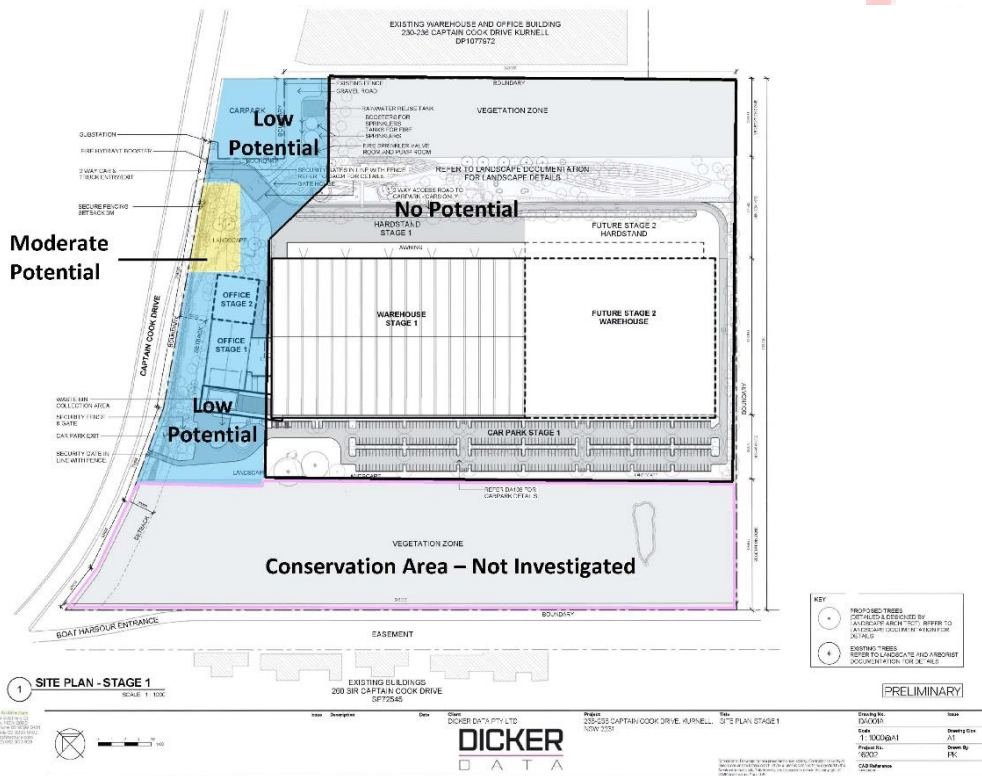


## Aboriginal Cultural Heritage Management Plan

238 – 258 Captain Cook Drive, Kurnell



Areas of Aboriginal Heritage Potential identified within the property

June 2019

Draft report prepared for Dicker Data Limited

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## 1 Introduction

Coast History & Heritage [Coast] have prepared this Aboriginal Cultural Heritage Management Plan (ACHMP) at the request of Dicker Data Limited to fulfil the Conditions of Development Approval SSD8662 of 12/4/2019 for the redevelopment of 238-258 Captain Cook Drive, Kurnell (Lot 1 DP 225973 and Lot 2 DP1088703) as a warehouse and distribution centre. The following requirements are addressed by the ACHMP (see **Attachment A**):

*B45. Before the commencement of any clearing or construction works, the Applicant must prepare an ACHMP for the development to protect and manage middens and other Aboriginal artefacts on the site. The plan must form part of the CEMP [Construction Environmental Management Plan] required by Condition C2 and must:*

*(a) be prepared by a suitably qualified and experienced expert in consultation with the Registered Aboriginal Parties;*

*(b) be submitted to the satisfaction of the Planning Secretary prior to construction of any part of the development; and*

*(c) describe the measures to protect middens and other Aboriginal artefacts on the site in perpetuity.*

*B46. The Applicant must:*

*(a) not commence construction until the Aboriginal Cultural Heritage Management Plan is approved by the Planning Secretary; and*

*(b) implement the most recent version of the Aboriginal Cultural Heritage Management Plan approved by the Planning Secretary for the duration of the development.*

*B47. If any item or object of Aboriginal heritage significance is identified on site:*

*(a) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately;*

*(b) a 10 m wide buffer area around the suspected item or object must be cordoned off; and*

*(c) the OEH must be contacted immediately.*

*B48. Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the National Parks and Wildlife Act 1974.*

### 1.1 Who contributed to the ACHMP

The ACHMP was prepared by Dr Paul Irish of Coast, who was the lead author and project manager for heritage consultancy MDCA during the archaeological assessment of the project (2013-2018). The ACHMP draws on the recommendations of the final assessment report for that project, which is also included as **Attachment C** to this plan.<sup>1</sup> The input of Registered Aboriginal Parties to the ACHMP and previous investigations is acknowledged with thanks.

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<sup>1</sup> MDCA 2018. *Aboriginal Cultural Heritage Assessment Report. 238-258 Captain Cook Drive Kurnell, NSW* (Report to Dicker Data Pty Ltd).

### 1.2 What area does this ACHMP cover?

The ACHMP covers portions of 238-258 Captain Cook Drive, Kurnell, which have been assessed as retaining Moderate Potential or Low Potential for Aboriginal heritage remains, as shown below.



Figure 1. The property (blue outline) in its local context.

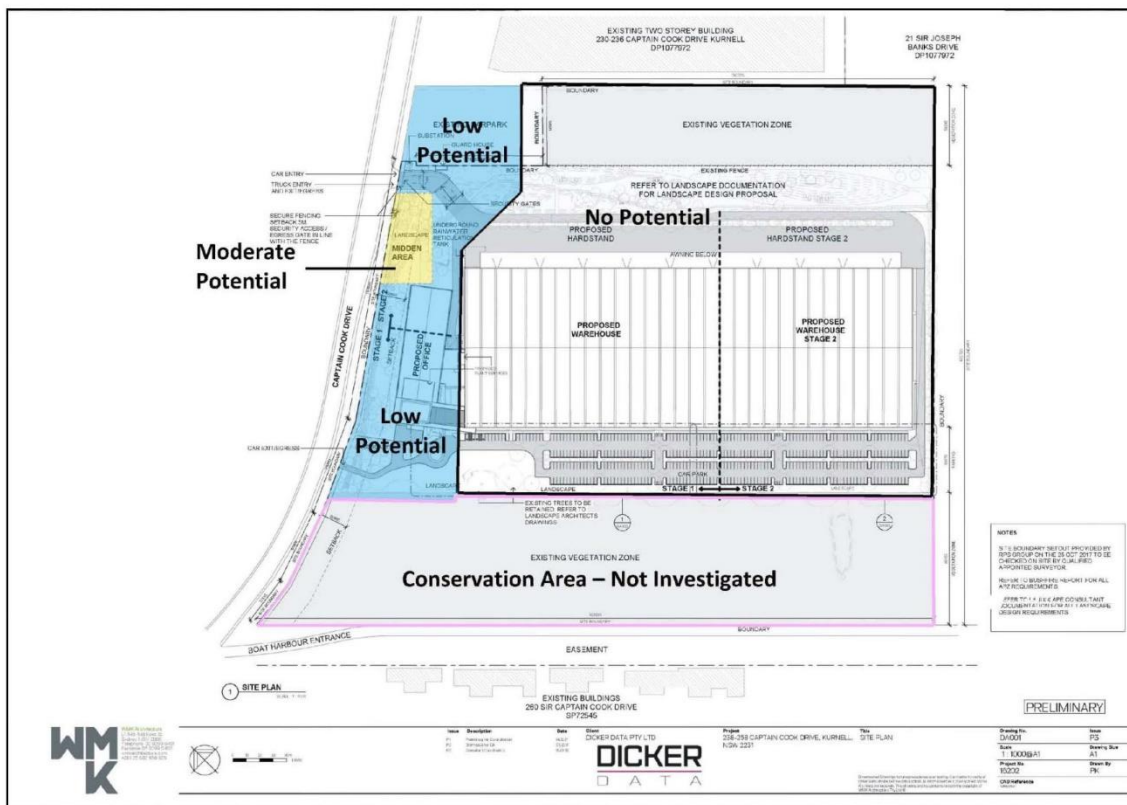


Figure 2. Areas of Aboriginal Heritage Potential in relation to the current approved development.



### 1.3 What is already known about Aboriginal heritage?

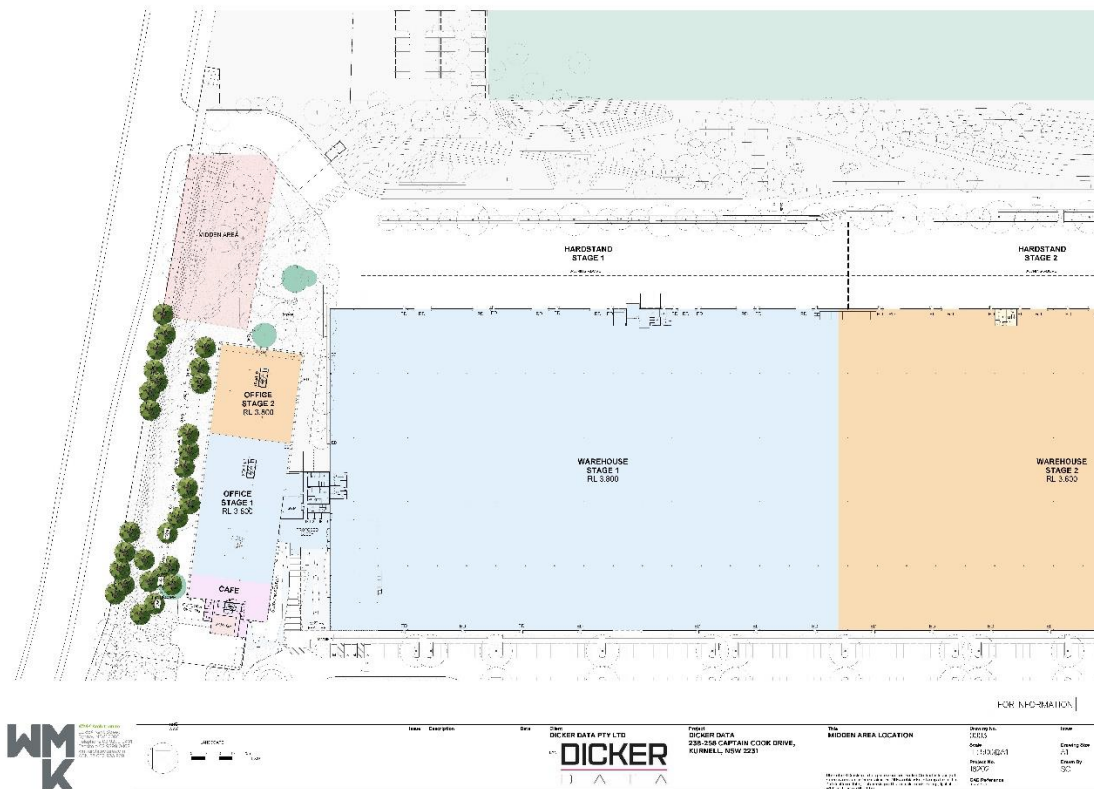
The property has been subject to Aboriginal heritage assessment in relation to the current proposal, and a former proposal since 2013. This has included comprehensive Aboriginal archaeological test excavations across the property. The findings of these assessments can be summarised as follows (and see **Figure 3**):

- An Aboriginal shell midden known as the *Abbotts Site Midden* (#52-3-0258) was recorded in the 1980s along the verge of Captain Cook Drive in front of the current property (which was formerly a pharmaceutical factory construction in the 1960s).
- Archaeological test excavations conducted by MDCA in 2014 found that this midden extends into the northern portion of the property, where it survives under at least 0.5m of sand spread across during construction of the factory.
- There is a small 30m x 60m area that contained almost all of the Aboriginal archaeological remains within the property, including a layer of shell midden about 500 years old. The old dune containing the midden sits 0.5m – 1.2m under the current surface and this area has been defined as an area of Moderate Potential for further Aboriginal archaeological remains to occur, as shown in **Figure 3**.
- A larger area around this where the dune survives has Low Potential for further Aboriginal archaeological remains as shown in **Figure 3**. Only occasional shell fragments and stone artefacts were found across the buried dune about 1.0m – 1.2m below the current surface in this area.
- The remaining investigated portions of the property have no archaeological potential as they were shown to have been comprehensively disturbed during the construction of the factory in the 1960s and are not associated with landforms with Aboriginal heritage sensitivity.
- The results of these investigations were used to revise the current approved development (**Figure 4**).
- Specifically, no sub-surface impacts are to take place in the area of Moderate Potential which may impact the buried dune which contains Aboriginal archaeological remains.
- Within the area of Low Potential, impacts have been minimised, and are mitigated further by the monitoring provisions outlined in this ACHMP.



**Figure 3. The assessed Aboriginal archaeological potential of the property**

[Reproduced from MDCA 2018, Figure 36].



**Figure 4. Approved development plan.**

## **1.4 Aboriginal community consultation**

As per Condition B45(a) this ACHMP was prepared in consultation with the Registered Aboriginal Parties (RAPs) to the original assessment as determined in accordance with the *National Parks & Wildlife Regulation 2009*. Specifically, a draft plan was sent to all RAPs on 20 May 2019 and RAPs were provided with 28 days to respond. We asked for any comments or information to be provided to us by 19 June 2019 so that they could be considered in the final ACHMP. The following responses were received (and see **Attachment B**):

**Table 1. Comments received on the draft report.**

Registered Aboriginal Party	Summary and Discussion (Coast comments in italics)
La Perouse Local Aboriginal Land Council	Supported the management plan.
Darug Land Observations	Supported the methodology for the proposed development and agreed that any recovered artefacts should be transferred to the custodianship of the La Perouse Local Aboriginal Land Council.
Tocomwall	No response received.

On this basis, the draft plan was finalised, unamended.

## 2 Aboriginal Cultural Heritage Management Plan

### 2.1 Construction Phase Protections

#### 2.1.1 Site Establishment and Protective Fencing

Prior to the commencement of construction works, the area of Moderate Potential is to be surrounded by security fencing to prevent unauthorised access and minimise the risk for impacts to the underlying dune. This fencing should remain in place for the duration of construction and access is only to be allowed in relation to the approved surface landscaping activities within this area.

The area of Low Potential is not to be used for the stockpiling of building materials during construction, and access by tracked vehicles should be restricted to those undertaking works within these areas.

#### 2.1.2 Aboriginal Heritage Induction

All workers on site for the duration of construction who may potentially be involved in subsurface works must be subject to an Aboriginal Heritage Induction to make them aware of

- the provisions of the ACHMP;
- the kinds of heritage items that may be encountered during their works;
- the unexpected finds protocol; and
- the legal protections afforded Aboriginal heritage under the *National Parks & Wildlife Act 1974*.

This induction is to be delivered by a representative of Coast and the La Perouse Local Aboriginal Land Council.

#### 2.1.3 Archaeological Monitoring

Archaeological monitoring is required in relation to the following proposed works:

- any subsurface works within the area of Moderate Archaeological Potential as shown in **Figure 3**.
- any excavation works of more than 0.5m depth below the current surface within the area of Low Archaeological Potential as shown in **Figure 3**.

Archaeological monitoring is to be undertaken by a representative of Coast in conjunction with a representative of the La Perouse Local Aboriginal Land Council.

The archaeological monitoring will ensure that buried foredune deposits are identified, as they vary considerably with depth across the areas of Moderate and Low Archaeological Potential.

Monitoring will lead to one of the following outcomes:

- Where excavation works expose the buried foredune within the area of Moderate Potential, the proposed impact must be avoided to prevent impact to the foredune e.g. by relocating or raising the level of the proposed impact. It is noted that the activities permitted under the existing approval are not proposed to impact the buried dune within the area of Moderate Potential.
- Where excavation works expose the buried foredune within the area of Low Potential, and are required to continue into it, monitoring will continue until the completion of works in that area, with one of the following outcomes:
  - no archaeological remains are encountered. The extent of excavations will be recorded by Coast and the La Perouse Local Aboriginal Land Council.
  - sparse or scattered shell or stone artefacts are noted during monitoring, and are collected where it is safe to do so. In the event of any such finds, the location and depth will be recorded by Coast and the La Perouse Local Aboriginal Land Council, and the retrieved materials subject to the analysis procedures outlined in **Section 2.1.5**.
  - a layer or layers of midden are exposed within the dune. These Aboriginal archaeological remains will be subject to archaeological salvage excavation and recording as per the procedures outlined in **Sections 2.1.4 and 2.1.5**.
  - bones suspected as being of human origin are exposed, which are to be managed in accordance with the procedures outlined in **Section 2.2**.

#### **2.1.4 Archaeological Salvage excavations**

In the event that a layer or layers of midden are exposed during archaeological monitoring within the area of Low Archaeological Potential, these are to be subject to archaeological salvage by Coast and the La Perouse Local Aboriginal Land Council using the following methodology, and in accordance with practical (WH&S) considerations (e.g. with respect to the depth of excavation).

- Any archaeological salvage will be undertaken in manual excavation squares (0.5m<sup>2</sup> or 1.0m<sup>2</sup> as appropriate). Excavation would proceed in 5-10cm spits or by context (as appropriate). All excavated material will be sieved onsite through nested 5mm and 2mm mesh sieves. Soil pH samples and where possible samples for radiometric dating will be taken and full recording of sections, plans and features will be made.
- All Aboriginal cultural remains (apart from human bone) retrieved during any archaeological salvage (or retrieved during monitoring or uncovered as an unexpected find), such as animal bone and shell, or artefacts from stone, bone or shell, will be recorded and bagged prior to specialist analysis in accordance with the procedures outlined and undertaken as part of the prior archaeological test excavations (see **Section 2.1.5**). If obtained, radiocarbon dating samples will be submitted to Waikato Radiocarbon Laboratory in New Zealand for dating.



### **2.1.5 Reporting and Artefact Management**

The results of any monitoring and archaeological excavations that are undertaken will be fully documented in an Aboriginal archaeological monitoring/excavation report. Any Aboriginal archaeological remains uncovered during the recommended investigations will be recorded on the AHIMS Register.

All retrieved archaeological remains will be subject to specialist analysis consistent with the methods used in the 2014 archaeological test excavations at the site by MDCA, as outlined in Section 4.1.5 of the MDCA 2018 report appended as **Attachment C**.

All archaeological remains from the 2014 archaeological test excavations have been transferred under a Care agreement to the La Perouse Local Aboriginal Land Council and it is proposed that any further archaeological remains which are uncovered during construction are also transferred to the custodianship of the La Perouse Local Aboriginal Land Council.

Archaeological material retrieved during the recommended monitoring and/or salvage excavation works will be stored temporarily at Coast office premises (Suite 9 & 10, 136 Marrickville Road, Marrickville). This does not apply to any human remains which will be managed in accordance with the procedures outlined in **Section 2.2**.

## **2.2 Unexpected Finds Protocol**

Due to the comprehensive natures of the archaeological test excavations and other information considered in the Aboriginal cultural heritage assessment, it is considered unlikely that items of Aboriginal heritage significance will occur outside of the areas already subject to procedures in this plan. However, an unexpected finds protocol will be in place which meets the requirements of approval Condition B47 in those areas in which archaeological monitoring is not proposed to occur.

### **2.2.1 The precautionary principle**

*If in doubt about something that has been uncovered, seek further advice*

The Aboriginal Heritage Induction will outline to site workers the kinds of materials that may be encountered, however this principle applies in all cases as a precautionary measure.

### **2.2.2 Procedures when a possible Aboriginal object has been found**

If any materials are uncovered during construction that are suspected to be Aboriginal objects, or any bones are uncovered during construction that may be human, site workers must:

- Immediately cease all work at the particular location.
- Not further disturb or move these remains.

- Contact Coast History & Heritage (1800 450 995) for initial advice. This may be in the form of evaluation of a photograph of the encountered material to check if it is of potential Aboriginal cultural origin, or may require a site visit to determine appropriate further actions.

If it is determined that the uncovered materials may be Aboriginal objects or human remains, the following must occur:

- Contact the Office of Environment & Heritage (OEH) Environment Line (131 555) to notify them of the find.
- Establish a 10m buffer around the find using temporary site fencing.
- Not recommence any work at the particular location until appropriate actions have been undertaken and specific advice has been provided by the OEH in accordance with Part 6 of the *National Parks & Wildlife Act 1974*. Possible actions include:

**In the case of Aboriginal objects**, the project archaeologist and the La Perouse Local Aboriginal Land Council must be contacted to determine appropriate management of the objects in accordance with the ACHMP and the requirements of the OEH. The objects are to be registered in the Aboriginal Heritage Information Management System (AHIMS) which is managed by OEH and the management outcome for the site included in the information provided to AHIMS.

**In the case of bone which may potentially be human**, specialist physical anthropologist and Coast Associate Emeritus Professor Richard Wright will be called in to determine whether the remains are definitely human, and whether they are likely to be Aboriginal or non-Aboriginal in origin. If they are confirmed as, or likely to be Aboriginal and old, discussions will be held with the La Perouse Local Aboriginal Land Council and the OEH to determine the most appropriate way to manage them. In all other cases, such as young Aboriginal bone or non-Aboriginal bone, the Police will be notified as it may be a potential coronial matter.

### 2.3 Post-Construction Protections

On completion of the construction activities approved under SSD Consent 8662 the following actions are to be included in any subsequent landscape management plan or other relevant plans which will guide the maintenance of the Moderate Potential and Low Potential areas as defined in **Figure 3**.

