.

1. Notification of the proposed modification and discussion of the assessment methodology (as provided in this letter).

2. Provision of a draft survey methodology for review by Aboriginal stakeholders (as in this letter).

3. Period during which Aboriginal stakeholders can provide comment/proposed amendments to the draft survey methodology (up to 28 days from receipt of this letter i.e. **26 October 2011** but efforts will be made to facilitate comment prior to this date).

4. Completion of survey of the proposed modifications to previously assessed access road with Aboriginal stakeholder representatives and in-field consultation regarding Aboriginal cultural values of the area and suggested management and mitigation recommendations (date to be confirmed in consultation with Aboriginal stakeholders).

5. Changes to the existing archaeological component of a draft Aboriginal Cultural Heritage Assessment to recognise modification of the previously assessed access road and incorporating results of field survey and feedback received from Aboriginal stakeholder representatives in the field (1 to 2 weeks from date of survey).

6. Provision of the archaeological component of a draft Aboriginal Cultural Heritage Assessment to Aboriginal stakeholders to provide them with the necessary archaeological information to complete an Aboriginal cultural values assessment and comment on/provide additional management and mitigation recommendations.

7. Period during which Aboriginal stakeholders can complete an Aboriginal cultural values assessment and comment on/provide additional management and mitigation recommendations (up to 28 days from receipt of draft Aboriginal Cultural Heritage Assessment).

8. Period for discussion regarding incorporating Aboriginal cultural values assessment with the archaeological component to form the finalised Aboriginal Cultural Heritage Assessment (5 working days from closing period for Aboriginal cultural values assessment).

9. Finalisation of Aboriginal Cultural Heritage Assessment for provision to the Aboriginal stakeholders and submission to DP&I (following the completion of Stage 8 above).

2. Draft Survey Methodology

As outlined above, one of the purposes of this letter is to provide a proposed methodology for the survey of the alterations to the previously assessed access road. It is suggested that the survey methodology should be consistent with that utilised for the previously surveyed portion of the proposed access road and for Lot 218 and Lot 220. As shown in **Figure 1**, Alteration 1 was surveyed as part of the previous assessment but was not included in the final assessment report. It is proposed to revisit this area as part of the additional survey.

Where possible, the proposed modifications to the previously assessed access road will be surveyed on foot. However, Alteration 2 is located largely within a low-lying and swampy area which may not be suitable to survey on foot. If this is the case, it is proposed to walk the adjoining higher landform to gain an understanding of the general area.
Survey data and sites will be recorded using a hand-held GPS, maps, compasses in accordance with OEH standards and requirements. Information recorded during the survey will include:

- the nature of the landforms and vegetation;
- the levels of visibility and exposure within the surveyed area;
- the effects of erosion and disturbance;
- the availability of Aboriginal resources;
- any archaeological sites that may be present;
- the likelihood that potential archaeological deposits may be present within the survey areas; and
- any information provided by Aboriginal stakeholders regarding the cultural significance of the area.

Any comments that Aboriginal parties wish to make regarding stories, cultural knowledge or Aboriginal cultural values associated with the alterations to the previously assessed access road and locality will be recorded during fieldwork and integrated into a draft report (provided that the relevant stakeholder is happy to have that information placed in the public domain).

3. Fieldwork Involvement

It is anticipated that the survey will be completed within one day by Aboriginal party representatives and an archaeologist. Should your party wish to be involved in the survey, Mackas Sand wishes to invite **one representative** from your group to participate. At this stage, it is proposed to conduct the fieldwork on **Thursday 27 October 2011** but the actual timing of fieldwork will be dependent on how quickly people can return the required paperwork.

Mackas Sand has provided a letter of engagement for all parties wishing to be involved in fieldwork. Mackas Sand will engage interested Aboriginal parties directly for fieldwork involvement. If your party wishes to be involved in fieldwork, you must carefully read the attached letter of engagement and ensure that you agree to all the conditions. If you have any issues with the letter of engagement, please contact The Director Mackas Sand on (02) 4982 8227.

4. Conclusion

In accordance with the *Interim Community Consultation Requirements for Applicants* (December 2004), we ask that your group provides comments on the draft survey methodology by no later than **5.00 pm** on **Wednesday 26 October 2011**. Verbal comments regarding the draft survey methodology can be made directly to Nicola Roche or written comments can be faxed on (02) 4950 5737. Fieldwork may be able to be scheduled earlier if comments from all Aboriginal stakeholder groups are received prior to the above mentioned date.

A signed copy of the terms of engagement must also be returned by **Wednesday 26 October** so if you have any queries about engagement, please make sure you contact The Director Mackas Sand prior to this date.

Please do not hesitate to contact me on (02) 4950 5322 if you need to discuss further aspects of the draft survey strategy or this correspondence.

Yours faithfully

Nicola Roche
Archaeologist

enc

Umwelt (Australia) Pty Limited
2/20 The Boulevarde
PO Box 838
Toronto NSW 2283

Umwelt
Environmental Consultants

Ph. 02 4950 5322
Fax. 02 4950 5737

ABN 18 059 519 041

Our Ref: 1646a/PJ/ARG/NR/280911

28 September 2011

Mur-roo-ma Incorporated
Anthony Anderson
9 Varden Road
FERN BAY NSW 2295

POSTED

Dear Anthony

Re: Mackas Sand Approval DA-08-0142 – Alteration to previously proposed access road and provision of proposed survey methodology

As you are aware, development consent DA-08-0142 was granted to Mackas Sand for the extraction of sand from Lot 218 in DP 1044608 and Lot 220 in DP 1049608. An Aboriginal Cultural Heritage Management Plan (ACHMP) was completed in consultation with the relevant Aboriginal stakeholders and in accordance with Condition 29 of DA-08-0142. The ACHMP was approved by the Department of Planning on 9 November 2009. An Aboriginal Heritage Management Group (AHMG) was then established in accordance with the ACHMP.

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In accordance with the requirements of the Department of Planning and Infrastructure (DP&I), the Aboriginal cultural heritage assessment of the proposed modifications will be undertaken in accordance with the *Department of Environment and Conservation (now the Office of Environment and Heritage - OEH) Interim Community Consultation Requirements for Applicants*. Mackas Sand has commissioned Umwelt (Australia) Pty Limited (Umwelt) to complete the Aboriginal archaeological component of this assessment. Umwelt is aware that your group has an interest in being consulted regarding cultural heritage in this area. This letter is to notify your organisation of the proposed alterations to the previously assessed access road and to outline the assessment process (as outlined below).

1. Assessment Process

The modification to the existing development consent will be sought under Section 75W of the *Environmental Planning and Assessment Act 1979* and this will require the submission of an environmental assessment to DP&I. The requirements for the environmental assessment are determined by DP&I. The presence of sites and PAD along the proposed access road (including the Alteration 1, as shown in **Figure 1**) indicates that the environmental assessment should address Aboriginal cultural heritage issues through the completion of an Aboriginal Cultural Heritage Assessment.

Umwelt (Australia) Pty Limited
2/20 The Boulevarde
PO Box 838
Toronto NSW 2283
Our Ref: 1646a/PJ/ARG/NR/280911

Umwelt
Environmental Consultants

Ph. 02 4950 5322
Fax. 02 4950 5737

ABN 18 059 519 041

28 September 2011

Nur-Run-Gee Pty Ltd
Lennie Anderson
22 Popplewell Road
FERN BAY NSW 2295

POSTED

Dear Lennie

Re: Mackas Sand Approval DA-08-0142 – Alteration to previously proposed access road and provision of proposed survey methodology

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Toronto NSW 2283
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Environmental Consultants