The following table summarises possible future activities within the areas of Moderate Potential and Low Potential and the management requirements associated with each.

**Table 2. Possible future activities and Aboriginal heritage requirements.**

Activity	Aboriginal heritage requirements
Mowing	Permitted
General lawn and garden maintenance (including weed removal).	Permitted
Planting of shallow rooted plants.	Permitted as long as excavation no deeper than 200mm
Minor, localised maintenance activities	Maintenance of existing paths and gardens permitted where impacts are not required more than 200mm below the current surface e.g. replacing pavers or garden edging
Vehicle access	As much as possible, the areas of Moderate Potential and Low Potential should be accessed by soft-tread vehicles only. Overflow carparking on the in these areas is not permitted.
Other proposed excavation or other subsurface impacts	Any other excavations or proposed subsurface impacts are not permitted without prior Aboriginal heritage assessment, and may require an Aboriginal Heritage Impact Permit under s90 of the <i>National Parks &amp; Wildlife Act 1974</i> .

### 3 Adoption of Plan and Legal Protections

- The current defined extent of the *Abbotts Site Midden* (#52-3-0258), and any currently undocumented Aboriginal objects within the areas of Moderate Potential and Low Potential (as shown in **Figure 3**), are protected under *National Parks and Wildlife Act* 1974. S86 of the Act makes it an offence to harm or desecrate Aboriginal objects. Penalties for breaching the Act include substantial fines and potential imprisonment.
- This Aboriginal Cultural Heritage Management Plan is to form part of the Construction Environmental Management Plan for the current approved development.
- This Aboriginal Cultural Heritage Management Plan should also be included or referenced in other relevant construction and post-construction management plans such as the Vegetation Management Plan and Landscape Plan. These plans must also be consistent with the legal protections and other permissible actions outlined in the Aboriginal Cultural Heritage Management Plan.
- Property managers are to be made aware of the Aboriginal Cultural Heritage Management Plan and the protections afforded to the *Abbotts Site Midden* (#52-3-0258) and any other currently undocumented Aboriginal objects within the property.
- There should be periodic review of the Aboriginal Cultural Heritage Management Plan (e.g. every **5 years**) to ensure that the plan continues to protect the *Abbotts Site Midden* (#52-3-0258) in accordance with the usage of the areas of Moderate Potential and Low Potential. This should be undertaken by a suitably qualified archaeologist and involve Management and relevant grounds staff/contractors.
- In the event that future handover of the property containing the *Abbotts Site Midden* (#52-3-0258) site occurs, the new owners and managers should formally adopt the relevant provisions of the Aboriginal Cultural Heritage Management Plan.

**Attachment A:**

**SSDA 8862 Approval Conditions relating to Aboriginal Heritage**



# Development Consent

## Section 4.38 of the Environmental Planning and Assessment Act 1979

As delegate of the Minister for Planning under delegation executed on 11 October 2017, I approve the Development Application referred to in Schedule 1, subject to the conditions specified in Schedule 2.

These conditions are required to:

- prevent, minimise, or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development



Anthea Sargeant  
**Executive Director**  
**Key Sites and Industry Assessments**

Sydney

12 April,

2019

File: DOC18/721211

### SCHEDULE 1

<b>Application Number:</b>	SSD 8662
<b>Applicant:</b>	Dicker Data Limited
<b>Consent Authority:</b>	Minister for Planning
<b>Site:</b>	238 - 258 Captain Cook Drive, Kurnell Lot 1 DP 225973 and Lot 2 DP 1088703
<b>Development:</b>	Construction and operation of a warehouse and distribution centre with associated office, carparking, landscaping, services and site subdivision

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## DEFINITIONS

<b>Applicant</b>	Dicker Data Limited, or any person carrying out any development to which this consent applies
<b>AHD</b>	Australian Height Datum
<b>BCA</b>	Building Code of Australia
<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i>
<b>Certifying Authority</b>	A person who is authorised by or under the former section 109D of the EP&A Act to issue Part 4A certificates
<b>CEMP</b>	Construction Environmental Management Plan
<b>Conditions of this consent</b>	Conditions contained in Schedule 2 of this document
<b>Construction</b>	The demolition and removal of buildings or works, the carrying out of works for the purpose of the development, including bulk earthworks, and erection of buildings and other infrastructure permitted by this consent
<b>Council</b>	Sutherland Shire Council
<b>Day</b>	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
<b>Demolition</b>	The deconstruction and removal of buildings, sheds and other structures on the site
<b>Department</b>	NSW Department of Planning and Environment
<b>Development</b>	The development described in the EIS and Response to Submissions, including the works and activities comprising construction and operation of the warehouse and distribution centre and associated office, as modified by the conditions of this consent
<b>Development layout</b>	The plans at Appendix 1 of this consent
<b>Earthworks</b>	Bulk earthworks, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction
<b>EIS</b>	The Environmental Impact Statement titled Warehouse and Distribution Centre, 238-258 Captain Cook Drive, Kurnell, prepared by BBC Consulting Planners dated May 2018, submitted with the application for consent for the development, including any additional information provided by the Applicant in support of the application
<b>ENM</b>	Excavated Natural Material
<b>Environment</b>	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
<b>EPA</b>	NSW Environment Protection Authority
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EP&amp;A Regulation</b>	<i>Environmental Planning and Assessment Regulation 2000</i>
<b>EPL</b>	Environment Protection Licence under the POEO Act
<b>Evening</b>	The period from 6 pm to 10 pm
<b>Fibre ready facility</b>	As defined in Section 372W of the <i>Telecommunications Act 1997</i>
<b>Heritage</b>	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement
<b>Heritage item</b>	An item as defined under the <i>Heritage Act 1977</i> , and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the <i>National Parks and Wildlife Act 1974</i> , the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), or anything identified as a heritage item under the conditions of this consent
<b>Incident</b>	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance Note: "material harm" is defined in this consent
<b>Land</b>	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act

<b>Material harm</b>	Is harm that: <ul style="list-style-type: none"> <li>a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or</li> <li>b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)</li> </ul>
<b>Minister</b>	NSW Minister for Planning (or delegate)
<b>Mitigation</b>	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
<b>Monitoring</b>	Any monitoring required under this consent must be undertaken in accordance with section 9.40 of the EP&A Act
<b>Night</b>	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
<b>Non-compliance</b>	An occurrence, set of circumstances or development that is a breach of this consent
<b>OEH</b>	NSW Office of Environment and Heritage
<b>OEMP</b>	Operational Environmental Management Plan
<b>Operation</b>	The use of the warehouse and distribution centre and associated office upon completion of construction
<b>PA</b>	Means a planning agreement within the meaning of the term in section 7.4 of the EP&A Act.
<b>PCA</b>	Principal Certifying Authority in accordance with the EP&A Act
<b>Planning Secretary</b>	Planning Secretary under the EP&A Act, or nominee
<b>POEO Act</b>	<i>Protection of the Environment Operations Act 1997</i>
<b>Reasonable</b>	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements.
<b>Registered Aboriginal Parties</b>	Means the Aboriginal persons identified in accordance with the document entitled " <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> " (DECCW)
<b>Rehabilitation</b>	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
<b>Response to submissions</b>	The Applicant's response to issues raised in submissions received in relation to the application for consent for the development under the EP&A Act, titled 'Response to Submissions, State Significant Development SSD 17_8662', prepared by BBC Consulting Planners dated September 2018
<b>RL</b>	Reduced Level
<b>RMS</b>	NSW Roads and Maritime Services
<b>Sensitive receivers</b>	A location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreational area
<b>Site</b>	The land defined in Appendix 1
<b>Site Auditor</b>	As defined in section 4 of the <i>Contaminated Land Management Act 1997</i>
<b>Site Audit Report</b>	As defined in section 4 of the <i>Contaminated Land Management Act 1997</i>
<b>Site Audit Statement</b>	As defined in section 4 of the <i>Contaminated Land Management Act 1997</i>
<b>TfNSW</b>	Transport for New South Wales
<b>VENM</b>	Virgin Excavated Natural Material
<b>Waste</b>	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
<b>Year</b>	A period of 12 consecutive months

## ABORIGINAL HERITAGE

### Aboriginal Cultural Heritage Management Plan (ACHMP)

- B45. Before the commencement of any clearing or construction works, the Applicant must prepare an ACHMP for the development to protect and manage middens and other Aboriginal artefacts on the site. The plan must form part of the CEMP required by Condition C2 and must:
- (a) be prepared by a suitably qualified and experienced expert in consultation with the Registered Aboriginal Parties;
  - (b) be submitted to the satisfaction of the Planning Secretary prior to construction of any part of the development; and
  - (c) describe the measures to protect middens and other Aboriginal artefacts on the site in perpetuity.
- B46. The Applicant must:
- (a) not commence construction until the Aboriginal Cultural Heritage Management Plan is approved by the Planning Secretary; and
  - (b) implement the most recent version of the Aboriginal Cultural Heritage Management Plan approved by the Planning Secretary for the duration of the development.

### Unexpected Finds Protocol

- B47. If any item or object of Aboriginal heritage significance is identified on site:
- (a) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately;
  - (b) a 10 m wide buffer area around the suspected item or object must be cordoned off; and
  - (c) the OEH must be contacted immediately.
- B48. Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974*.

## HISTORIC HERITAGE

### Unexpected Finds Protocol

- B49. If any archaeological relics are uncovered during the course of the work, then all works must cease immediately in that area. Unexpected finds must be recorded and evaluated and a proposal for the treatment of the remains submitted to the satisfaction of the Planning Secretary.

## AIR QUALITY

### Dust Minimisation

- B50. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.
- B51. During construction, the Applicant must ensure that:
- (a) exposed surfaces and stockpiles are suppressed by regular watering;
  - (b) all trucks entering or leaving the site with loads have their loads covered;
  - (c) trucks associated with the development do not track dirt onto the public road network;
  - (d) public roads used by these trucks are kept clean; and
  - (e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.

## NOISE

### Hours of Work

- B52. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.

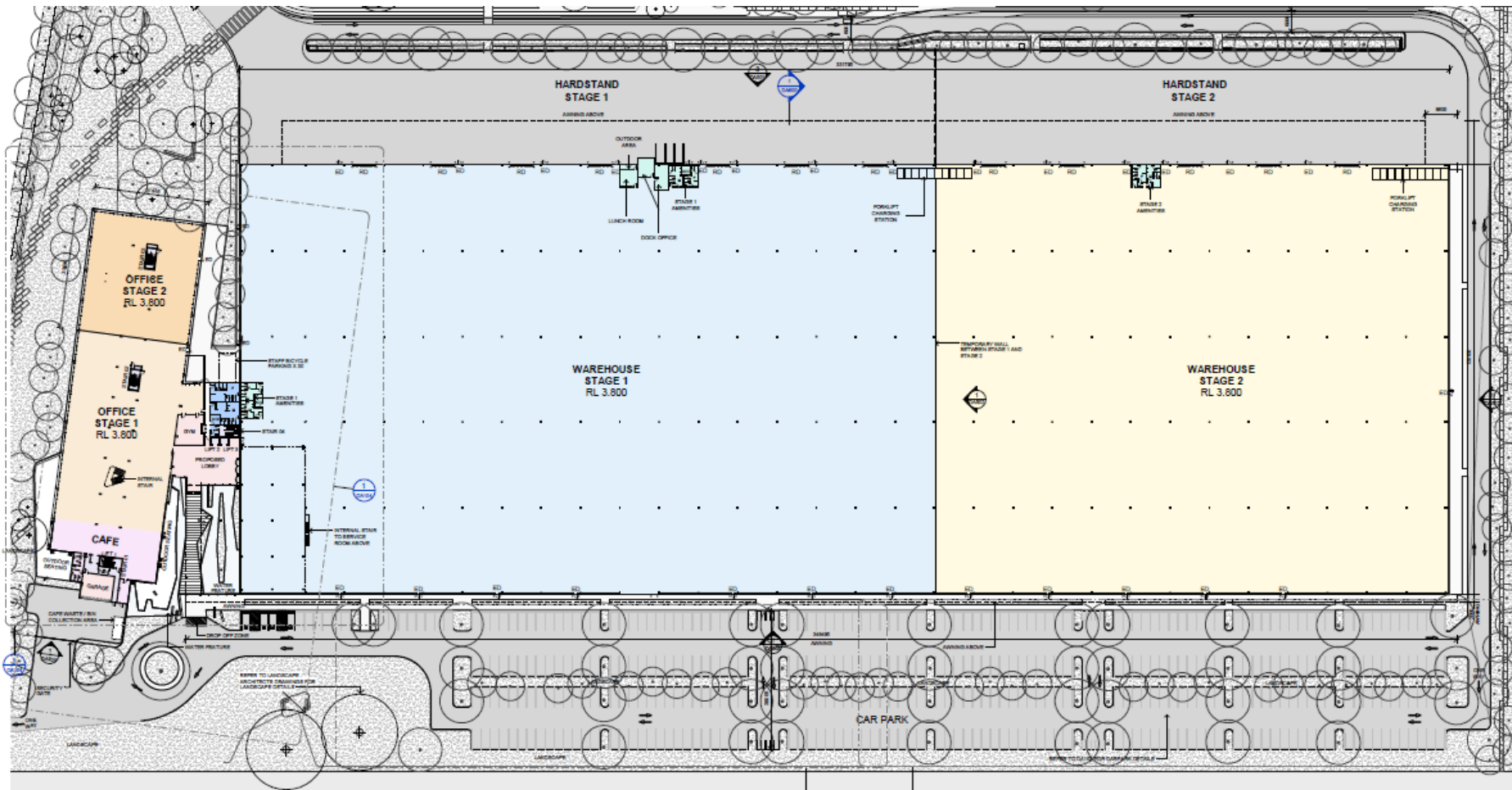
**Table 1** Hours of Work

Activity	Day	Time
Earthworks and construction	Monday – Friday	7 am to 6 pm
	Saturday	8 am to 1 pm
Operation	Monday – Friday	6:00 am to 10 pm
	Saturday	6 am to 4 pm

- B53. Works outside of the hours identified in condition B52 may be undertaken in the following circumstances:
- (a) works that are inaudible at the nearest sensitive receivers;





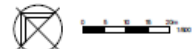


**1 GROUND FLOOR PLAN**  
SCALE 1:500

- LEGEND**
- WAREHOUSE STAGE 1
  - WAREHOUSE STAGE 2
  - OFFICE STAGE 1
  - OFFICE STAGE 2
  - CAFE INCLUDING KITCHEN AND AMENITIES
  - CORE
  - ROOFTOP SERVICES PLANTS
  - WAREHOUSE OFFICE, LUNCH ROOM AND AMENITIES
  - OFFICE WC AMENITIES INCLUDING END OF TRIP FACILITY AT GROUND LEVEL
  - GARAGE, GYM, LOBBY

**DEVELOPMENT APPLICATION**

**WMK**  
 WMK Architecture  
 G2 354 Kent Street  
 Sydney NSW 2000  
 Telephone: 61 2 9221 0400  
 Fax: 61 2 9221 0402  
 Email: info@wmk.com.au  
 www.wmk.com.au



Issue	Description	Date	Client
A	ISSUED FOR DEVELOPMENT APPROVAL	03.05.18	DICKER DATA PTY LTD

**DICKER DATA**

**Project:** DICKER DATA  
 238-258 CAPTAIN COOK DRIVE,  
 KURNELL, NSW 2231

**Title:** GROUND FLOOR PLAN

Drawing No.	Issue
DA1930	A
Scale	Drawing Size
1:500@A1	A1
Project No.	Drawn By
16202	AC
CAD Reference	
16202	

Dimensional Drawings to take precedence over reality. Contractor to verify all dimensions on site before construction. All measurements to line reported to the architect are absolute. The client and its contractors remain the copyright of WMK Architecture Pty Ltd ©

**Figure 2: Ground Floor Plan**

## **Attachment B:**

### **Aboriginal Community Correspondence**

17 June 2019

Dr Paul Irish  
Director  
Coast History and Heritage  
7 Mitchell St,  
ARNCLIFFE NSW 2205

Email: [paul@coasthistory.com.au](mailto:paul@coasthistory.com.au)

## LA PEROUSE



LOCAL ABORIGINAL LAND COUNCIL

PO Box 365, Matraville  
New South Wales, 2036

T: (02) 9311 4282

E: [admin@laperouse.org.au](mailto:admin@laperouse.org.au)

ABN: 89 136 607 167

Dear Dr Irish

### **Draft Aboriginal Cultural Heritage Management Plan – 238 – 258 Captain Cook Drive, Kurnell**

I write in regards to the above mentioned management plan dated May 2019. I have reviewed the management plan and provide the following information and recommendations on behalf of the La Perouse Local Aboriginal Land Council (**La Perouse LALC**).

As you may be aware, the La Perouse LALC was established and operates within the provisions of the *Aboriginal Land Rights Act 1983* (NSW) (**ALRA**) and currently represents a membership of 470 Aboriginal persons who reside within or have an association with the La Perouse LALC area. In accordance with Section 52 of the ALRA the La Perouse LALC has a statutory function to “*take action to protect the culture and heritage of Aboriginal persons in the Council’s area*”.

The La Perouse LALC acknowledges and recognises the Gweagal people Dharawal (Tharawal, Turuwal or Thirroul) language group who traditionally occupied the Kurnell Peninsula in which the subject property is located.

Following the review of the management report, I can provide the following recommendations:

#### **Recommendation 1:**

The La Perouse LALC supports the Aboriginal Cultural Heritage Management Plan as prepared by Coast History & Heritage.

If you would like to discuss this issue further please don't hesitate to contact the La Perouse LALC office on 9311 4282 during business hours.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Chris Ingrey'. The signature is fluid and cursive.

Chris Ingrey  
**Chief Executive Officer**



**DARUG LAND  
OBSERVATIONS PTY LTD  
ABN 27 602 765 453**

---

EMAIL: DARUGLANDOBSERVATIONS@GMAIL.COM  
PO BOX 173 ULLADULLA NSW 2539  
MOBILE: 0413 687 279

17<sup>th</sup> June, 2019

Paul Irish  
Coast History & Heritage  
PO BOX A74  
ARNCLIFFE NSW 2205

Email: admin@coasthistory.com.au

Dear Paul,

**RE: 238-258 CAPTAIN COOK DRIVE, KURNELL**

Aboriginal Cultural Heritage Management Plan

Darug Land Observations Pty Ltd (DLO) has reviewed the draft Aboriginal Cultural Heritage Management Plan, and supports the methodology for the proposed redevelopment of Lot 1 DP 225973 and Lot 2 DP1088703 as a warehouse and distribution centre, located at 238-258 Captain Cook Drive, Kurnell.

In relation to the long-term storage of recovered artefacts, if any, we agree with any recovered artefacts to be transferred to the custodianship of the La Perouse Local Aboriginal Land Council.

Furthermore, we would like to be involved in the field survey, archaeological test excavations and/or any other forms of works to be carried out on the site.

Look forward to working with you on this project.

Yours sincerely,

Jamie Workman  
Darug Land Observations Pty Ltd

Uncle Gordon Workman  
Darug Elder



**Attachment C:**

**MDCA 2018 Aboriginal Cultural Heritage Assessment Report**

# ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT



[SQUARE TRC SQ1 DURING EXCAVATION]

**238 – 258 CAPTAIN COOK DRIVE  
KURNELL, NSW**

**SUTHERLAND LGA**

**Mary Dallas Consulting Archaeologists**

**March 2018**

**Report to Dicker Data Pty Ltd**



## Plain English Summary

This is a summary of an Aboriginal cultural heritage assessment undertaken in relation to a proposed industrial development at 238-258 Captain Cook Drive Kurnell. It describes what was found during an Aboriginal archaeological dig conducted within this property in 2014 by MDCA [Mary Dallas Consulting Archaeologists] and the La Perouse Local Aboriginal Land Council. This will help to explain what we did and what we found, and what is now proposed. This report is an updated version of an earlier report in 2014. That report was done at the time the property was being rezoned to allow industrial development. At that time, there was no specific development proposed like there is now. The report on those investigations was provided to all of the Registered Aboriginal Parties who had registered an interest in the project. A draft of the current report was also provided to all of these Registered Aboriginal Parties for their comments.

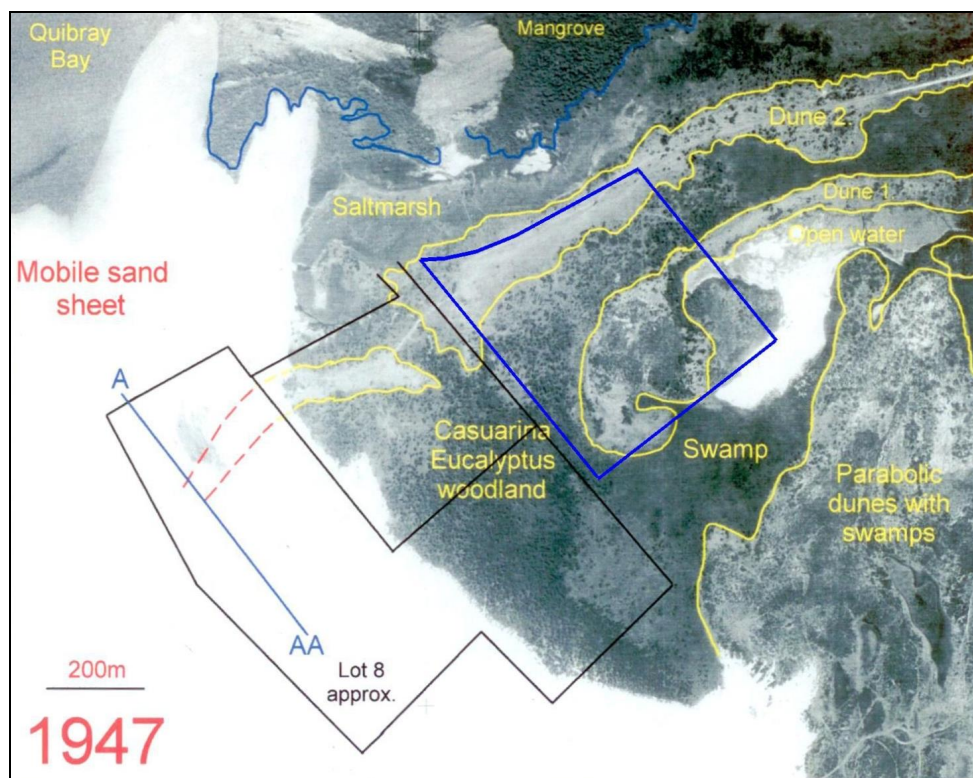


**The property (shaded blue) on the Kurnell Peninsula.**



## What We Did and Why

Initial work was done in 2014 because of a plan to subdivide the property for light industrial purposes, like a number of nearby properties along Captain Cook Drive. At that time, there was a concept plan for subdivision but no actual proposal for development. The property was previously the site of the Abbotts Pharmaceuticals factory, and contained several large buildings, roads and other structures. When the factory was built in the 1960s, about a metre of sand was spread across the site to make it level for the factory buildings and roads. Underneath this though, we thought the original shoreline of Botany Bay might survive. We know from elsewhere along this shoreline that it can contain shell middens and other traces of how Aboriginal people used the area in the past. So we applied for a permit to dig on the property and see what was there.



This is the property (blue outline) as it was in 1947 before sand was dumped on top. The dune nearest to Quibray Bay is the one which contains middens elsewhere on the along the Kurnell Peninsula.





In March 2014, archaeologists from MDCA and the La Perouse Local Aboriginal Land Council supervised the digging of trenches like this one across the property to go below the surface and see what was underneath.



## What We Found

We found that most of the property had been quite heavily disturbed during the construction of the Abbots factory in the 1960s. But along the front of the property we found that the old shoreline of Quibray Bay still survived.



As this photo shows, the old shoreline dune is a quite obvious black sand layer sitting underneath the pale yellow sand that was dumped across the property in the 1960s.

So we then did some digging by hand into the dune to see if it contained any midden or artefacts.



We dug through the old dune from top to bottom and sieved everything we dug to see if it contained any artefacts or shell.

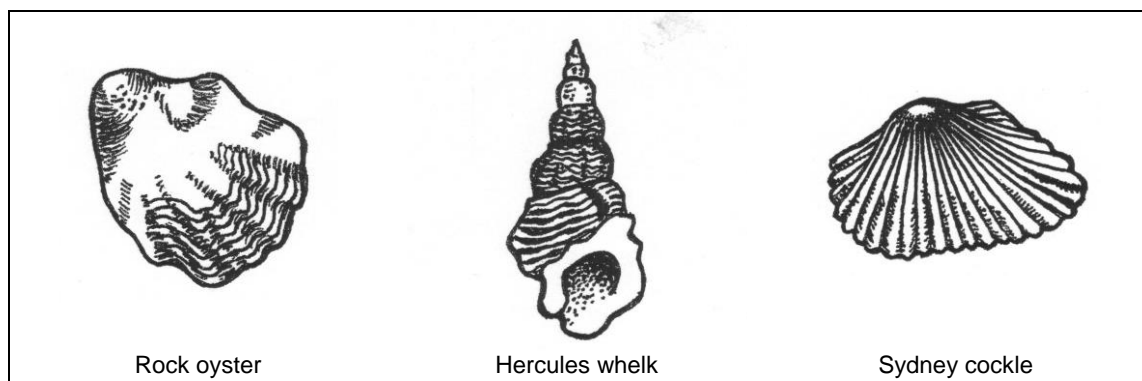
It generally looked like this, with the dark 'topsoil' at the top, and then lighter sand down to groundwater. Shell and artefacts were generally only in the dark top layer.

We found a small amount of midden in one pit near the corner of the site, and about 40 stone artefacts across several other pits. This midden appears to have been in use around 500 years ago. We also found several small pieces of ochre in one pit.

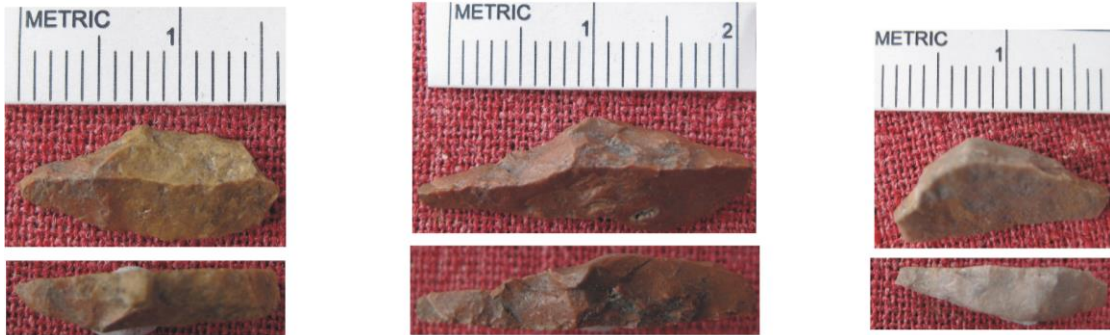


Considering how much was dug, we did not find a lot. The dune is in pretty good condition, so we don't think that artefacts and midden have been destroyed in the past. We think that this part of the shoreline was not used as much as some other parts.

Even so, we can tell that Aboriginal people collected cockles and whelks from the nearby mangroves, plus the odd oyster, and ate them at the site.

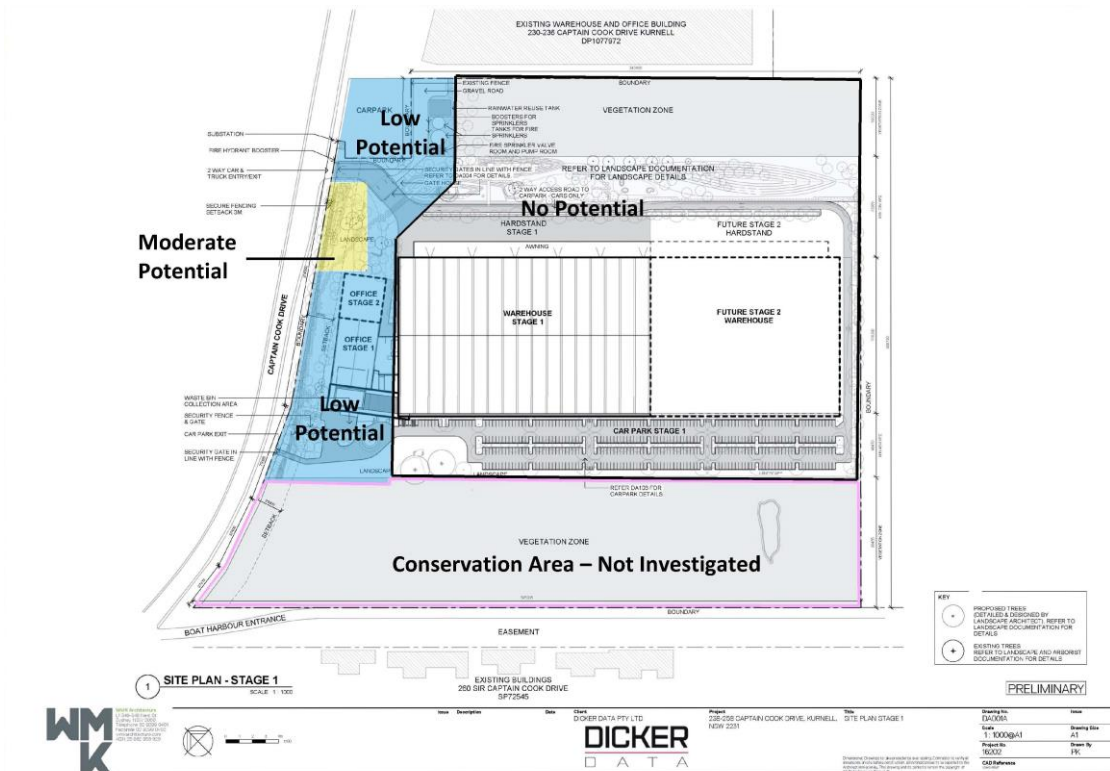


They also used, and made stone artefacts like these spear points.



## What Happens Now?

After the 2014 dig, we divided the property into different areas, according to what was found. If we compare these areas to the current proposed subdivision, this is how it looks:



This is the archaeological potential compared to the current proposal. The next page explains what this means.

- The yellow shaded area called 'Moderate Potential' is where the midden and almost all of the shell fragments and artefacts were found, between





0.5m and 1.2m below the current ground surface. These Aboriginal cultural remains will be preserved under this proposal. The only impacts proposed in this area are on the surface and will not impact the underlying dune. This includes replanting the area with appropriate native trees and other vegetation, the installation of an earth mound along the front of the property in this area to create the entrance signage for the property, and a possible footpath that will be installed by building up the existing surface.

- The blue shaded area called 'Low Potential' also contains the buried dune around 1.0m to 1.2m below the current surface. Occasional stone artefacts and shell fragments were found in some pits across this area. As the dune sits across the front of the property, it will be necessary to impact some portions of this area for access to the property, and to connect to electricity and water, as well as to manage waste and water within the property. An office building is also proposed to be built in this area. We are recommending that where any impacts require excavation below 0.5m under the current surface, they will need to be monitored. If the buried dune is uncovered and any midden layer is observed, this will be subject to salvage excavation. If safe to do so, isolated artefacts or shells observed may be collected without further excavation. We have also made clear instructions about what to do if human remains are discovered. You can read the recommendations and methods in more detail towards the end of the main report.
- The black outlined area called 'No Potential' does not contain any Aboriginal sites and can be developed without any further investigation.
- The pink area is existing vegetation which will be retained and will not be developed. We did not investigate within this area to conserve the vegetation.

Based on the recommendations of the 2014 dig, the La Perouse Local Aboriginal Land Council were given Care of the artefacts found at that time.



We are proposing that the La Perouse Local Aboriginal Land Council would also have Care of any other Aboriginal archaeological remains that may be uncovered or excavated during the monitoring recommended for the 'Low Potential' area.

Approval for the current development proposal is being sought under the 'State Significant Site' planning process, which does not require Aboriginal Heritage Impact Permits to be sought under s90 of the *National Parks & Wildlife Act* 1974. But you can see in this report how we have recommended the same works that would have been done under an Aboriginal Heritage Impact Permit. These works will become a condition of the development being approved and will need to be carried out.



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## 1.0

# Project Overview

### 1.1 Introduction

This Aboriginal Cultural Heritage Assessment ('ACHA') report has been prepared by MDCA [Mary Dallas Consulting Archaeologists] at the request of Dicker Data Pty Limited. It has been prepared in relation to a proposal to construct a data distribution warehouse and distribution centre within 238-258 Captain Cook Drive, Kurnell (Lot 2 DP 108873 and Lot 1 DP DP225973). The proposal is to be assessed as a State Significant Development (SSD 8662) under Part 4 (Division 4.1) of the *Environmental Planning & Assessment Act* (1979). As such, Secretary's Environmental Assessment Requirements (SEARs) have been issued under Section 78A(8A) of the EPA & Act which require 'an Aboriginal heritage assessment' in accordance with the OEH 2011 *Guide to investigation, assessing and reporting on Aboriginal Cultural Heritage in NSW* and the OEH 2010 *Aboriginal cultural heritage consultation requirements for proponents 2010*.

As substantial work, including a detailed program of archaeological test excavations had already been undertaken in accordance with these documents, it was considered appropriate to update previous reporting to specifically address the current proposal, and to provide this to all Registered Aboriginal Parties to the earlier investigations for comment. Specifically, this report updates a previous ACHA prepared by MDCA in 2014 for Aboriginal archaeological test excavations within 238-258 Captain Cook Drive which were completed under an Aboriginal Heritage Impact Permit (AHIP) under s90 of the National Parks & Wildlife Act (1974) (AHIP#C0000219 issued on 19/2/2014; see **Appendix B**). It incorporates the findings and recommendations from these Aboriginal archaeological investigations into an assessment and proposed suite of Aboriginal heritage management procedures in relation to the current light industrial development proposal.

The report has been prepared to meet the reporting requirements outlined in the *National Parks and Wildlife Regulation 2010* and relevant policy documents of the Office of Environment & Heritage, specifically the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) and the *Aboriginal cultural heritage consultation requirements for proponents 2010. Part 6 National Parks & Wildlife Act 1974* (2010). MDCA has also undertaken an historical archaeological assessment of the property to address SEARS requirements for the current proposal. That assessment has no implications for the current report, and is documented separately (see MDCA 2018).

The current report includes:

- A plain English summary report (**start of report**)
- A description of the subject land and current proposal (**Section 1**)
- Details of the Aboriginal cultural assessment undertaken (**Section 2**)
- Details of the Aboriginal archaeological assessment undertaken (**Section 3**)
- A discussion of the methods and results of the archaeological investigations (**Section 4**)



- A discussion of potential impacts and management strategies (**Section 5**)
- A set of management recommendations (**Section 6**)
- References used in the current report (**Section 7**)
- Aboriginal community consultation records (**Appendix A**)
- Aboriginal Heritage Impact Permit (**Appendix B**)
- Aboriginal archaeological investigations records (**Appendix C**)
- Radiometric dating records (**Appendix D**)

## **1.2 Report Authorship**

This report has been prepared by Dr Paul Irish (MDCA Principal Consultant and Historian). It updates an earlier 2014 report authored by Paul Irish, Mary Dallas (MDCA Principal Consultant) and Tamika Goward (MDCA Archaeologist). Stone artefact analysis was undertaken by Emeritus Professor Richard Wright, and shell analysis by Tamika Goward and Paul Irish.

## **1.3 Site Identification**

The subject land is located on the southern side of Captain Cook Drive about 500m west of its intersection with Sir Joseph Banks Drive on the Kurnell Peninsula in southern Sydney. It is located about five kilometres northeast of Cronulla, and is known as 238-258 Captain Cook Drive (Lot 1 DP225973 and Lot 2 DP1088703). The subject land is approximately 17 hectares in size and is bounded to the west by an existing light industrial subdivision at Lot 6 Captain Cook Drive, to the south by a timbered buffer zone to the desalination plant complex to the south, and to the east by another light industrial subdivision (**Figures 1 and 2**). North of Captain Cook Drive are wetlands associated with Quibray Bay.





Figure 1. The general location of the subject land (blue shading).

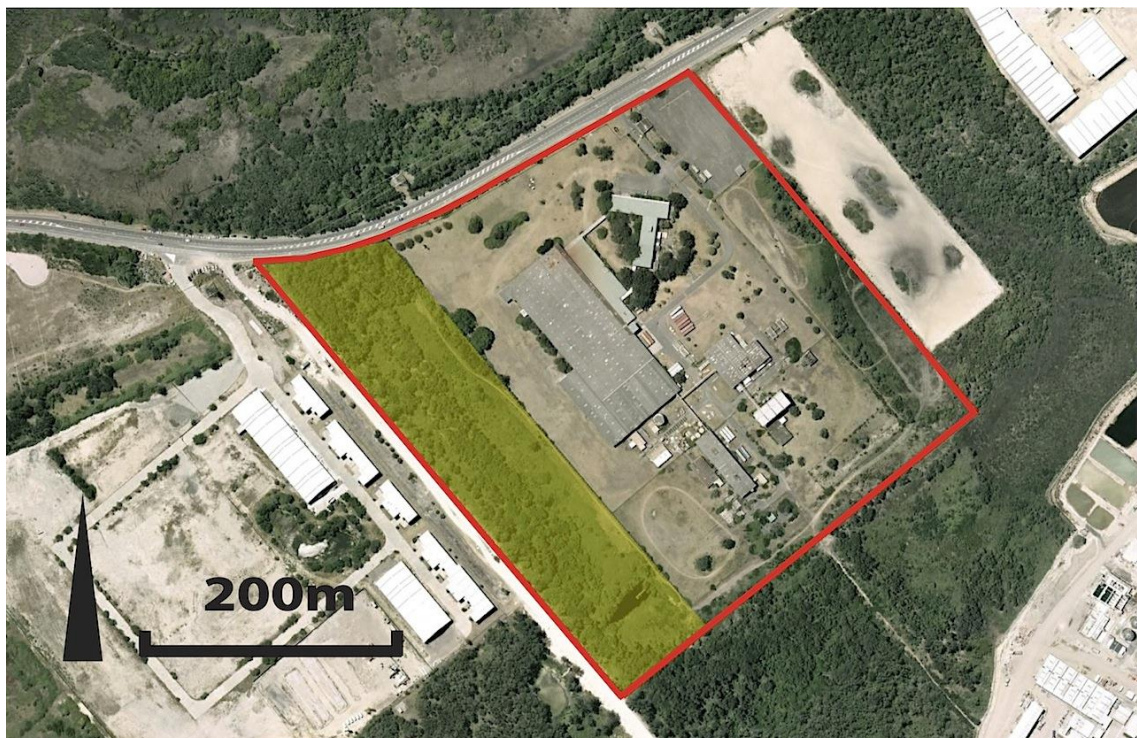


Figure 2. Aerial view of the subject land.

[Note yellow shading denotes area of natural vegetation that is not proposed for development].







The subject land currently comprises the sites of several recently demolished warehouse and office buildings constructed on concrete pads, along with surviving internal roadways and electrical and water services. These features date to the use of the land as the Abbott Pharmaceuticals production facility from the 1960s to 2003. Since the closure of that facility, no additional construction has taken place on the subject land. Until demolition several of the buildings were used for storage, and the northern and western grassed portions of the subject land were used for horse agistment. Along the western edge of the subject land is a timbered area adjacent to a channel excavated in the early 1960s to drain the swamps within and further south of the subject land. This area is approximately 90m wide and 450m (north-south) and is not proposed to be impacted under the current proposal (see **Figure 2 & Figure 3**).

## 1.4 Reason for the Current Study

### 1.4.1 Proposed Development

The subject land is currently proposed for development as a data distribution warehouse and distribution centre as shown in **Figure 3**. This will involve the staged construction of a warehouse-distribution facility (39,870 m<sup>2</sup>) with ancillary office space (6,916 m<sup>2</sup>) as well as car parking, utilities and landscaping (see also **Figures 37 – 40**). The results of previous Aboriginal heritage investigations documented in MDCA have been used to minimise the potential impacts of this proposal on known and potential Aboriginal heritage. These potential impacts are described and considered in detail in **Section 6.0**, and include the installation of office buildings, an electrical substation and stormwater management infrastructure, as well as buried electrical and water services and landscaping.

### 1.4.2 Legislative & Policy Requirements

The *National Parks & Wildlife Act* (1974), administered by the *Office of Environment & Heritage* (OEH), provides statutory protection for all Aboriginal ‘objects’ and ‘places’ where an object is defined 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, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains”* [Section 5(1)]

An Aboriginal place must be declared under Section 84 of the Act and be a place that:

*in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture, to be an Aboriginal place for the purposes of this Act.”* [Section 84].

Amendments to the NPW Act in 2010 have retained an offence to knowingly *harm* an Aboriginal object [s86(1)] but greatly increased penalties for such offences. The amendments have also introduced a strict liability offence for any *harm* (i.e. knowingly or unknowingly) to Aboriginal objects [s86(2)] or Aboriginal places [s86(4)] without a valid and applicable Aboriginal Heritage Impact Permit under Section 90 of the Act. *Harm* is defined as:



“any act or omission that:

- (a) destroys, defaces or damages the 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)” [Section 5(1)]

It is a defence to the strict liability offence of harm to an Aboriginal object under s86(2) if a process of Due Diligence was followed which reasonably determined that the proposed activity would not harm an Aboriginal object [S87(2)]. Due Diligence assessment can take a number of forms, including a generic process developed by the OEH (as described in DECCW 2010a) or one of an equivalent standard. An exemption is also provided for ‘low impact activities’ which result in unknowing damage to an Aboriginal object, including a range of common farm and track maintenance activities.

Impacts to Aboriginal objects generally require an Aboriginal Heritage Impact Permit (AHIP), applications for which must be accompanied by an Aboriginal Cultural Heritage Assessment report. An exception is impacts proposed through projects assessed as State Significant Development, where an AHIP is not required (see below). In general however, the same level of assessment and documentation are required for most of these projects, and methodologies for investigations such as archaeological excavation follow the same guidelines and regulations. In particular:

- The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (OEH 2010b) sets out the requirements for Aboriginal heritage investigations and reporting, including the required format and contents of Aboriginal Cultural Heritage Assessment reports which must accompany all AHIP applications.
- S80C of the *National Parks and Wildlife Regulation 2009* [‘the Regulation’], as detailed further in the *Aboriginal cultural heritage consultation requirements for proponents 2010. Part 6 National Parks & Wildlife Act 1974* (OEH 2010c), sets out the legislated requirements for Aboriginal community consultation in relation to AHIP applications, which must be fully documented in the Aboriginal Cultural Heritage Assessment reports accompanying any such applications. The consultation process includes placing a public advertisement to seek expressions of interest in the project (or more precisely the AHIP to be sought) as well as directly notifying Local Aboriginal Land Councils and government agencies dealing with Aboriginal communities in the area. People or organisations can register as “Registered Aboriginal Parties” which provides them with a right to review and comment on aspects of AHIP applications, and to provide advice on Aboriginal cultural and historical significance.