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ABN 18 059 519 041

28 September 2011

Viola Brown
22 Salamander Place
RAYMOND TERRACE NSW 2324

Dear Viola

Re: Mackas Sand Approval DA-08-0142 – Alteration to previously proposed access road and provision of proposed survey methodology

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2/20 The Boulevarde
PO Box 838
Toronto NSW 2283
Our Ref: 1646a/PJ/ARG/NR/280911

Umwelt
Environmental Consultants

Ph. 02 4950 5322
Fax. 02 4950 5737

ABN 18 059 519 041

28 September 2011

Maaiangal Aboriginal Heritage Corporation
Carol Ridgeway-Bissett
5 Ondine Close
NELSON BAY NSW 2315

POSTED

Dear Carol

Re: Mackas Sand Approval DA-08-0142 – Alteration to previously proposed access road and provision of proposed survey methodology

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2/20 The Boulevarde
PO Box 838
Toronto NSW 2283

Umwelt
Environmental Consultants

Ph. 02 4950 5322
Fax. 02 4950 5737

ABN 18 059 519 041

Our Ref: 1646a/PJ/NR/060510

POSTED

6 May 2010

Worimi Local Aboriginal Land Council
Attn: Andrew Smith & Kyle Finlay
PO Box 56
TANILBA BAY NSW 2319

Dear Andrew & Kyle

Re: Survey of Final Section of Proposed Access Road, Mackas Sand

As you are aware, Mackas Sand is proposing to establish an alternate access road to Lot 218 from Lavis Lane and is seeking a modification to its development consent under Section 75W of the *Environmental Planning and Assessment Act 1979.* During an inspection by the Mackas Sand Aboriginal Heritage Management Group, an area of PAD and an area of a previously recorded site (A3) were identified along the proposed access road. The proposed modification will be the subject of an Aboriginal Cultural Heritage Assessment to be completed in accordance with Department of Environment Climate Change and Water requirements.

As part of this process, a survey methodology for the proposed access road was provided to you on 3 March 2010 so that you could review and comment upon the survey methodology. Survey of part of the proposed access road was undertaken on 29 March 2010 by Nicola Roche (Umwelt Senior Archaeologist), Jamie Merrick (Worimi Local Aboriginal Land Council Senior Sites Officer), Anthony Anderson (Mur-Roo-Ma Inc. CEO) and Chris Collison (Nur-Run Gee Pty Ltd Sites Officer). The route of the initial section of the proposed access road had not been finalised at the time of survey and it was confirmed that the initial section would be surveyed at a later date.