Although the current development proposal is to be assessed as a State Significant Site proposal, the initial Aboriginal archaeological test excavations were undertaken under a s90 AHIP under the *National Parks & Wildlife Act 1974* and in full compliance with the 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (OEH 2010c).



The way in which Aboriginal heritage is managed with respect to proposed development impacts is set out in the provisions of the *Environmental Planning & Assessment Act 1979* (the **EP&A Act**). The EP&A Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part III which governs the preparation of planning instruments, Part IV which relates to development assessment process and Part V which relates to activity approvals by governing (determining) authorities.

Part IV is of most relevance to the current project, and deals with the process of obtaining development consent, including the requirement for documentation of an assessment of potential development impacts in certain cases. Under Part 4 (Division 4.1) of the EP&A Act, projects can be deemed to be of State Significance. In these cases, the Department of Planning & Infrastructure takes over the role of the determining authority from Council. Importantly, projects assessed as State Significant Developments (SSD) do not require Aboriginal heritage impact approvals under the NPW Act but do require a process of investigation broadly parallel to that under the Act, as generally set out in the Secretary's Environmental Assessment Requirements (SEARs) for each SSD project.

In summary, the implications of the provisions of the NPW Act and EP&A Act for the current project are as follows:

- As a State Significant Development, an investigation of Aboriginal cultural heritage values must be undertaken to inform the Environmental Impact Assessment of the proposal.
- While impacts to Aboriginal objects in the context of State Significant Developments do not require approval under s90 of the NPW Act, similar processes of archaeological assessment and Aboriginal community consultation are required to be undertaken and documented, and impacts to Aboriginal objects should be avoided where possible.

## **1.5 Methods Used**

The current study documents the Aboriginal heritage assessment of the subject land and proposed impacts, and includes full documentation of a prescribed process of Aboriginal community consultation in accordance with current OEH guidelines (OEH 2010c) and in fulfilment of the SEARS for the current proposal.



## 2.0

## Aboriginal Cultural Assessment

Consultation with the local Aboriginal community was undertaken in order to document the Aboriginal cultural significance of the subject land in relation to which an AHIP is currently proposed. This section documents that consultation, which was undertaken in accordance with the requirements of the *National Parks and Wildlife Regulation 2009* (s80C) [‘the Regulation’]. It was initiated in 2013 in relation to an earlier proposal and archaeological test excavations, and has been continued in relation to the current assessment, as outlined below.

### 2.1 Aboriginal Community Consultation

#### 2.1.1 Public and Direct Notices

The OEH Aboriginal consultation process does not prescribe the automatic registration of Registered Native Title Claimants or Local Aboriginal Land Councils, however MDCA notes that the latter have a statutory responsibility “to promote the protection of Aboriginal culture and the heritage of Aboriginal persons”<sup>1</sup> within their boundaries. As such, the La Perouse Local Aboriginal Land Council (LPLALC), within whose administrative boundaries the subject land is situated, was automatically listed as a Registered Aboriginal Party for the project. There are no current active claims under the Native Title Act 1993 [Commonwealth] on or in proximity to the subject land, and there are no relevant claimant groups who have passed the Native Title Registration Test.

A public notice seeking registrations of interest in the project was lodged in the St George and Sutherland Shire Leader on 17/9/13 giving a date of 2/10/2013 for responses (**Appendix A1**). Responses to the public notice are documented in **Appendix A1**. At the same time (16/9/2013) direct notices were sent to the agencies listed below (**Table 1**) to seek details of potential further Aboriginal parties to contact in relation to registrations of interest (see sample in **Appendix A1**). The responses received (**Appendix A1**) led to follow up letters being sent to the organisations listed in **Table 2**, enquiring whether they were interested in registering an interest in the project (see sample in **Appendix A1**). Based on responses from the public notice and direct notifications, Gordon Workman of Darug Land Observations (DLO) and Scott Franks of Tocomwall Pty Ltd were also listed as Registered Aboriginal Parties.

**Table 1. Direct Agency Notices sent 16/9/2013**

Agency	Response Deadline	Response Received?	Additional Contacts to those already Registered
Hawkesbury-Nepean CMA	2/10/2013	25/9/2013	The CMA stated that they had no interest in this project, but advised that they would pass the letter on to their Aboriginal Advisory Committee for their reference.
NNTT	2/10/2013	23/9/2013	No

<sup>1</sup> Aboriginal Land Rights Act 1983, s52(1)(m).



NTSCORP	2/10/2013	18/9/2013	No but details would be forwarded to any individuals, groups and organisations whom NTSCORP is aware assert traditional interests within or hold cultural knowledge about the relevant area.
Sutherland Shire Council	2/10/2013	13/3/2012	Yes – Deanna Schreiber (Aboriginal Children’s Advancement Society), Frank Gorrel (Kurrulla Aboriginal Corporation), Bruce Howell, Max Harrison, June Riemer, Yvonne Simms, Barbara Simms Keeley and Les Bursill
OEH	2/10/2013	24/9/13	Yes- Yvonne Simms (La Perouse Botany Bay Aboriginal Corporation ), Norma Simms, Scott Franks (Tocomwall) and Ken Foster.
NSW Department of Aboriginal Affairs	2/10/2013	Yes- not dated	No
La Perouse LALC	2/10/2013	No	No

**Table 2. Direct Community Notices.**

Community group	Date of Letter	Response Deadline	Response Received?	Seeking Registration?
Deanna Schreiber	26/9/2013	11/10/2013	No	No
Frank Gorrel	26/9/2013	11/10/2013	No	No
Bruce Howell	26/9/2013	11/10/2013	No	No
Max Harrison	26/9/2013	11/10/2013	No	No
June Riemer	26/9/2013	11/10/2013	No	No
Yvonne Simms	26/9/2013	11/10/2013	No	No
Barbara Simms Keeley	26/9/2013	11/10/2013	No	No
Les Bursill	27/9/2013	11/10/2013	No	No
Scott Franks	2/10/2013	17/10/2013	Yes	Yes
Ken Foster	2/10/2013	17/10/2013	No	No

### 2.1.1 Registered Aboriginal Parties

On the basis of the notification process above, the following Aboriginal organisations were listed as Registered Aboriginal Parties and details of these organisations were sent to the OEH and La Perouse LALC as required by the *Regulation (80C[5b])* on 22/10/13.

**Table 3. Registered Aboriginal Parties**

Name	Abbreviation Used in this Report
La Perouse LALC	LPLALC
Gordon Workman (Darug Land Observations)	DLO
Scott Franks (Tocomwall Pty Ltd)	Tocomwall





### 2.1.2 Project Information and Comment on Methodology

All Registered Aboriginal Parties were sent project information and a proposed assessment methodology on 17/10/13 with a deadline of 15/11/13 for responses (see **Appendix A2**). Specifically, all Registered Aboriginal Parties were requested to provide comment on:

- the proposed assessment methodology (including the proposal to undertake archaeological test excavations under an AHIP).
- any objects or places of cultural value to Aboriginal people which may be located within the current subject land, and any other Aboriginal cultural or historical information relevant to the current assessment and proposal.
- Aboriginal cultural knowledge relating to the subject land.
- the proposed management of any Aboriginal archaeological remains recovered during the proposed subsurface Aboriginal archaeological investigations a s90 AHIP.

In addition, Registered Aboriginal Parties were requested to inform MDCA of any information of a culturally sensitive nature so that appropriate protocols of access could be developed. No comments were received from Registered Aboriginal Parties.

### 2.1.3 Comment on 2013 Draft ACHA Report

The draft Aboriginal Cultural Heritage Assessment Report was also sent to all Registered Aboriginal Parties for comment on 20/11/13 with a deadline of 19/12/13 for responses (see **Appendix A3**). Specifically, all Registered Aboriginal Parties were requested to provide comment on:

- their views on the draft recommendations
- their support or otherwise for the proposed AHIP
- Any other views or information relating to the Aboriginal Cultural Heritage Assessment parties believed should be considered in relation to the proposed AHIP application.

The comments received are shown in **Table 5** and are included in **Appendix A3**:

**Table 4. Responses to 2013 Draft ACHA Report**

Registered Aboriginal Party	Response
LPLALC	Supported the draft recommendations
DLO	Supported the draft recommendations
Tocomwall	No response

### 2.1.4 Comment on the 2014 Draft ACHA Report

All Registered Aboriginal Parties were sent a copy of AHIP #C0000219 via post prior to the commencement of the archaeological investigations within the subject land. On completion of the archaeological investigations, a draft version of the current report was prepared by MDCA and circulated to all Registered Aboriginal Parties to the project. This draft report was sent to



all Registered Aboriginal Parties for comment on 11/6/14 with a deadline of 11/7/14 for responses (see **Appendix A4**). Specifically, all Registered Aboriginal Parties were requested to provide comment on:

- their views on the draft recommendations
- Any other views or information relating to the Aboriginal Cultural Heritage Assessment parties believed should be considered in relation to the current report.

The comments received are shown in **Table 5** and included in **Appendix A4**:

**Table 5. Responses to the 2014 Draft ACHA Report**

Registered Aboriginal Party	Response
LPLALC	Written response endorsing the recommendations of the draft report and seeking Care and Control of artefacts retrieved during the archaeological test excavations.
DLO	No response
Tocomwall	Responded via email 13/6/14 (CC'd to OEH archaeologist Fran Scully) to object to the running of the Aboriginal community consultation process on the grounds that Tocomwall Pty Ltd was not engaged by the proponent for paid fieldwork on the archaeological test excavations (see attached). No comments were received about the subject land, its Aboriginal heritage values or the recommendations of the report in this response or any previous responses. With respect to the adequacy of the consultation undertaken, the records summarised above and provided in Appendix A demonstrate that all relevant and applicable procedures were followed in the preparation of the 2014 report.

### **2.1.5 Comment on 2018 Draft ACHA Report**

The current draft Aboriginal Cultural Heritage Assessment Report was also sent to all Registered Aboriginal Parties for comment on 20/2/18 with a deadline of 23/3/18 for responses (see **Appendix A5**). Specifically, all Registered Aboriginal Parties were requested to provide comment on:

- their views on the draft recommendations
- their support or otherwise for the proposed AHIP
- Any other views or information relating to the Aboriginal Cultural Heritage Assessment parties believed should be considered in relation to the proposed AHIP application.

The comments received are shown in **Table 6** and are included in **Appendix A5**.

The LPLALC fully supports the recommendations of the current report to protect the most significant portions of Aboriginal heritage sites within the property and provide appropriate precautionary measures for other areas. DLO also supported the recommendations of the report.

Tocomwall responded by rejecting the recommendations of the draft report on the basis that anthropological research was not undertaken as part of the assessment, referring to p5 of the OEH 2010 *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* which states that



'The investigation and assessment of Aboriginal cultural heritage should make use of all relevant disciplines. The assessment of cultural significance is more than a component of an archaeological assessment or investigation. It cannot be assumed that any one practitioner will have the full range of skills required to investigate and assess cultural significance and harm. During this task it may be necessary to engage additional practitioners with special expertise.'

We note that the quoted passage is derived from a guide rather than requirement specified in a Code of Practice, Regulation or formal policy, and it will be up to the determining authority for the current proposal to assess whether sufficient investigation has been undertaken to support the recommendations of this report. Notwithstanding this, we point out that the lead author of the current report Dr Paul Irish is both a qualified historian and archaeologist and has extensively researched Aboriginal associations with the Kurnell Peninsula as part of ongoing collaborative research with researchers from the La Perouse Aboriginal community over the past decade. It is our considered opinion that all relevant investigations have been undertaken in relation to the current project and proposal.

**Table 6. Responses to 2017 Draft ACHA Report**

Registered Aboriginal Party	Response
LPLALC	Fully supports the report recommendations and notes the high significance of Aboriginal heritage in the Kurnell area
DLO	Supports the report recommendations
Tocomwall	Responded rejecting the recommendations of the draft report on the basis that anthropological research was not undertaken as part of the assessment with reference to the OEH 2010 <i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i>

## **2.2 Aboriginal Cultural Significance within the Subject Lands**

Specific information about the Aboriginal cultural or historical significance of the subject lands has been provided in earlier versions of the current report. In particular it is noted that the La Perouse Local Aboriginal Land Council identifies the Kurnell area generally as being “of great significance to the Aboriginal Community due to the past occupation of the area in both pre and post European contact periods”. The subject land is identified as being within the “traditional lands of the Gweagal clan of the Dharawal Language Group”. The La Perouse Local Aboriginal Land Council also identifies the ongoing associations of Aboriginal people from that community throughout the nineteenth century, “including employment with the local farmers and property owners”, which ensured “their continual occupation and connection to their traditional lands” (see **Appendix A3 & Appendix A4**). The Aboriginal cultural significance of the area is also clearly supported by the area’s rich archaeological and historical records. For example, ongoing Aboriginal connections to the Kurnell Peninsula have been documented in the recent book *Hidden In Plain View: The Aboriginal People of Coastal Sydney* by the current author (Irish 2017).



## 3.0

# Archaeological Assessment

### 3.1 Introduction

The Aboriginal Archaeological Assessment component of the current study is based on the requirements of the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010c). The current section describes the environmental, historical and archaeological context of the subject lands.

### 3.2 Environmental and Historical Context

Aboriginal archaeological remains in the central Kurnell area are aligned closely with landscape features that are now buried across much of the peninsula. Within the subject land, the currently visible surface is made ground underlain by graded and/or imported sandy fill on top of the remnants of former landscape features. It is therefore important to understand the environmental and historical changes that have taken place within the subject land to identify the areas which may have been used by Aboriginal people in the past, and whether traces of this use are likely to have survived. The following account is a summary of the original environment and the changes it has undergone in recent times with a particular focus on the subject land and its immediate surrounds. A more detailed account of the Kurnell Peninsula in general can be found in MDCA 2005.

#### 3.2.1 Geology, Soils and Hydrology

The subject land is set within a barrier dune system that was formed at the end of the last glacial maximum, as sea levels began to rise and Botany Bay assumed its current shape. Prior to this time, the Georges and Cooks Rivers joined in the vicinity of what is now Towra Point and flowed south through the centre of what is now the Kurnell Peninsula (Albani *et al.* 1976). This channel is now 90m below the present sea level at the centre of the peninsula. Pleistocene aged deposits will similarly be up to 90m below the present sea level. Immediately east of the subject land was a rocky peninsula that now forms the southern headland of Botany Bay. As sea levels rose, a barrier system formed and migrated northwards, eventually forming the sandy central portion of the Kurnell peninsula. These barrier sands overlie the proto Cooks-Georges River channel. The sea level reached a stand still at about 6,000 years ago, though there is some evidence for a marine transgression about 3,700 years ago during which time sea levels were temporarily higher than before or since. This probably accounts for the dating of most sites along the Kurnell foreshore to within the last few thousand years.

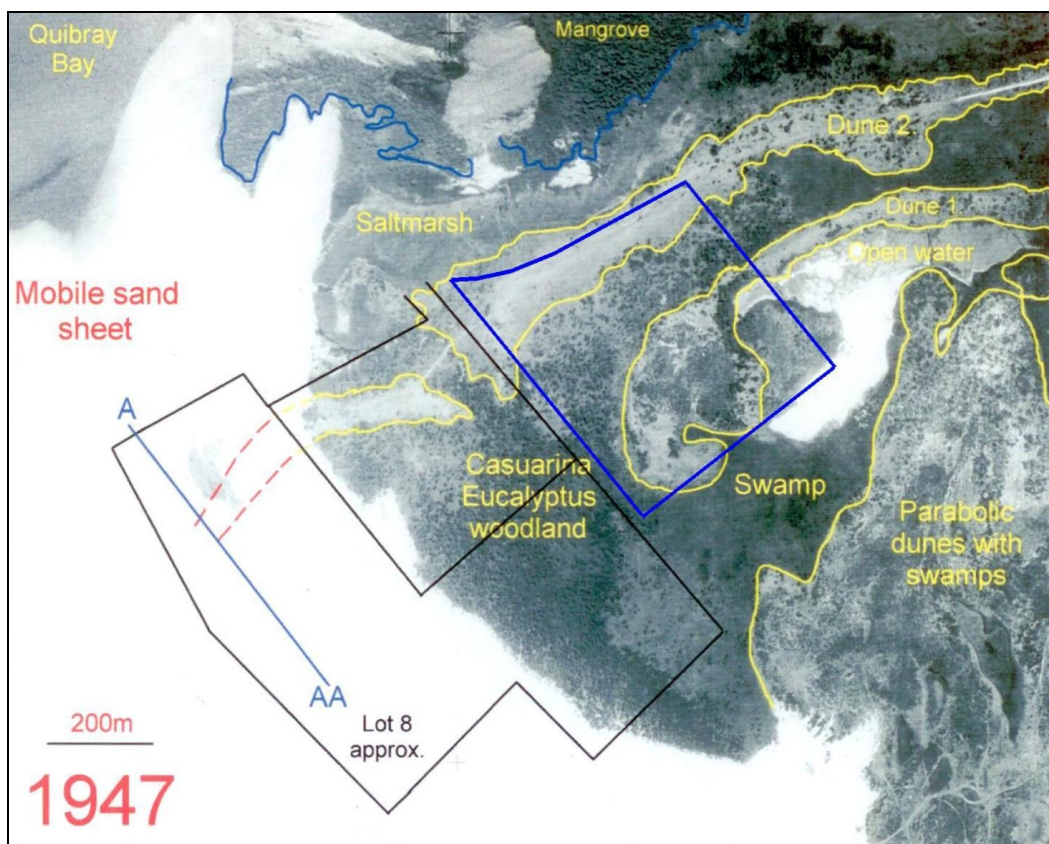
The subject land is underlain by Quaternary marine and Aeolian sands, but is also close to the western extent of sandstone bedrock associated with the Kurnell headland.<sup>2</sup> Sandstone bedrock was found at relatively shallow depth (<1m) during archaeological test excavations to the immediate east of the subject land (JMcDCHM 2003:18), but testing within the subject

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<sup>2</sup> Wollongong- Port Hacking 1:100,000 Soil Landscape Sheet (9029-9129)



land shows sandy deposit is present to at least 2m depth across the subject land (Environmental Earth Sciences 2012). For the last few thousand years the surface of the subject land most likely consisted of a stable, vegetated foredune along its northern edge, behind (south of) which lay a second dune and areas of swamp and woodland as indicated in an annotated aerial photograph from 1947 (**Figure 4**). It may have looked somewhat as depicted in an early twentieth century photo of the general area shown in **Figure 5**. Although its original topography is not completely clear, the subject land has always been low-lying, a maximum of 5m AHD, and groundwater currently lies 1.7 – 2.7m below the current ground surface (JBS 2005; Environmental Earth Sciences 2012).



**Figure 4. The subject land (blue outline) in relation to previous landscape features in 1947.**



[Source: adapted from MDCA 2005:Figure 2.5. Note the line along the foredune (“Dune 2”) is a cart track linking Kurnell to Cronulla].

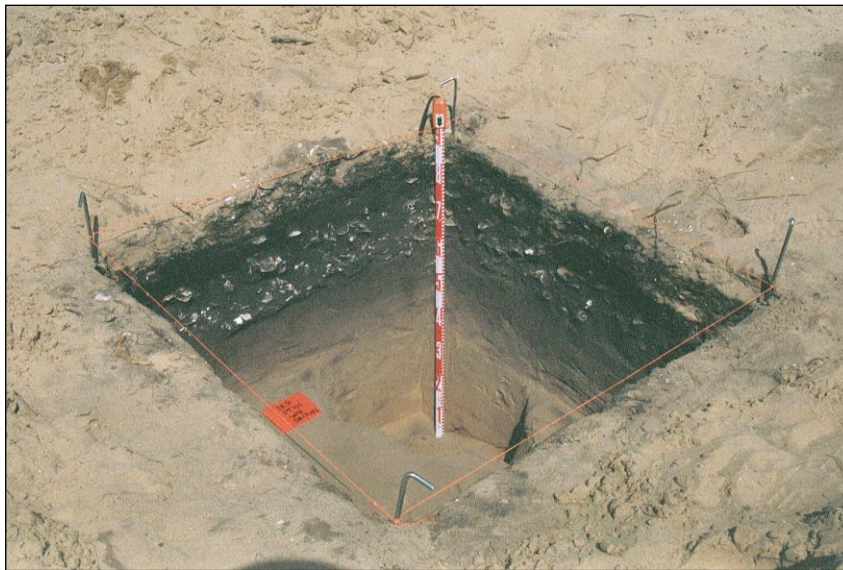




**Figure 5. The 'Blue Lagoon' east of the subject land at Kurnell in the early to mid-20<sup>th</sup> century.**

[Source: Sutherland Local Studies Library Image #MF002404]

The foredune has been recorded in areas to the west of the subject lands, where it is sometimes (though not always) associated with Aboriginal midden (e.g. MDCA 2005, JMcDCHM 2008). To the east, archaeological testing in 2003 in the adjacent Lot 101 revealed no clear evidence of the presence of the foredune or second dune behind it, and no subsurface archaeological remains were located (JMcDCHM 2003). The foredune was a stable, vegetated land surface and is found archaeologically as a buried horizon consisting of dark grey/black sandy organic soil of up to 0.5m thickness, below which is a brown/grey leached sand horizon (see **Figure 6**). As documented below, the foredune and second dune have both survived within parts of the subject land, though subject to varying levels of historical disturbance.



**Figure 6. Typical dune section containing midden, from the McCue Midden to the west.**

[Source: MDCA 2005: Figure 5.16].

In front of (seaward) of the foredune are found muddy rich organic sand deposits derived from the mangrove area along the former Quibray Bay foreshore (**Figure 7**). Similar deposits, though more peaty in character, represent the former swamp deposits typically located behind (landward of) the foredune. Soil sampling undertaken by Environmental Earth Sciences (2012) in the southern portion of the subject land suggests that swamp deposits may have survived in some parts of this southern area, but the ubiquitous presence of overlying introduced sandy fill precludes definitive interpretation. The testing does however suggest that considerable disturbance to underlying natural deposits in the southern portion of the subject



land has occurred. On this basis, and the negative results of testing in the adjacent property to the east, it also appears that the second dune visible in **Figure 4**, has been impacted by historical activity within the subject land. This was confirmed during the archaeological excavations outlined below.



**Figure 7. Estuarine deposits in front of the McCue Midden.**

[Source: MDCA 2005: Figure 5.5]

### 3.2.2 Historical Land Use and Disturbance

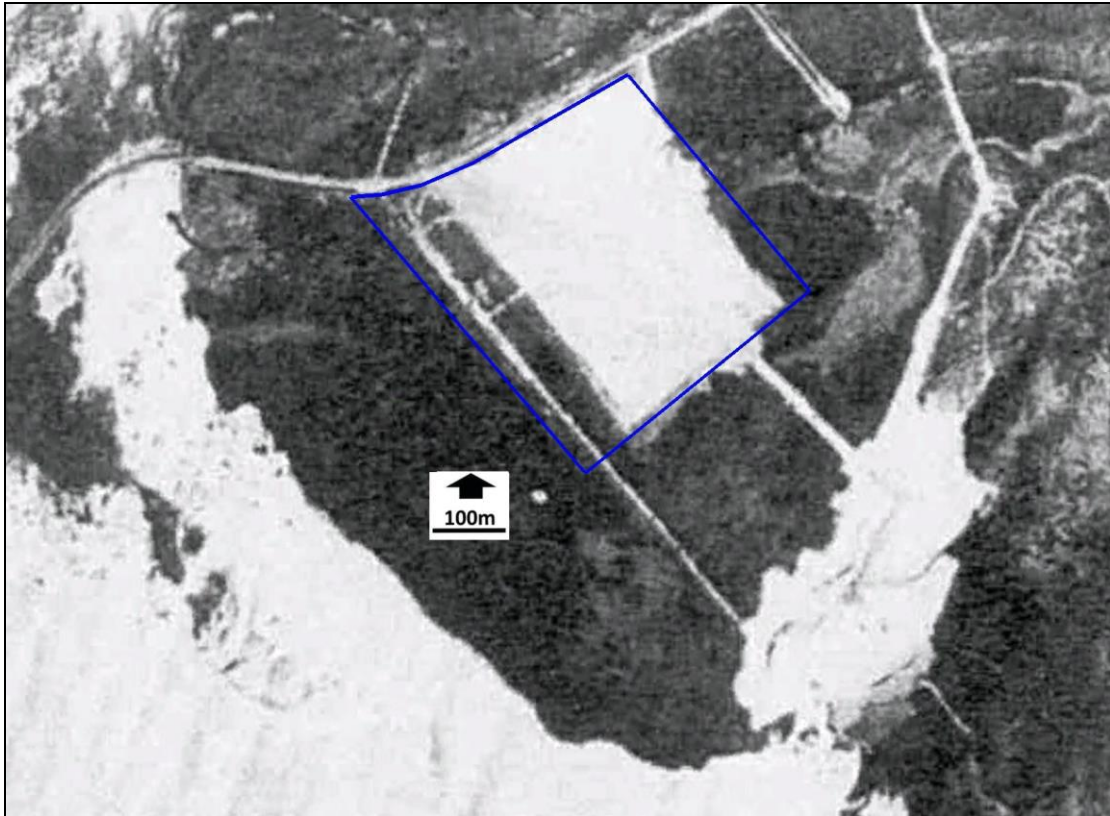
Aboriginal people are known to have lived along the foredune, with midden deposit being recorded at several points along this dune (see below). Other Aboriginal sites in the area suggest that the margins of swamps were also used by Aboriginal people, though possibly less intensively than the foreshore. Prior to the arrival of Europeans, the large dunes which have subsequently blown across the peninsula to the immediate west of the subject land, were stable and vegetated, although Aboriginal firing practices were likely to have produced some open and mobile dune areas (Byrne 1987). Land clearing and grazing from the early 19th century denuded this dune system and it became mobile, following prevailing winds to drift slowly to the north towards Botany Bay. A major bushfire in 1928 facilitated the dune mobility (Dickson in Byrne 1987), and by the mid-20<sup>th</sup> century the drifting sands had infilled parts of Quibray Bay (see **Figure 4**).

The subject land appears to have been relatively unaffected by these drifting sands and apart from grazing of cattle, and the use of the foredune as the main track linking Kurnell and Cronulla (see **Figure 4**), there appears to have been little impact to this area prior to its modern development. By 1961 the subject land was subdivided and establishment works were commenced as part of the construction of the Abbots Pharmaceutical facility. There





were two main impacts to the subject land at this time, both of which can be seen in **Figure 7** and **Figure 8**. By 1961 channels were being excavated to drain the swamps within and adjacent to the subject lands into Quibray Bay to the north. The construction of these is visible in 1961 and the finished open channels are clear in 1965. The area adjacent to the channel along the western side of the subject land was left undeveloped from that time and has been retained as the vegetated area still present on the western side of the subject land today.



**Figure 8. 1961 aerial photograph of the subject land.**

[Source: Unisearch 1978:83. Adastra Airways, County of Cumberland Run 37, 84, 86. Note the channel under excavation in the top right of frame and the channel being excavated along the western boundary of the subject land]



**Figure 9. 1965 aerial image covering most of the subject land.**

[Source: New South Wales Department of Lands 1965. Cumberland Series Run 27E, NSW 1412-5096 – 5098. Note the clearly visible excavated channel along the western boundary of the subject land].

Across the main part of the subject land however, considerable levelling and filling works were undertaken. **Figure 8** shows that sand appears to have been taken from exposed dunes to the south to raise the site above flood levels. Dickson (Site Card #52-3-0258) quotes a Sutherland Shire Council engineer as saying that the site was “raised by 0.75 – 1m by filling and grading” during this process. This is confirmed by soil sampling across the southern portion of the subject land which recorded sandy fill of around this thickness (EES 2012), and also by the archaeological test excavations documented below, which also confirmed varying degrees of impact to the underlying original landform, particularly in the southern portion of the subject land. By 1965 these filling and grading works had been completed and several of the existing buildings had been constructed (see **Figure 9**). In 1980 a gas pipeline was installed below ground between the northern boundary of the subject land and Captain Cook Drive. During these works midden material was disturbed (see below). Over the last thirty years there have been little or no additional impacts within the subject land that will have penetrated below the fill layer across the site.



### 3.3 Archaeological Context

#### 3.3.1 First People

For thousands of years, the Kurnell peninsula was the domain of the Gweagal people - a clan of Dharawal speaking Aboriginal people whose estate extended along the southern shores of Botany Bay and down past Cronulla. The peninsula provided the Gweagal with a host of terrestrial, maritime and estuarine resources provided by a unique and varied landscape that included Botany Bay, rugged Cape Solander, the swamplands of Weeney and Quibray Bay and the extensive peninsula dune system.

Aboriginal people left remains of their activities in the form of hearths, shell middens, burials and durable material culture items such as stone tools. Aboriginal sites relating to the sand formations of the peninsula consist largely of shell middens and stone artefact scatters. In addition to these types, rockshelters with occupation deposit and rock engravings are found within the sandstone formations at the eastern end of the Kurnell Peninsula and on the Cronulla Peninsula.

Kurnell is widely known as the site of first contact between Aboriginal people and Europeans on the eastern coast of Australia (see Nugent 2009). With the arrival of the first European settlers in the early 1800s, Aboriginal people did not cease to use the peninsula however. A number of Aboriginal people continued to live across the peninsula, maintaining traditional practices, as shown by the incorporation of European materials into midden deposits on the headland and at Quibray Bay (Rolfe 1931, Megaw 1972). Their presence is also shown by the adoption of Aboriginal place names around the peninsula during the first detailed survey around 1827 (**Figure 10**).



**Figure 10. Extract of ca. 1827 survey map of the Kurnell Peninsula.**

[Source: Dixon, R. nd. *Part of a map of Port Hacking*. NSW State Records Item NRS 13859, 4734/SG Map P256. Note all of these place names are still in use today]



Aboriginal people worked for and developed relationships with the major European landholders across the nineteenth century such as the Connell/Laycock and Holt families (Irish 2017). By the early twentieth century most Aboriginal people in the area had moved across the bay to the large Aboriginal settlement at La Perouse. However Aboriginal people have continued to visit the peninsula for a range of reasons across the twentieth century, for example to gather mangrove wood and shells for implements and handicrafts sold to tourists at La Perouse (Australian Institute of Aboriginal Studies nd:12-13). It has remained a place of great significance to Aboriginal people both for these enduring cultural and historical connections (see **Section 2.2** above), as well as its symbolic association with the process of European colonisation and dispossession.

### 3.3.2 Archaeological Evidence

Ongoing archaeological research on the Kurnell Peninsula demonstrates that Aboriginal people have used the entire area for some thousands of years and Aboriginal archaeological sites have been located in most environmental contexts across the peninsula (Smith *et. al* 1990, MDCA 2002). However of most relevance to the current study is the documented focus of Aboriginal occupation along the foreshore of Botany Bay on the northern side of peninsula. It has been shown that Aboriginal people camped for short to possibly lengthy periods at a time along the foreshore over several thousand years, and also buried their people along the sandy shoreline. They also appear to have accessed the swamps behind the dunes and even the rocky shore of Boat Harbour on the southern side of the peninsula from these camps (MDCA 2005, JMcDCHM 2008).

Background research into archaeological investigations previously completed within and surrounding the subject land was undertaken for the current study. Sources accessed included the OEH Aboriginal Heritage Information Management System Aboriginal Sites Register ('the AHIMS Register') and Catalogue of Archaeological Reports and other secondary sources. This review allowed the plotting of known Aboriginal sites and a means of predicting the potential location of further unrecorded areas of Aboriginal heritage significance.

#### OEH AHIMS Register

A search of the OEH AHIMS Register of a 2km by 2km area surrounding the subject land revealed that there are six registered Aboriginal sites within about 500m of the subject land (see **Figure 11**).<sup>3</sup> Of these, the most relevant is the *Abbott Site midden* (AHIMS #52-3-0258), which was recorded immediately adjacent to the northern boundary of the subject land, "about 30 metres west of the main gate" by amateur archaeologist and collector Frank Dickson in 1980 (Site Card #52-3-0258).<sup>4</sup> The midden was disturbed during excavations for a gas pipeline from the Caltex Refinery to Philips Chemicals in 1980. The trench had largely been

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<sup>3</sup> Search conducted on 6/11/2013 with the coordinates; Easting 332600-334600 Northing 6232600-6234600. An updated AHIMS online search of 5/12/17 shows that no additional sites have been recorded in this area since the original search.

<sup>4</sup> The AHIMS coordinates are incorrect and have been amended.





backfilled but scattered shells were visible on the surface over about 50m and in a short section of exposed trench about 70cm below the surface was a thin layer of cockle and mud whelk shells as would have been available in the adjacent mudflats (see **Figure 12**). Dickson sifted some of the trench spoil and found fish bone, charcoal and stone artefacts confirming the site as a shell midden. The lateral extent of the site could not be determined and no further recording of the site appears to have occurred since that of Dickson. It is highly likely that this midden site is associated with the original Botany Bay foredune (**Figure 4**) as with middens located previously further to the west, though it is unclear how extensive or intact the midden is, or indeed the remaining portion of the foredune. It is also unknown whether this midden extends south into the subject land, though this is quite probable.



Figure 11. Location of registered Aboriginal sites in proximity to the subject land.



**Figure 12. Aboriginal midden site #52-3-0258 along Captain Cook Drive.**

[Source: Site card #52-3-0258, exact angle and location unknown].

If associated with the foredune, the *Abbotts Site Midden* (#52-3-0258) is most closely related to the *McCue Midden* (#52-3-1110) located several hundred metres to the west within the same foredune (see further discussion below). The other registered sites within the vicinity of the subject land are small surface scatters of shell and/or artefacts. For example sites #52-3-0214 and #52-3-0217 are shell middens associated with stone artefact scatters, located on the margins of a swamp behind the subject land. Like the *Abbotts Site Midden*, they were recorded by Frank Dickson, who appears to have collected the artefacts from them (Smith in Dallas 1996:13). Archaeological test excavations undertaken to relocate these sites in 2004 located only the disturbed remnants of both, which have subsequently been impacted by the construction of the desalination plant (JMcDCHM 2004). To the east a surface scatter of four artefacts and several pieces of debitage (#52-3-1271) was located during archaeological test excavations in 2003 (JMcDCHM 2003).<sup>5</sup> It is likely that the artefacts derive from sands imported from elsewhere or disturbed from underlying deposits. The remaining 'site' to the east of the subject land is an area of archaeological potential that was registered in 2003 to facilitate archaeological test excavations in this area (JMcDCHM 2003).

### **Previous Archaeological Investigations**

Aboriginal occupation of the Botany Bay foreshore at Kurnell has been documented archaeologically for nearly a century. Middens were recorded by amateur anthropologists and collectors at Quibray Bay in the 1920s (Doak & Macaulay-Doyle 1927 and see **Figure 13**),

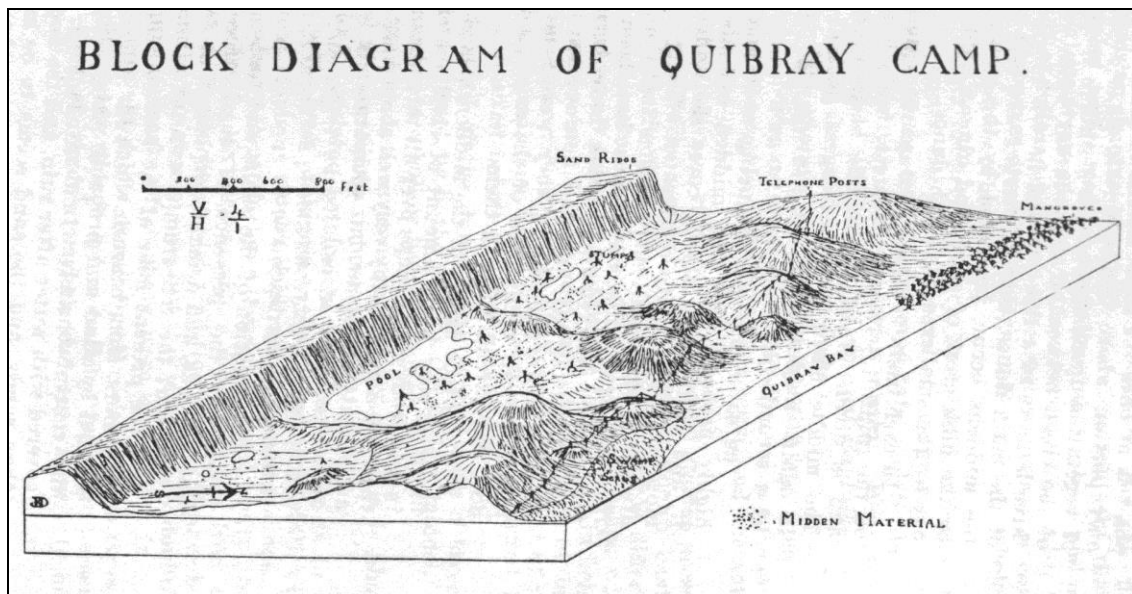
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<sup>5</sup> This has been recorded twice. The duplicate recording #52-3-1332 has incorrect coordinates.





which included European artefacts indicating their use until around a century before (Rolfe 1931). Our understanding of the nature of this occupation, and its archaeological characteristics however has been greatly advanced by archaeological assessment and test excavation work within properties directly to the west of the subject land over the last decade (MDCA 2005, JMcDCHM 2008 and see **Figure 14**). In particular the initial investigations by MDCA within Lot 8 Captain Cook Drive thoroughly examined the geomorphology of the Kurnell isthmus (the sandy middle portion of the Kurnell Peninsula) and demonstrated through archaeological excavation that Aboriginal people had lived on the original Botany Bay foredune. Specifically these excavations revealed that this foredune has survived virtually intact across the width of the northern portion of Lot 8 and was associated with a large Aboriginal site known as the McCue Midden (#52-3-1110), which had been in use over several thousand years until (and possibly after) the arrival of Europeans in this area (see **Figure 11** and **Figure 6**).



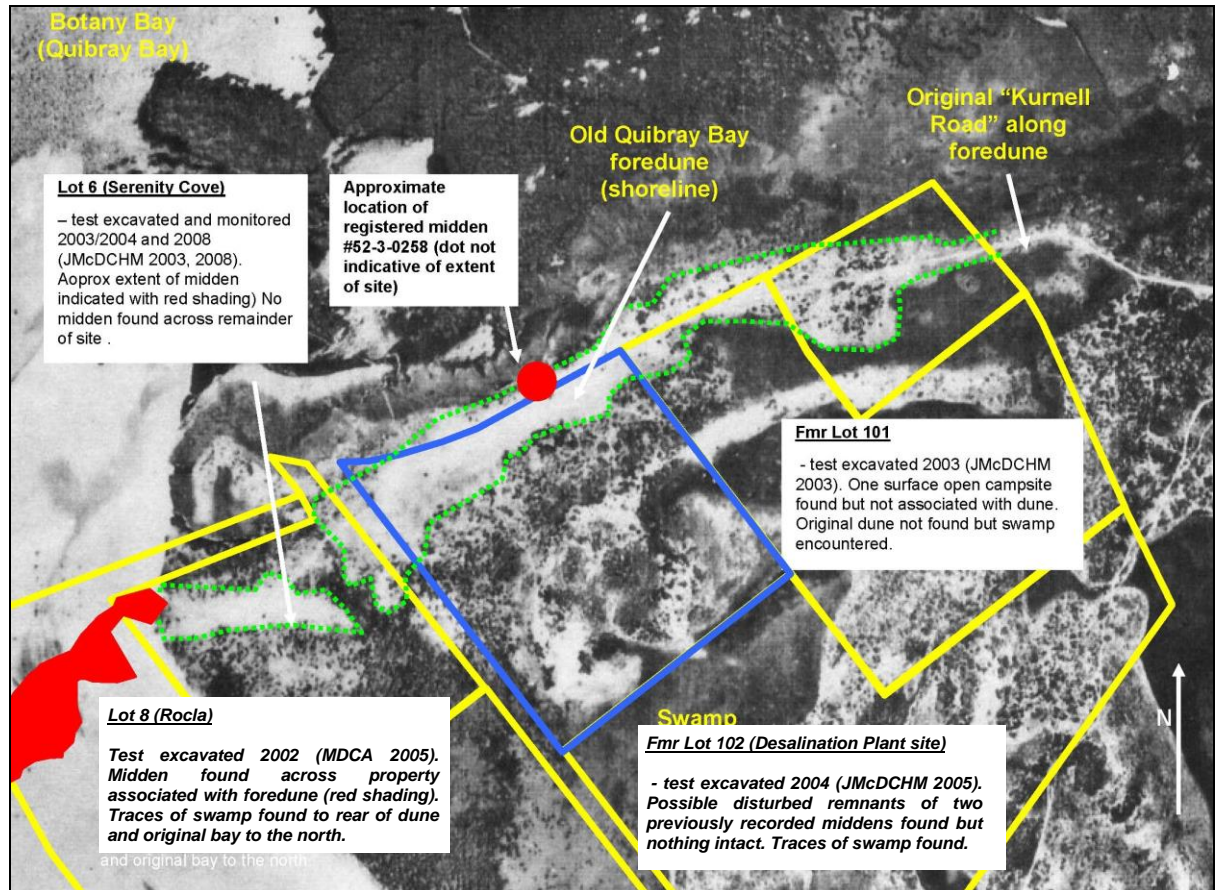
**Figure 13. Midden deposits along Quibray Bay recorded in the 1920s.**

[Source: Doak & Macaulay-Doyle 1927:35. Note this is a stylised map with an exaggerated vertical scale, to accentuate the foredune and back swamps as they were exposed in the early twentieth century.]

The McCue Midden consists of one or several lenses of shell within the foredune and was dated to at least 1900 years ago and up to the European historical period. The site extends across to the western boundary of the adjacent Lot 6 Captain Cook Drive, between Lot 8 and the subject land. This area was subsequently investigated as part of redevelopment proposals for Lot 6 (as summarised in JMcDCHM 2008, see **Figure 13**). These investigations showed that the McCue Midden extended a short way into that property, associated with the buried foredune. Similar midden deposits were located, but a slightly older date of about 2150 years



ago was obtained. In addition, the foredune in Lot 6 contained areas with scatters of stone artefacts but no midden, as well as areas of foredune in which no Aboriginal cultural remains were located.