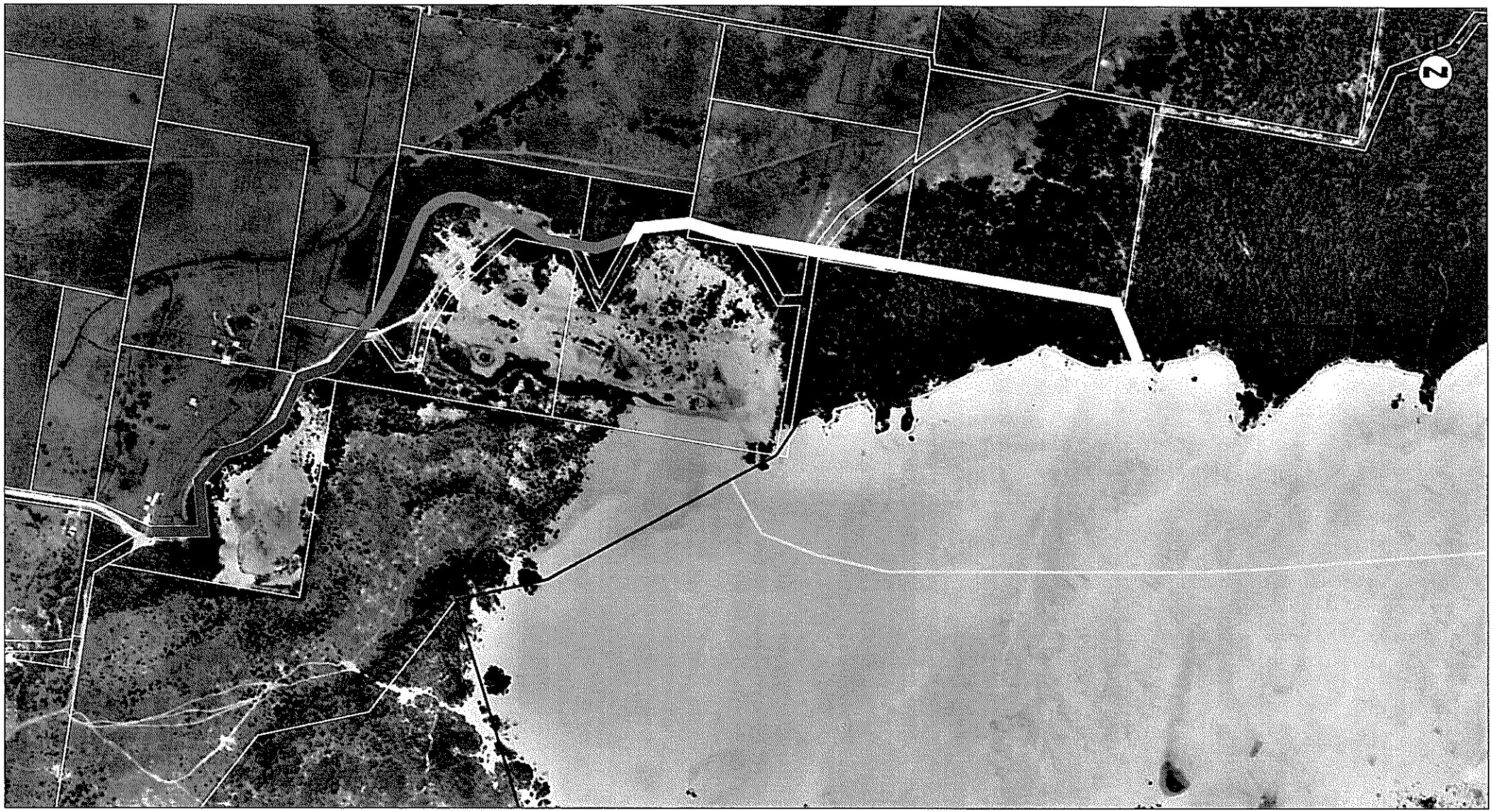
This letter is to advise you that the initial section of the proposed access road has now been finalised, as shown in **Figure 1**. This area will be surveyed in accordance with the survey methodology provided to you on 3 March 2010. However, if you wish to make any additional comments regarding the survey methodology please contact me prior to the survey so that we can discuss.

At this stage, it is proposed to complete the survey on Friday 21 April however if this date is not suitable, please let me know as soon as possible. We can meet at the end of Lavis Lane at 8 am and arrange vehicles from there, provided that is suitable to all.

Should you wish to discuss any aspect of the survey of the final section of the proposed access road, please do not hesitate to contact me on 4950 5322.

Yours faithfully

Nicola Roche
Senior Archaeologist



Source: Aerial: Google Earth, 2008

0 100 250 500m
1:10 000

Legend

- Lot 218 Boundary
- Lot 218 Approval Area
- Previously Approved
- Previously Surveyed
- To be Surveyed

FIGURE

Location of Proposed Access Road

Umwelt (Australia) Pty Limited
2/20 The Boulevarde
PO Box 838
Toronto NSW 2283

Umwelt
Environmental Consultants

Ph. 02 4950 5322
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Our Ref: 1646a/PJ/NR/060510