**Figure 14. Previous archaeological investigations in the vicinity of the subject land.**

[The former foredune along Botany Bay is shown in green dotted outline. The approximate location of documented Aboriginal midden deposits are shown in red].

Archaeological test excavations have also been undertaken to the east and south of the subject land (see **Figure 14**). To the east in Lot 101, a series of mechanically excavated test pits were excavated to determine whether the foredune had survived in this area (JMcDCHM 2003). Along the western boundary of Lot 101 (eastern boundary of the subject land) some possible evidence of the survival of the foredune was located, but no archaeological remains were found. Excavations to the south of the subject land sought to locate two previously recorded Aboriginal sites around a large area of former swamp, and determine if any other sites were recorded around the swamp margin (JMcDCHM 2004). The excavations revealed only highly disturbed traces of the two previously registered sites due to historical activity such as sand mining in the area. No additional archaeological remains were located.





### 3.3.3 Modelling and Site Prediction within the Study Area

A considerable amount of archaeological investigation has been undertaken within the vicinity of the subject land, including archaeological test excavations to the immediate west, south and east, and recording of a disturbed Aboriginal site between the subject land and Captain Cook Drive. Based on these investigations, as well as other archaeological and geomorphological evidence from across the Kurnell Peninsula, the following was concluded:

- It was considered unlikely that there was any surface evidence of past Aboriginal use of the area within the potentially developable portion of the subject land. The western vegetated portion of the subject land, along the excavated drainage channel, is a possible exception, but is not proposed to be impacted by any future development.
- Archaeological evidence of past Aboriginal use of the subject land was most likely to be associated with the buried foredune along the northern section of the property if this has survived.
- Apart from that associated with the foredune, buried archaeological evidence across the remainder of the subject land was likely to be sparse and more vulnerable to historical disturbance. For example, if present, Aboriginal sites around former swamp areas within the subject land, were likely to have been impacted.
- The extent to which historical activity has disturbed or destroyed evidence of past Aboriginal use across the subject land was not known in detail, however soil testing within the southern portion of the subject land suggested a considerable degree of impact to underlying natural deposits in this area.

The nature and condition of underlying landscape features which may have Aboriginal archaeological sensitivity could not be determined without actual subsurface investigation, and hence the archaeological test excavations documented below were recommended to be undertaken. It was anticipated that archaeological evidence within the subject lands could include:

- Shell Middens. These sites contain the discarded remains of shellfish meals. They may occur in lens or mounded deposits. The evidence of other activities such as fishing, camping, cooking, artefact manufacture or maintenance and the interment of the deceased may also be found in midden deposits.
- Burial sites. Burial sites are rare and are usually only located when sub-surface sediments have been exposed by erosion or disturbance. Burial practises vary over time and place. Skeletal material may be found as single individuals or in group situations. They may be found in soft sediments such as sand bodies or sandy loam. A number of burials are known on the Kurnell Peninsula in soft sandy contexts and within rock shelter deposits.
- Stone artefacts in isolation or combination may occur in association with buried former land surfaces.



### 3.3.4 Previous Assessment of the Subject Land

Given the historical impacts and geomorphological change which has taken place within the subject land, a detailed site survey was not considered warranted. A site inspection was however conducted on 25/10/13 by MDCA principal consultant Paul Irish primarily to document the location and extent of visible historical disturbance and any other features/evidence which may have been relevant to inform an assessment of the archaeological sensitivity of the subject land, and to determine the most practical means of further investigating the subject land through archaeological test excavation.

### 3.3.5 Observations

It was apparent that on the basis of the site inspection, aerial photography review and recent geotechnical and other subsurface investigation studies the entire extent of the subject land which is under consideration for future development is made ground through the deposition and spreading of fill. This is clearly illustrated in **Figure 8**. The exposed surface of the subject land is either grassed or paved with internal roadways and concrete building slabs.

A number of buildings were extant within the subject land at this time, including warehouses, offices and factory buildings (**Figure 15**). An access road runs along the eastern perimeter and then through the middle of the facility (**Figure 16** and **Figure 17**). Also within the subject land is a large sealed car park in the north eastern corner (**Figure 18**). Some historical plantings dating to the establishment of the Abbots facility remain around the main buildings, but the remainder of the subject land is cleared and covered in pasture grasses (**Figure 15**). Regrowth swamp sclerophyll forest is present along the western boundary of the subject land associated with a drainage line which flows northwest through a culvert underneath Captain Cook Road toward Quibray Bay (**Figure 19**). The vegetation along this drainage line afforded no surface visibility which could potentially have indicated the nature of adjacent deposits. Within the south western portion of the property is an artificial pond that adjoins the drainage line. No archaeological material was observed during the site inspection and no further information was gathered concerning the potential underlying landscape features.

**Figure 15. View southeast over main factory building extant and horse agistment area in the northern portion of the subject land.**





**Figure 16. View north toward Captain Cook Drive showing main access road.**



**Figure 17. View south along main access road.**



**Figure 18. Storage and parking area along the north eastern edge of the subject land.**







**Figure 19. View south along excavated drainage line on western edge of the subject land.**



### **3.4 Conclusions from Previous Assessments**

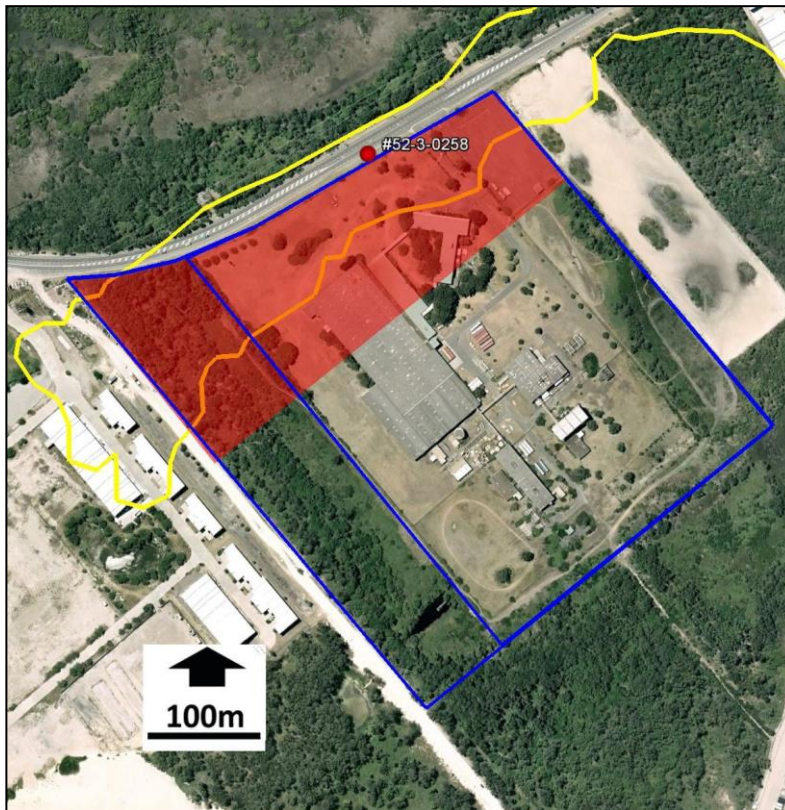
#### **3.4.1 Aboriginal Archaeological Sensitivity within the Subject Land**

Prior to the archaeological test excavations documented below, no Aboriginal objects had previously been located within the subject land, or were recorded during the inspection for the 2013 MDCA assessment. However the presence of midden site AHIMS #52-3-0258 immediately adjacent suggested that Aboriginal archaeological remains may extend some way into parts of the northern extent of the subject land. Based on this, and the review of contextual environmental, historical and archaeological information outlined above, it was concluded that (with reference to **Figure 20**):

- It was likely that the 'Abbott Site' Aboriginal midden (#52-3-0258), which is recorded as being located between Captain Cook Drive and the northern fence, extends into the boundary of the subject land.
- It was possible that the original Botany Bay foredune, with which the aforementioned midden is most likely associated, had partially survived within the northern third of the subject land. If/where this buried foredune has survived, it was considered to retain high archaeological sensitivity for its potential to contain subsurface archaeological material of potentially high significance. For this reason, the likely maximum extent of the buried foredune was designated as an *Area of High Aboriginal Archaeological Sensitivity* as depicted in **Figure 20**.
- The remainder of the subject land was considered to possibly contain other buried former landscape features such as a secondary dune ridge behind the foredune, and swamp margin areas, both of which may have been used by Aboriginal people in the past. However archaeological contextual information suggested that these would be of a more ephemeral nature than along the foredune and therefore more vulnerable to historical



disturbance. Furthermore, the remainder of the subject land appeared to have been subjected to considerable historical disturbance. For this reason, the remainder of the subject land was designated as an *Area of Low Aboriginal Archaeological Sensitivity* as depicted in **Figure 20**.



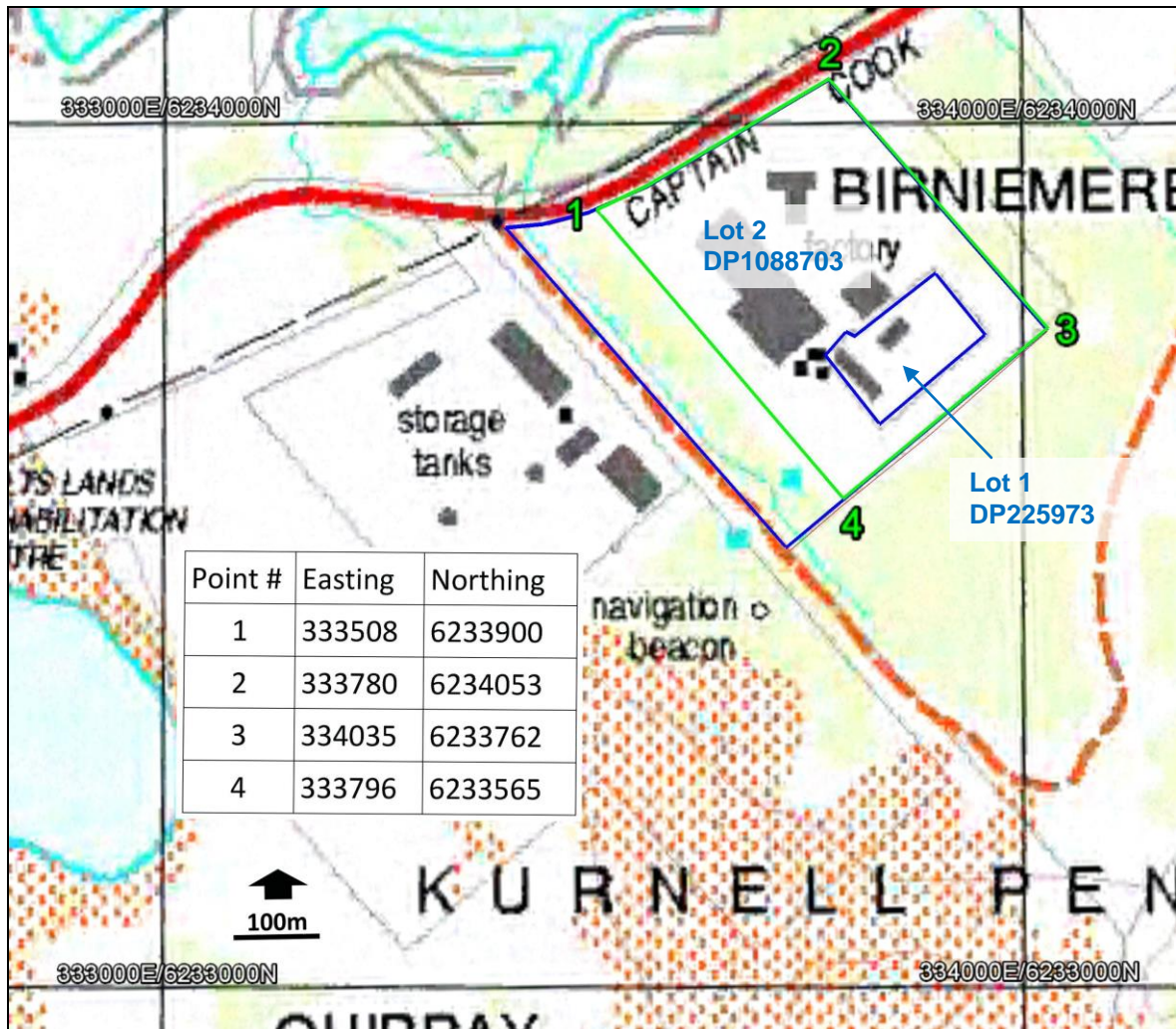
**Figure 20. Assessed archaeological sensitivity within the subject land.**

[The possible extent of the buried foredune is indicated in yellow outline. The area of *High Aboriginal Archaeological Sensitivity* associated with the possible extent of the foredune is shaded red. The remaining unshaded portion of the subject land is an area of *Low Aboriginal Archaeological Sensitivity*].

### 3.4.2 Recommended Further Investigations

On the basis of these conclusions, archaeological test excavations were recommended to be undertaken within portions of the subject land to determine the presence/absence, extent and significance of any Aboriginal archaeological remains within the potentially developable portion of the subject land, as indicated in **Figure 21**. Specifically the excavations were proposed to be undertaken within Lot 1 DP225973 and part of Lot 2 DP1088703 (excluding the conservation area along its western edge). The 2013 assessment concluded that the original Botany Bay foredune was most likely extant within parts of the northern portion of the subject land, designated as an *Area of High Aboriginal Archaeological Sensitivity*. It was therefore proposed that the archaeological test excavations should focus on this area, though also investigating the remainder of the subject land.





**Figure 21. The subject land and area of archaeological test excavations.**

[Subject land boundary and lot numbers in blue, area investigated through test excavation shown in green outline with boundary coordinates indicated. Base map, Port Hacking 1:25,000 topographic map and all coordinates are AGD Zone 56. The property is located in Sutherland Parish].



## 4.0 Archaeological Investigations

### 4.1 Field Methodology

#### 4.1.1 Aims of the Archaeological Investigations

The principal objective of the archaeological investigations was to determine if Aboriginal cultural remains were located within the defined areas of *High Aboriginal Archaeological Sensitivity* and *Low Aboriginal Archaeological Sensitivity* that could be impacted by future development. This would facilitate the formulation of recommendations for the appropriate management of Aboriginal remains if they were found to occur within these areas. Specific aims were:

- 1) To determine if subsurface archaeological remains were present within the areas of *High Aboriginal Archaeological Sensitivity* and *Low Aboriginal Archaeological Sensitivity*. Specifically, whether Aboriginal cultural remains from the pre-contact or early-contact period have survived within these areas.
- 2) To characterise the nature of any archaeological deposits encountered (within the limitations of the sampling and excavation methodology).
- 3) To identify any further archaeological requirements (e.g. preservation, salvage, collection or impact).
- 4) To provide informed mitigative measures and management requirements for any archaeological remains located by the archaeological investigations.

#### 4.1.2 Timing of Excavations and Personnel

The Aboriginal archaeological excavations at 238-258 Captain Cook Drive took place over 8 weekdays from Monday 10 March 2014 to Wednesday 19 March 2014. The excavations were carried out by MDCA in association with the La Perouse Local Aboriginal Land Council. A list of excavation participants is included as **Table 7** below.

**Table 7. List of participants in the test excavation program.**

Participant \ Date	Mon 10th	Tues 11th	Wed 12th	Thurs 13th	Fri 14th	Mon 17th	Tue 18th	Wed 19th
Mary Dallas (MDCA)	X	X			X		X	X
Paul Irish (MDCA)	X	X	X	X	X	X	X	X
Tamika Goward (MDCA)	X	X	X	X	X	X	X	X
Susan Whitby (MDCA)					X		X	X
Shane Ingrey (LPLALC)	X	X	X	X		X	X	X
Adam Russell (LPLALC)	X		X	X		X		
Derrick Davison (LPLALC)					X			
Michael Lester (LPLALC)					X			





#### 4.1.3 Numbering of Excavated Trenches

The mechanical trenches and manual squares described below were aligned along a series of north-south oriented transects<sup>6</sup> designed to provide a cross-section of landforms from the seaward to landward end of the subject land (see **Figure 22** to **Figure 25**). The Transects were labelled alphabetically and trenches/squares were labelled as follows:

- excavated mechanical trenches are identified by the distance from the northern end of the transect e.g. *TrB 30m* represents a mechanical trench 30m south of the northern end of Transect B.
- manual squares are identified by Transect and Square number e.g. *TrB Sq2* is the second manual square excavated along Transect B.

#### 4.1.4 Field Procedure

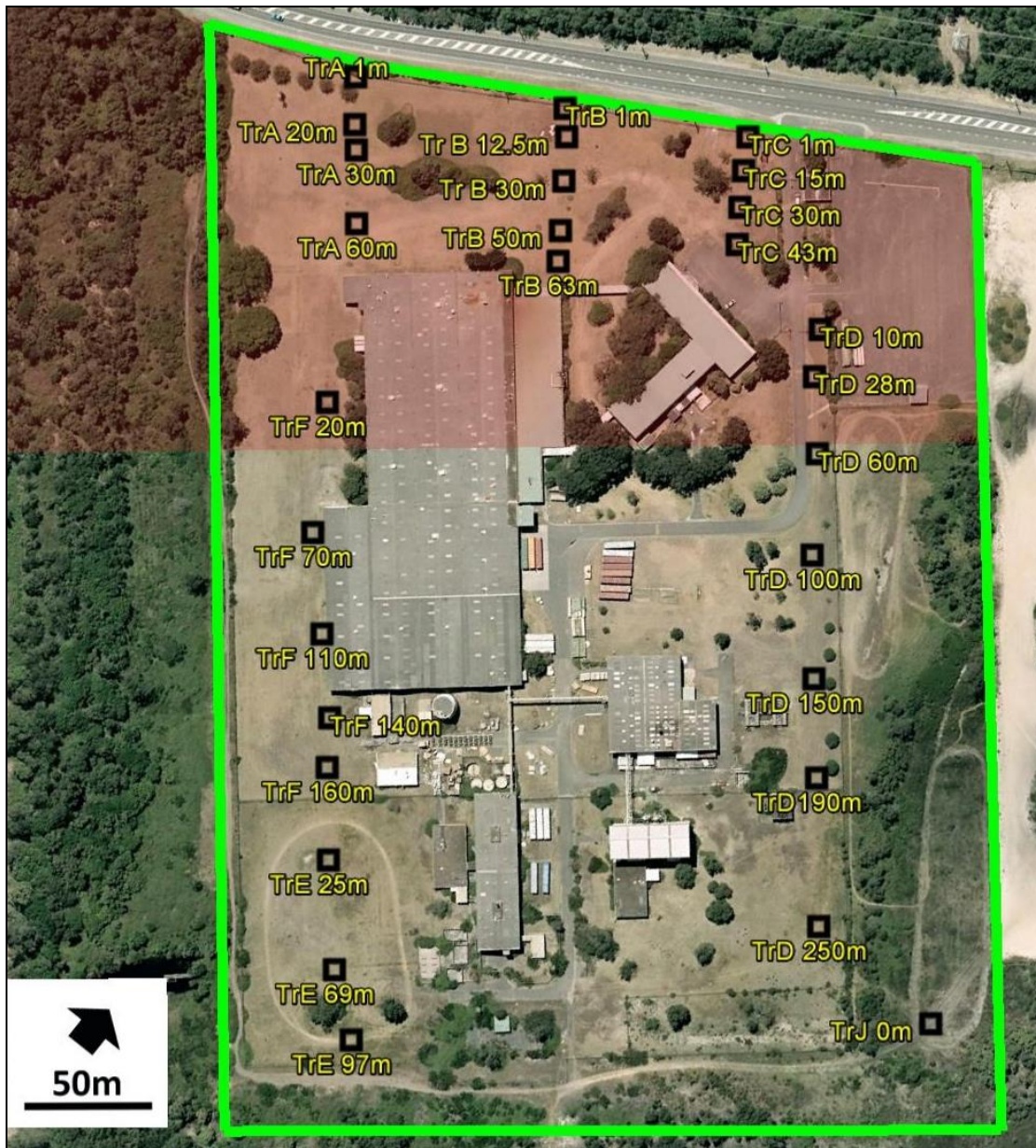
The field investigations proceeded according to the methodology outlined in the 2013 assessment report and approved as a condition of the AHIP. Specifically they comprised the following stages:

1. **Mechanical trenches:** A total of 29 mechanical trenches were excavated across the two areas of sensitivity, with a focus on the area of assessed *High Aboriginal Archaeological Sensitivity* in the northern third of the subject land (**Figure 22**, **Figure 24** & **Figure 25**). Initially trenches were excavated along Transects A, B and C across this area, with a spacing of 10-30m, dependent of local conditions. Pits were then excavated along the eastern and western sides of the property in the area of *Low Aboriginal Archaeological Sensitivity* with a spacing of 25-60m. A final trench was excavated in an area of underlying sandstone bedrock in the southeastern corner of the subject land (Transect J). Pits were excavated by backhoe using a toothless (batter) bucket of 1m width. Trench sizes were generally 1m x 2-3m in size, though with some variation for local conditions as described in **Appendix C1**.

Trenches were excavated in spits of approximately 20cm thickness, and excavation was ceased upon encountering an upper A1 horizon of a buried land surface. Generally this could easily be discerned due to the clean overlying sandy fill across much of the subject land. In some trenches, where an A1 horizon was not encountered (for example in the southern half of the property where the dune in this area had been substantially truncated) excavation continued to a depth sufficient to confirm the unit encountered, or at groundwater. Soil samples were taken from buried soil horizons in most trenches. As the overlying fill was clearly introduced and had no archaeological potential, sample sieving was not undertaken during the mechanical excavations. All excavated pits were backfilled on completion.

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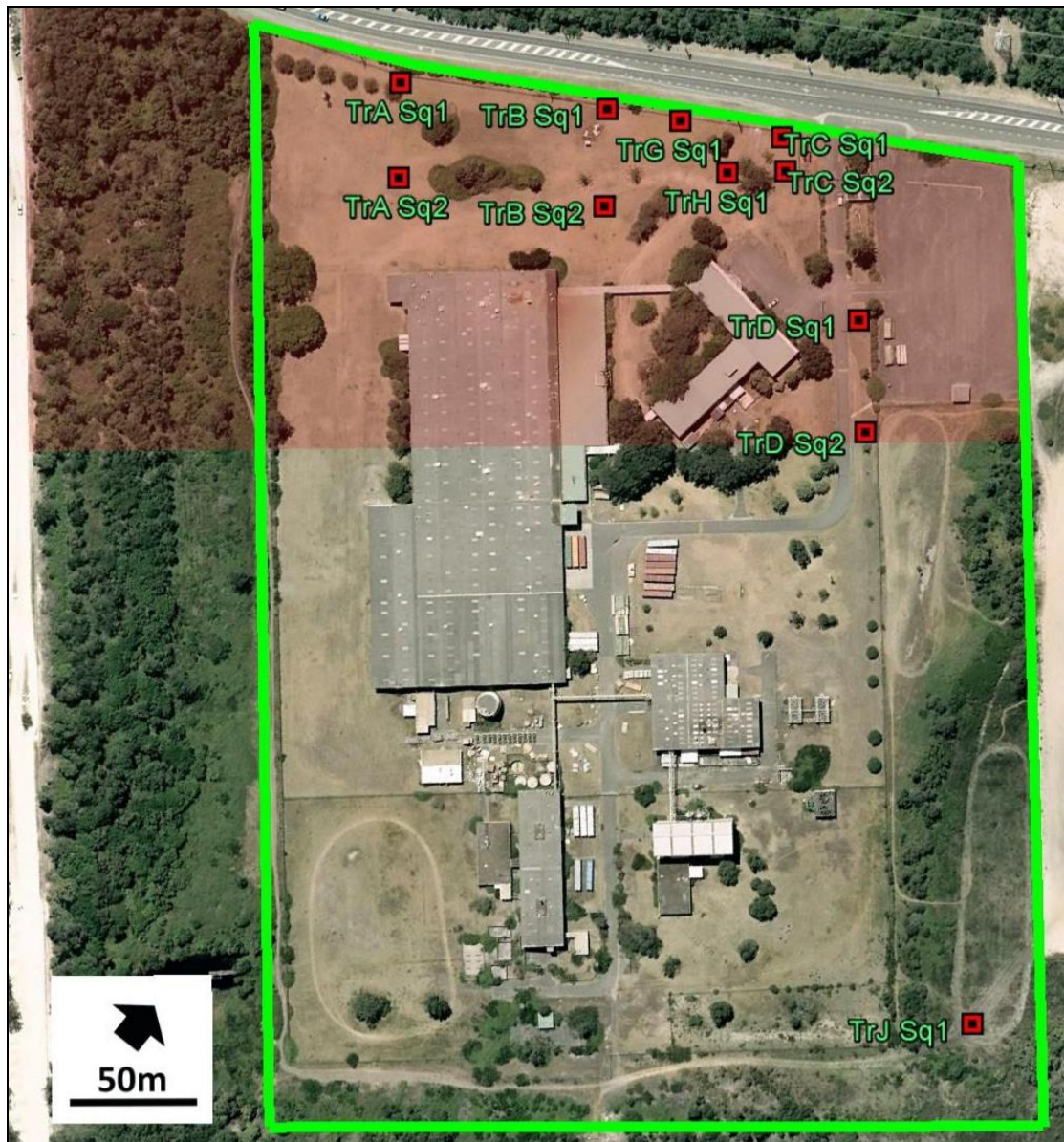
<sup>6</sup> The road frontage of the subject land is referred to as nominal north for ease of discussion. True north is indicated in all attached plans.



**Figure 22. Location of Mechanical Pits.**

[Green line indicates area of investigation under AHIP. Red shading is area of High Aboriginal Archaeological Sensitivity. Symbol size does not indicate size of excavated pits]





**Figure 23. Location of Manual Squares.**

[Green line indicates area of investigation under AHIP. Red shading is area of High Aboriginal Archaeological Sensitivity. Symbol size does not indicate size of excavated pits]



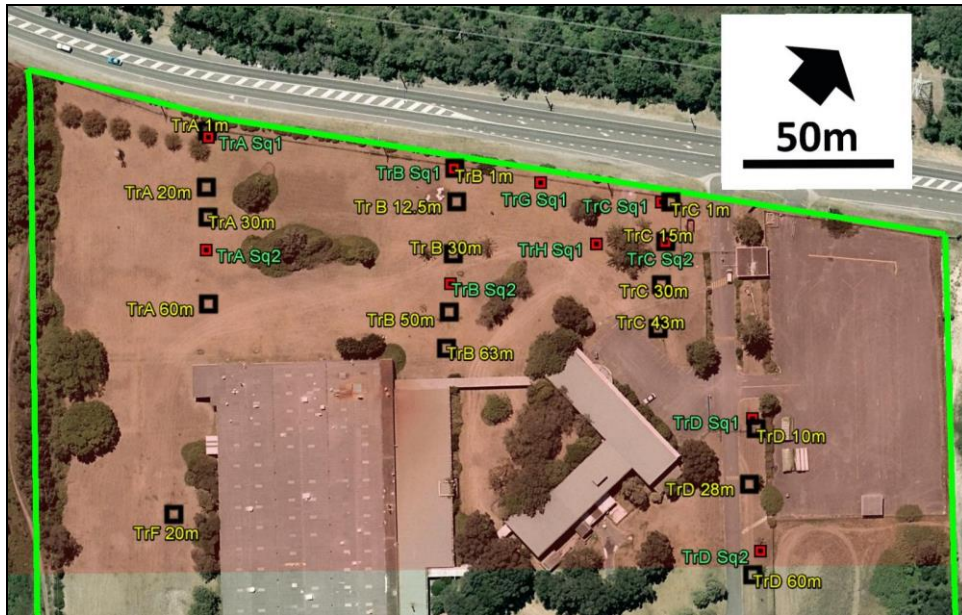


Figure 24. Location of manual and mechanical pits in area of High Aboriginal Archaeological Sensitivity (red shading).

[Mechanical pits indicated with Black squares and yellow labels. Manual squares indicated with red squares and green labels. Symbol size does not indicate size of excavated pits]

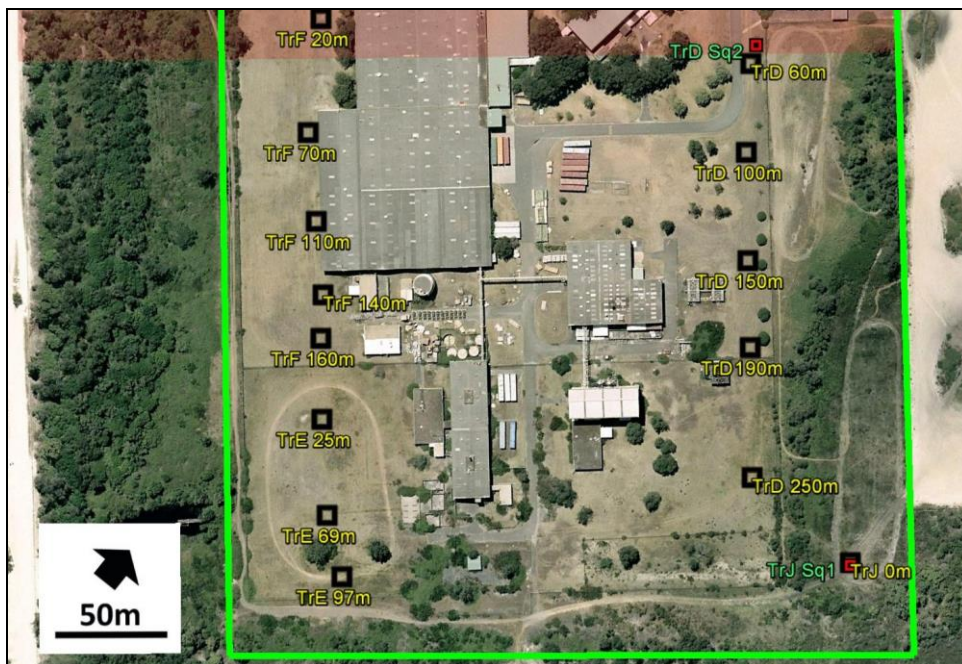


Figure 25. Location of manual and mechanical pits in area of Low Aboriginal Archaeological Sensitivity (no shading).

[Mechanical pits indicated with Black squares and yellow labels. Manual squares indicated with red squares and green labels. Symbol size does not indicate size of excavated pits]



2. **Manual Excavations:** A series of eleven squares were manually excavated to investigate the archaeological potential of the buried landforms encountered. All but one square was excavated within the area of *High Aboriginal Archaeological Sensitivity*, where all buried horizons with archaeological potential were located. A final square was excavated in the southwestern corner of the subject land (TrJ Sq1), where an original soil profile was found immediately below the surface and overlying sandstone bedrock. All squares were excavated by hand and were either 0.5m<sup>2</sup> or 1.0m<sup>2</sup> in size, depending on the practicalities of removing the overburden and maintaining a stable and safe excavation area, as well as considerations of minimising disturbance to the buried landform (see **Appendix C2**). All squares were excavated following contexts (see below) and then in spits of 5-10cm. The A1 horizon was fully excavated, as well as several spits into the A2 horizon to confirm the lack of archaeological material in this horizon. Excavation ceased at this point or on encountering ground water, whichever came first. All excavated deposit was sieved onsite through nested 5mm and 2mm mesh sieves and any potential Aboriginal cultural remains were retained for analysis. Soil pH samples were taken at regular intervals, as well as root samples. The only discernible midden horizon was located in TrC Sq1 and from this were taken shell samples for radiocarbon dating, as well as unexposed sands for thermoluminescence dating (see **Section 4.2.4**). All excavated pits were backfilled.
3. **Field Recording:** A full photographic and written record of the investigations was taken, some of which is reproduced in this report and **Appendix C**. Locations and levels of all excavated pits were undertaken using a Differential GPS courtesy of Insites Development Consultants, or using an automatic level based on field stations established by Differential GPS.

#### 4.1.5 Retrieved Remains and Analysis Methodology

The archaeological test excavations resulted in the retrieval of small numbers of flaked stone artefacts, several small unworked but manually transported ochre pieces, and small quantities of faunal remains (shells). The vast majority of these remains were retrieved from TrC Sq1, TrC Sq2, TrG Sq1 and TrH Sq1 (see **Figure 27**), all located within the northeastern corner of the subject land. However very small quantities of shell or flaked stone were retrieved from most excavated squares. The significance of this is discussed below.

All of the retrieved remains were subjected to specialist analysis according to the methodologies outlined below.

##### Stone Artefact Analysis

The analysis of stone artefacts from the site considered the following:

- quantity of stone, by counts and weight;
- suspected origin of the stone (whether from quarries where the rock is in place, or dispersed along riverbeds);
- identification of the artefacts;
- interpretation of elaborated artefacts (such as scrapers and cores), including function and indications of way of life;



- patterns in spatial and chronological distributions within the site;
- age of the site; and
- archaeological importance of the site.

#### ***Sorting of the Stone into Artefacts***

Stone artefacts were initially sorted by rock type and then catalogued according to procedures adapted from those originally published for excavations at the site of Koonalda Cave, on the Nullarbor Plain (Wright, 1971). The procedures were later elaborated (Wright, 1972; Wright, 1994).

Collections from most archaeological sites contain stones that can be grossly divided into:

- definite artefacts (i.e. humanly manufactured stone forms), recognised by the conchoidal fracturing that characterises deliberately flaked glassy, and fine-grained or grainless, stone;
- probable artefacts, rendered probable (but not definite) by the fresh fracturing of a coarse-grained stone; and
- objects which are not flaked, but because of their nature must have been humanly brought to the site (e.g. lumps of unworked ochre in a windblown sand dune); such objects are sometimes called manuports.

Artefacts get accidentally broken during and after manufacture. If an artefact breaks, for example, into three pieces how many artefacts do these three pieces represent? The answer should be one. It is therefore necessary to have a concept of the *minimum number of artefacts* that all the pieces in a collection represent. There are various approaches to this question (e.g. Hiscock 2002a).

To arrive at a minimum number, the complete flakes, butts of flakes, elaborated implements (e.g. scrapers and cores) were totalled. Restricting to these categories lowers the risk of double counting broken artefacts - a risk that the inclusion of distal flakes would entail. A more exact figure may possibly be arrived at through an intensive programme of refitting broken edges that was not considered warranted in this case.

#### ***Examination of Artefact Forms***

The complete flakes and elaborated definite artefacts were then further examined. All were described using attributes of weight, length, width, thickness, material, and for complete flakes the percentage of cortex on the back of the flake and the width and thickness of the striking platform on the flake.

#### ***Examination of Edges***

Implements can be recognised not only by studying their flaked properties but also by examining the edges of flakes for use-wear. The examination was geared to detect such wear. All pieces were examined under oblique light through x5 magnifying spectacles. Three basic types of use-wear can be recognised

- minute chipping of an edge, due to use in chopping a hard surface;





- striations (scratches) caused by cutting an abrasive material; and
- accumulations of silica, looking like a polish, due to cutting plants rich in silica.

### **Shell Analysis**

Shellfish remains were found in a number of excavated squares as isolated fragments, but only in TrC Sq1 as a discernible lens of midden. Given the low overall quantities of shell retrieved, all shell fragments from the 5mm sieve fraction, and those that could be separated from the 2mm fraction, were analysed according to the techniques outlined below. The analysis of shellfish remains aimed to shed light on both the dietary contribution represented by shellfish and the activities which took place on and off the site to collect, prepare, consume and discard them.

Examining such issues first required determining (for each excavated unit), what species were consumed and in what quantities, together with any additional information about their environment and the way they were obtained and eaten. It should also be pointed out that some shellfish species are known to have been used as implements by Aboriginal people as well or instead of as food, and so this was also considered for each excavated unit.

#### ***Sorting the Shell***

Shell was separated out from all other excavated remains during sieving onsite and the 5mm fraction was separately bagged and labelled. The 2mm fraction contained shell and other materials and was not sorted onsite, apart from the removal of extraneous matter such as rootlets. The 2mm fraction for each excavated unit was analysed and any diagnostic shell fragments were removed for analysis together with the 5mm fraction (given the small size of the assemblage it was not considered warranted to separate by sieve fraction). The 2mm residue was then weighed but not further analysed. The analysed shell was sorted by species for each unit and subjected to the quantitative measurements below.

#### ***Quantification of the Assemblage***

The measurements and counts recorded for the shell samples from each species per excavation unit were; total weight, total weight of fragments, minimum number of individuals (MNI), presence/absence of burnt shell, presence/absence of modified shell, and the total weight of unidentified shell fragments for unit. The assumptions and points of measurement for these are described below:

- **Total weight of shell:** This measurement was the total of all shell from one species per excavation unit to the nearest gram.
- **Total weight of fragments:** The aim of this (subjective) measurement was to provide an approximate indication of the level of fragmentation of each shell species per excavation unit for rough comparisons between units and with comparable data from other sites. All shell fragments from each species which did not constitute more than about 80% of a whole shell (or for bivalves a whole valve) were weighed as fragments. In some cases the diagnostic portion of shell used for MNI counts was not itself 'whole' and was thus



weighed with the fragments. Measurements were to the nearest gram. This information can help to establish intrasite variation and levels of historical disturbance.

- **Minimum number of individuals (MNI):** This measurement gives an indication (usually very approximate and minimal) of the number of individual shellfish present in an assemblage and is based on the presence of certain identifying points from each shellfish species. Usually this is either the apex/peak (top of the spiral) or the aperture (opening) for gastropods and the hinge from one valve of a bivalve. By itself, it is generally not a reliable indicator of relative quantity, due to the highly differential rates of fragmentation of different species (leading to over/under-representation of some species). However it can be used together with total weights to more accurately reveal or confirm observed trends in shell species distribution.

For the 238-258 Captain Cook Drive shell assemblage, several different identifying points were used. For most gastropods, the aperture was used as this was more often preserved. For all bivalves the number of hinges was counted and divided by two (thus 7 hinges implied 4 individuals). Although this produces a slightly inflated total when spit totals are added together, it is offset by at least an equal number of hinges being fragmented and thus not counted. Bottom valves of Rock Oyster (*Saccostrea glomerata*) were counted if whole. They proved lesser in number than top valves (containing the umbo) and so the top valve count was used as the MNI.

- **Presence/absence of burnt shell:** This was included to investigate any evidence of burning which may indicate preparation of shellfish for consumption or use as bait.
- **Presence/absence of modified shell:** The shell may be modified for use as an artefact or as part of food preparation. If present more detailed descriptions were given.

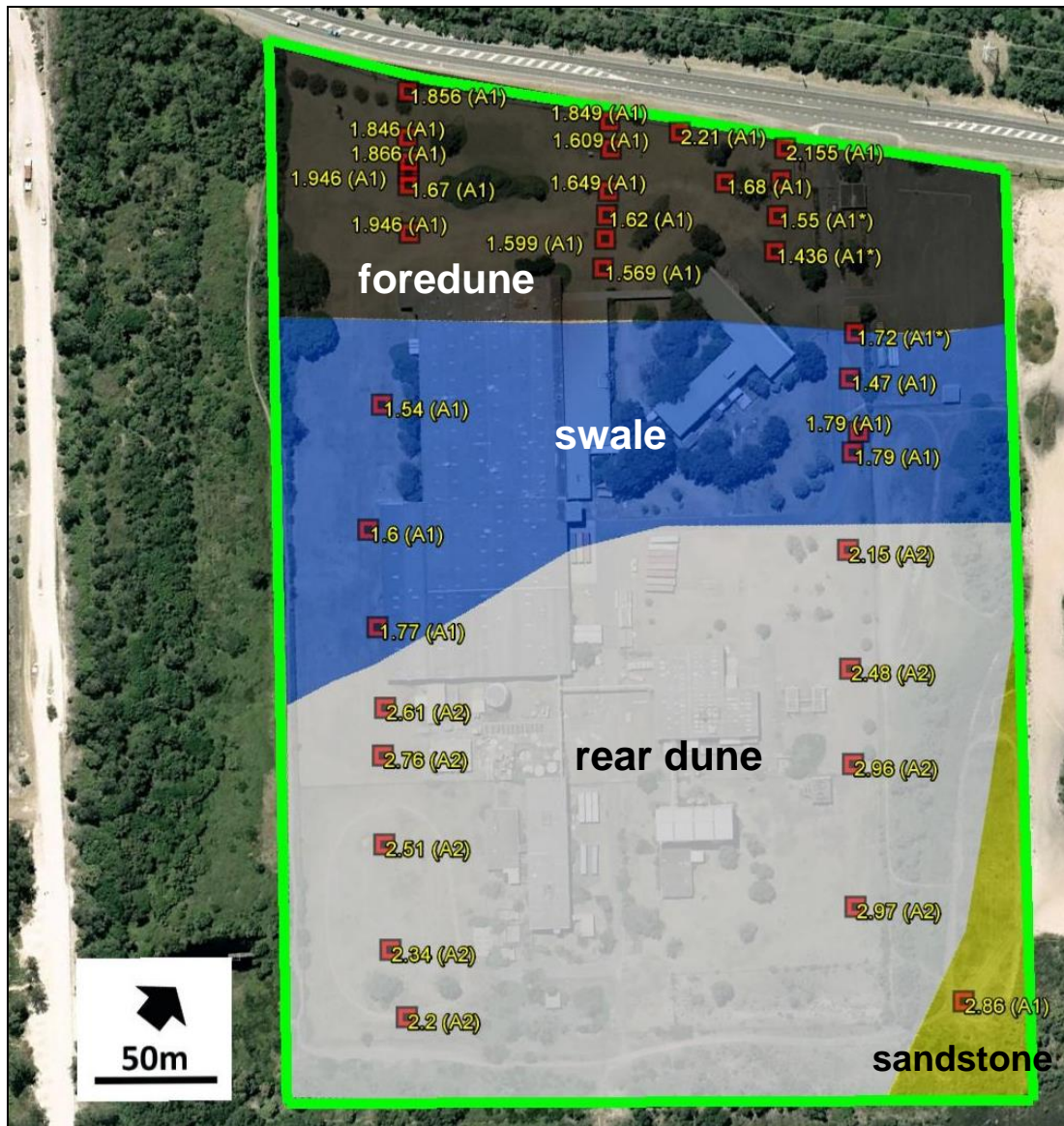
## 4.2 Results of the Test Excavation

The location of excavated squares/trenches is shown in **Figure 22**. Details of excavated units are presented in **Appendix C** and summarised in **Section 4.2.3**. The location of retrieved Aboriginal cultural remains are shown in **Figure 27**.

### 4.2.1 Site Stratigraphy and Environment

#### Landscape Contexts

The archaeological test excavations noted four main landscape units, all overlain by varying amounts of sand and/or rubble fill, as described below and depicted in **Figure 26**.