POSTED

6 May 2010

Nur-Run-Gee Pty Ltd
Attn: Leanne Anderson
22 Popplewell Road
FERN BAY NSW 2295

Dear Leanne

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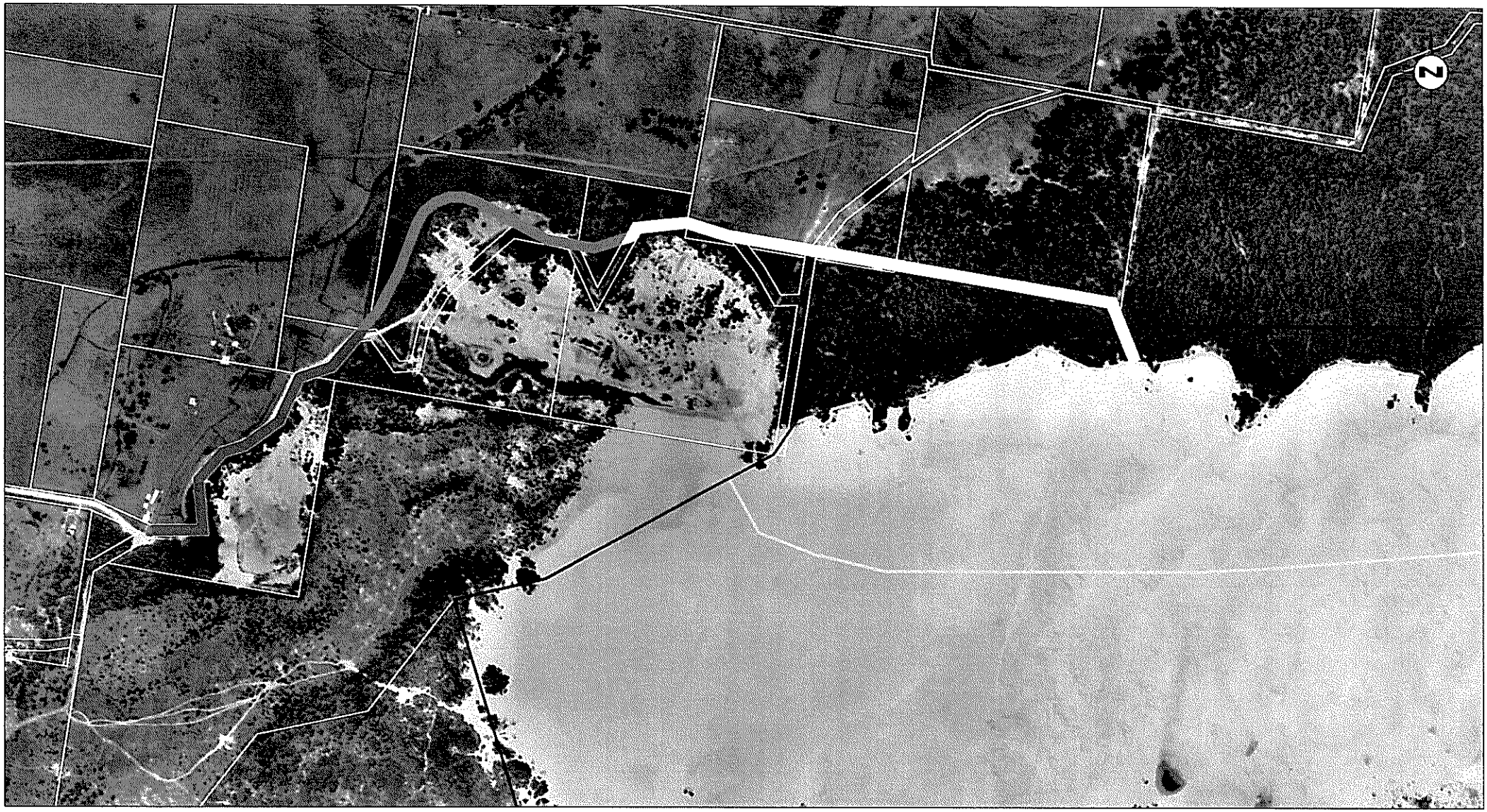

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