**Figure 26. Elevations of natural buried soil horizons and landscape unit interpretation.**

[Locations of measurements shown as red squares. Elevations shown as metres AHD in yellow followed by interpretation of uppermost soil horizon, where \* indicates a truncated A1 horizon, accounting for lower elevations. Designations of landform extents are approximate and by extrapolation].

### 1. Deposits relating to the former (buried) dune surface

As described in **Section 3**, this represents a foredune which formerly fringed Quibray Bay. It is relatively accurately depicted and interpreted in **Figure 4** but the test excavations have allowed the extend of the dune to be more accurately mapped as shown in **Figure 26**. It is restricted to the northern quarter of the subject land where it is overlain by 0.5 – 1.2m of clean sandy fill, deposited during the establishment of Abbotts Pharmaceuticals site in the 1960s. The dune surface is detectable as a black sandy organic soil (**Figure 28**). It has variable thickness of 0.1 – 0.9m dependent on local variation and extent of historical



disturbance/truncation of the uppermost horizon. Most squares exhibited some evidence of historical disturbance in the form of introduced materials or intermingled fill/natural sands. It varied in overall elevation between 1.6m and 2.2m AHD.

## **2. Interdune swale deposits**

These deposits were encountered landward of the foredune in an approximately 60 – 100m band east west across the property, as indicated in **Figure 4** and **Figure 26**. It was discernible on the basis of elevation and the nature of exposed deposits. Elevations were uniformly lower than the foredune and the second dune landward of the swale, suggesting a slope downwards between these two units. At the eastern end (along Transect D), the deposit was black humic sand similar in nature to the foredune, whereas on the western side (Transect F) a distinctly more silty, more compact black sand with preserved tree roots indicative of an anaerobic environment was encountered, suggestive of regular inundation, most likely from the swamp to the south to which it appears to have been connected (see **Figure 4**). The eastern swale deposits were considered to have archaeological sensitivity and were examined through the excavation of two squares (TrD Sq1 and TrD Sq2), the closest of which to the foredune contained several artefacts. The western swale/swamp deposits were not considered to have archaeological sensitivity and were not investigated.

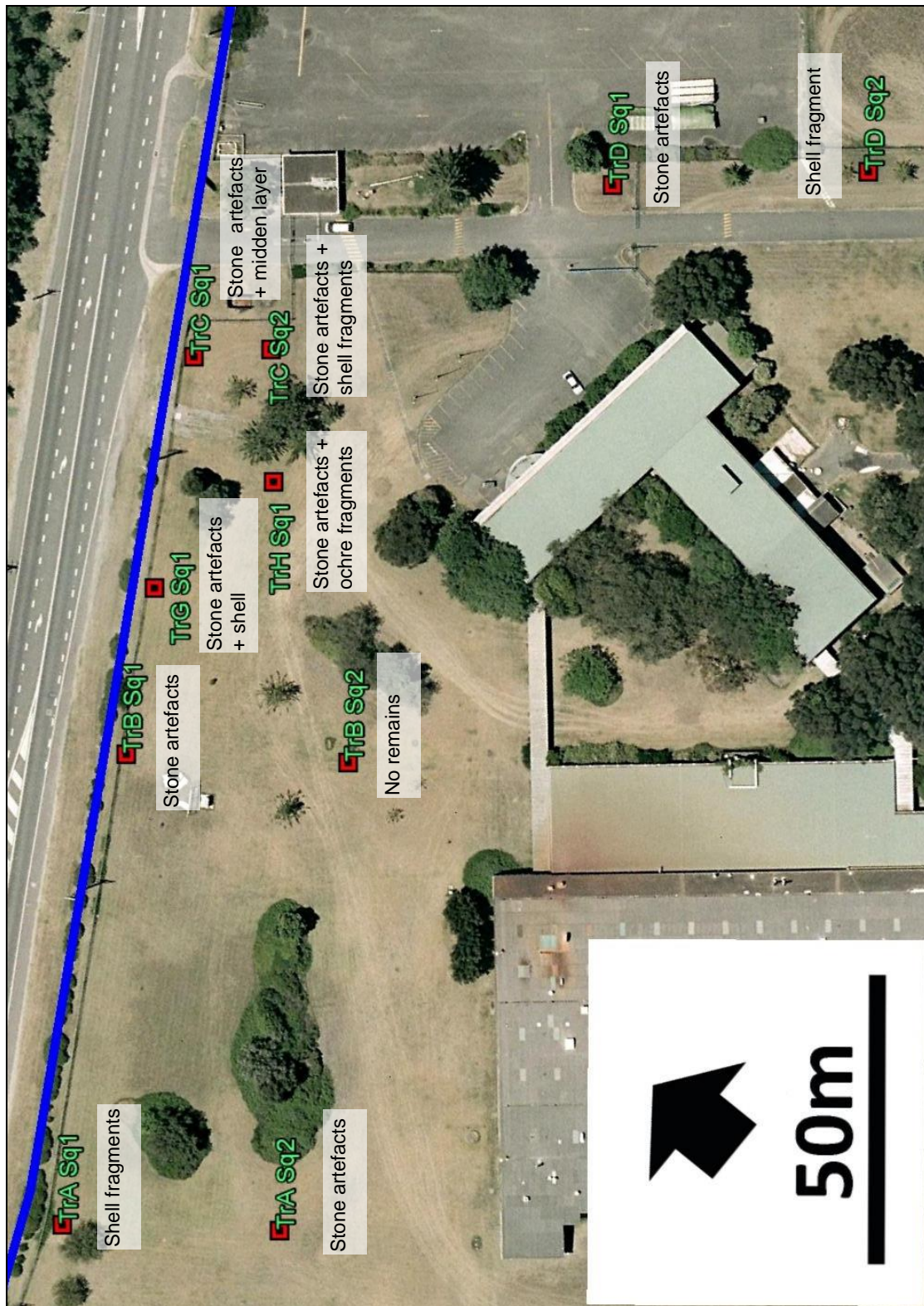
## **3. Rear dune**

Landward of the swale was a second dune, readily identifiable in the 1947 aerial photograph of the subject land (**Figure 4**). Levels indicate that this dune was considerable higher than the foredune. Uniformly across the southern half of the site, this dune was encountered below sand and rubble fill and was missing its uppermost horizon (A1). It was generally encountered as a truncated A2 horizon, grading into a B horizon and/or groundwater. The truncation of the deposit is likely to have resulted from the grading/spreading of this more elevated dune during site establishment works in the 1960s to achieve a uniform flat surface for construction. Due to the absence of the upper soil horizon, and comparably greater evidence of historical disturbance in the form of rubble fill and gouged deposit, this unit was not subject to manual excavation. Unlike the annotation of the 1947 aerial, no evidence of swamp deposits was found in the southeastern portion of the subject land and this is interpreted as an extension of the dune as shown in **Figure 26**.

## **3. Sandstone bedrock/floater**

In the southeastern corner of the property, mechanical investigations revealed the presence of a large sandstone floater, or possible sandstone bedrock about 0.4m below the current surface. This sandstone was also encountered during archaeological investigations of the adjacent property to the east, and relates to the sandstone bedrock of the Kurnell Headland (Jo McD CHM 2003). However the presence of deep sand deposits between this sandstone and the headland, and its absence elsewhere within the subject land, suggests that it may be a large piece of sandstone tens of metres in length which is either 'floating' in the sandy deposit, or anchored to the headland deposits at a deeper level. Overlying the sandstone was a developed and relatively intact humic, moist topsoil horizon. This was interpreted as being of relatively recent age and unlikely to retain archaeological sensitivity, but was examined through the excavation of TrJ Sq1, which located no Aboriginal archaeological remains.





**Figure 27. Location of archaeological remains retrieved during the excavations.**

[Note: almost all remains were located in Squares TrC Sq 1 & Sq2, TrG Sq1 and TrH Sq1].





Figure 28. Dark humic sand A1 horizon typical of foredune deposit below fill sand in TrC Sq2.



Figure 29. Silty compact sand deposits representing swale/swamp in TrF 20m.



**Figure 30. Banded sand and rubble fill overlying truncated A2 and B horizons of rear dune in TrD 100m.**



**Figure 31. Humic soil horizon above sandstone bedrock/floater in TrJ 0m.**



#### 4.2.2 Stratigraphic Units

Manual excavations were limited to the foredune and swale contexts as described above. Within these deposits, three main stratigraphic units were consistently located. A typical section is shown in **Figure 32**.

##### 1. Clean fill sand (Unit 0)

This pale/yellow dune sand derives from the spreading of sands during site establishment works in the 1960s. It was mostly encountered as a uniform sand layer up to 1.2m in thickness, but occasionally contained sandy lenses of various hues and textures and rubble of varying sizes.

##### 2. The former dune/swale surface (Unit 1)

This is the upper surface of the former dune as referred to in **Section 4.2.1**. It consists of a black sandy organic soil horizon of varying thickness (up to 90 cm, generally up to 50cm) and is referred to as Unit 1. Unit 1 contained almost all of the Aboriginal cultural remains (stone, ochre manuport, shell) encountered during the archaeological test excavations, with the exception of several isolated shell fragments and small stone pieces which worked their way by bioturbation into the underlying A2 horizon. The thickness, nature and integrity of this soil horizon demonstrates that this buried dune represented a stable vegetated land surface.

##### Brown/grey leached sand horizon (Unit 2)

This unit consists of brown/grey leached sand referred to as Unit 2 and has a diffuse boundary with the overlying Unit 1. This component of the soil profile represents leaching of minerals from Unit 1 (the former vegetated dune surface) and extends generally to the level of groundwater. This layer was devoid of Aboriginal cultural remains with the exception of several isolated shell fragments and small stone pieces which worked their way by bioturbation into the uppermost levels of this horizon.

#### 4.2.3 Stratigraphy and Integrity

In general, the foredune as encountered in the mechanical excavations, and observed in section during the manual excavations, was relatively undisturbed. The uppermost horizon was general mixed to some degree with the overlying fill sand as could be expected from the mechanical spreading/grading of sands across this surface in the 1960s. With the exception of several clearly truncated A1 horizons within the foredune and swale deposit (see **Figure 26**), the dune appears to have survived relatively undisturbed, protected to some degree by the deposition of fill sands in the 1960s.

The relative low density or absence of Aboriginal cultural remains across the dune is unlikely to be due to historical disturbance/removal, but probably represents less intense use of this area by Aboriginal people. This is supported by the stone artefact analysis presented below, which found that stone artefacts were in pristine condition. Soil pH samples also do not suggest that midden was once present but has decomposed, and the relative young age of





the midden located, and survival of isolated fragments of shell across the dune, suggest that the surviving evidence broadly approximates that which was originally deposited.

As noted above, a midden (AHIMS #52-3-0258) was previously recorded within the same foredune landform to the immediate north of the subject land, on the north and south sides of Captain Cook Drive. This midden, while not substantial by local standards, is still considerably thicker and denser than the midden layer encountered in 238-258 Captain Cook Drive. It is possible therefore, that the portion of the original Quibray Bay foredune represented within the subject land is its rearmost extent, and that more intensive Aboriginal use occurred along its seaward portions.

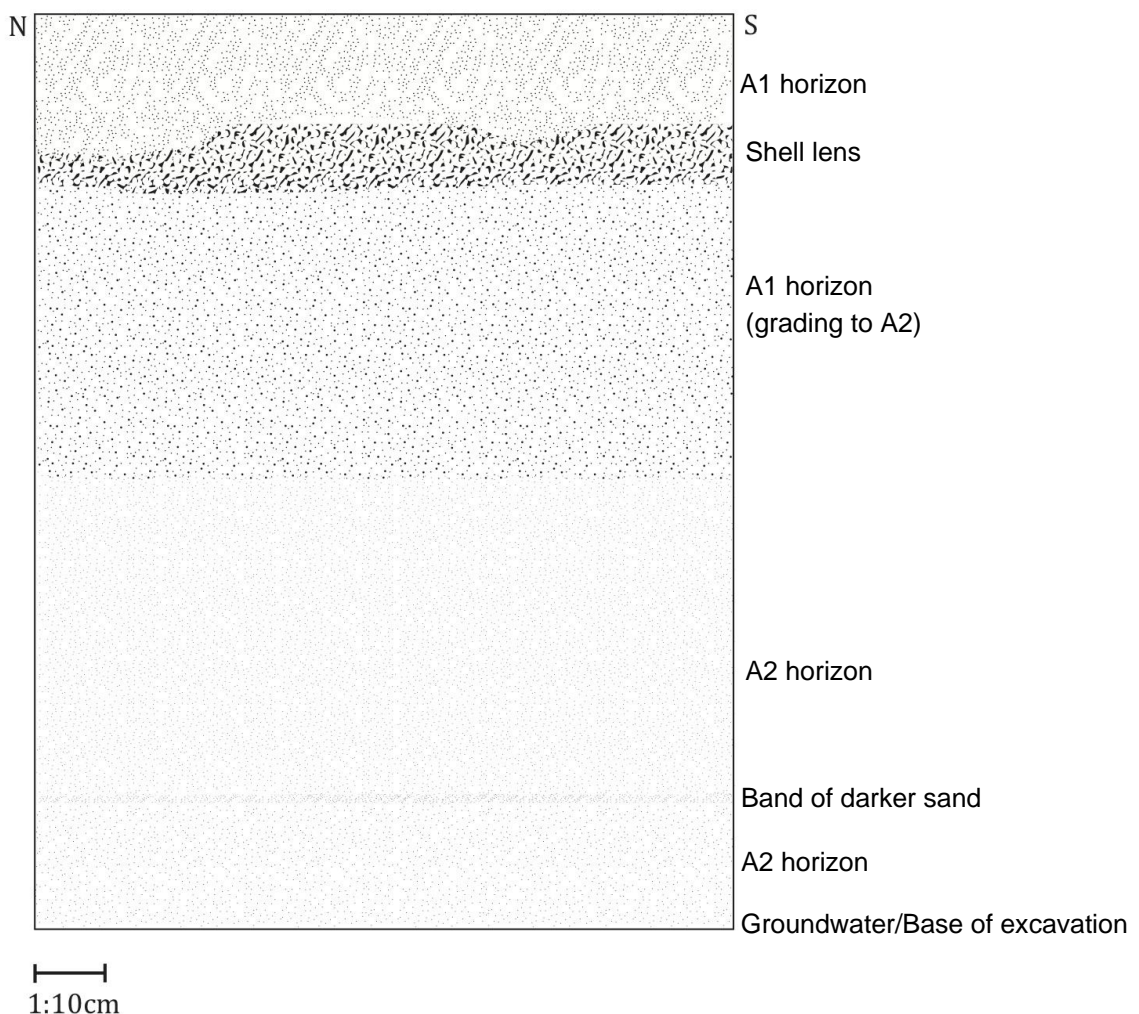


Figure 32. East section of TrC Sq1.



#### 4.2.4 The Age of the Site

The lack of substantial archaeological remains (e.g. midden lenses), and regular evidence of tree root penetration and *in situ* natural burning of tree roots, restricted opportunities for scientific dating of the site. The only samples able to be taken for analysis were associated with a thin band of midden located in TrC Sq1. The band of midden was 1-7cm in thickness and was located approximately 0.15 – 0.22cm below the top of the A1 horizon. A sample of several valves of Sydney cockle (*Anadara trapezia*) was taken from the midden layer in the eastern section of the square and submitted to the Waikato Radiocarbon Dating Laboratory in New Zealand for dating (sample #Wk-39035). No charcoal was located that could be used as a complementary dating sample for the shell. Because of this, sand samples were taken for thermoluminescence (TL) dating from immediately above and below the shell layer (at 15 and 30cm below the surface of the A1 horizon) and submitted to the University of Wollongong for dating. However the results of the TL dating are in error, dating the sands below and above the midden to around ten thousand years ago, many millennia before this dune horizon formed and also at odd with the much younger date of the shells in between the two samples.

The shell sample from the midden layer was dated at 778±23BP (conventional radiocarbon age; see radiocarbon dating report in **Appendix D.**). This number refers to a single event that has a roughly 68% chance (one standard statistical deviation) of having occurred within the range presented. It is more useful however to calibrate this figure and convert it into calendar years, and giving a 95% certainty (two standard deviations) that the event falls between the calendar years provided.

This suggests that the midden within 238-258 Captain Cook Drive was created by Aboriginal people sometime between 1430AD – 1670AD. This is a comparatively recent date, but within the range of other nearby sites along the Kurnell Peninsula (e.g. the McCue Midden to the west and Landing Place Midden on the Kurnell headland to the east), which were used within the last several thousand years and continued to be used up to and into the European contact period. A single date cannot provide any indication of how long the midden was used for, or how intensively, however the low density of remains in comparison to other nearby sites, suggests that the area was not used repeatedly or intensively by Aboriginal people.

#### 4.2.5 Aboriginal Stone Artefact Analysis

The flaked stone pieces retrieved from the test excavations were analysed following the methodology outlined in **Section 4.1.5.**

##### Quantity of Stone Pieces and Raw Materials

A total of 80 pieces of stone, as well as several unworked fragments of ochre, were retrieved during the archaeological test excavations, primarily in the northeastern corner of the subject land. The total numbers of flaked stone retrieved during the archaeological test excavations are shown in **Table 8**, classified according to raw material. As noted above this only includes counts and weights for all pieces that are at least 10mm in one dimension. They number 43 for all spits. The frequency and rock types of the additional 37 pieces less than 10mm are noted in **Table 9**. In addition **Table 10** summarises the predominant rock types amongst the 43 analysed stone pieces, which demonstrates that chert and quartz are the predominant rock





types, followed by silcrete. The assemblage is very small compared with other sites in the area, such as the McCue Midden (total 460) to the west and Landing Place Midden (total 3,970) on the headland. Nevertheless, all three sites show a predominance of chert and quartz. However silcrete is much more frequent at the McCue midden compared with the Landing Place midden. To that extent, the site 238 CC Drive is more like the McCue Midden than the Landing Place midden.

Kurnell 238 CC Drive	Silcrete count	Quartzite count	Quartz count	Volcanic count	Chert count	TOTAL Flaked Lithics count	Silcrete weight g.	Quartzite weight g.	Quartz weight g.	Volcanic weight g.	Chert weight g.	TOTAL Flaked Lithics weight g.
TrA Sq2 Unit0 Spit1				1		1				1.6		
TrA Sq2 Unit1 Spit3					2	2					2.6	
<b>TOTAL</b>				1	2	3						4.2
TrB Sq1 Unit1 Spit2			1			0		0.2				
<b>TOTAL</b>			1			1						0.2
TrC Sq1 Unit2 Spit1	1	1				2	0.3	0.3				
TrC Sq1 Unit1 Spit3					1	1					0.4	
TrC Sq1 Unit1 Spit5					1	1					1.2	
TrC Sq1 Unit1 Spit6			9			9		2.6				
TrC Sq1 Unit1 Spit7	1	1		1	1	3	1.7	0.1		0.2		
<b>TOTAL</b>	2	1	10	3	16							6.8
TrC Sq2 Unit0 Spit1					5	5					1.2	1.2
TrC Sq2 Unit1 Spit4			3			3		0.6				0.6
TrC Sq2 Unit1 Spit5			2			2		1.0				1.0
<b>TOTAL</b>			5		5	10						2.8
TrD Sq1 Unit1 Spit2	2				1	3	2.7				0.1	
TrD Sq1 Unit1 Spit3						0						
<b>TOTAL</b>	2				1	3						2.8
TrG Sq1 Unit2 Spit1	1					1	0.3					
TrG Sq1 Unit1 Spit3						0						
TrG Sq1 Unit1 Spit4			4			4		0.2				
TrG Sq1 Unit1 Spit5					1	1					0.4	
TrG Sq1 Unit1 Spit6	1	1		1	1	3	0.6	0.1		0.6		
<b>TOTAL</b>	2		5	2	9							2.2
TrH Sq1 Unit1 Spit2					1	1					4.8	
TrH Sq1 Unit1 Spit3						0						
<b>TOTAL</b>					1	1						4.8

Table 8. Flaked stone artefacts and raw materials.



TrC Sq1 Unit1 Spit3	2 chips quartz.
TrC Sq1 Unit1 Spit6	8 chips quartz.
TrC Sq1 Unit1 Spit7	4 chips quartz.
TrC Sq2 Unit1 Spit4	3 chips quartz, 1 chip chert.
TrC Sq2 Unit1 Spit5	1 chip quartz.
TrD Sq1 Unit1 Spit2	1 chip chert.
TrD Sq1 Unit1 Spit3	9 chips chert, 1 chip silcrete.
TrG Sq1 Unit1 Spit3	3 chips quartz, 2 chips chert.
TrG Sq1 Unit1 Spit5	1 chip quartz.
TrG Sq1 Unit1 Spit6	1 chip chert.
TrH Sq1 Unit1 Spit3	11 frags ochre 54gm, 1 chip quartz.

Table 9. Additional small chips of stone and ochre fragments.

	Count	Weight g.
Silcrete	6	5.6
Quartzite	1	0.3
Quartz	21	4.8
Volcanic	1	1.6
Chert	14	11.5
<b>TOTAL</b>	<b>43</b>	<b>23.8</b>

Table 10. Frequency of raw materials by count and weight used to make artefacts.



Figure 33. Ochre fragments in site in TrH Sq1 Unit 1, Spit 3.

The ochre found in TrH Sq1 Unit 1 Spit 3 (**Figure 33**) shows no signs of grinding, so may be of natural occurrence or a broken up piece of ochre brought into the site by Aboriginal people.



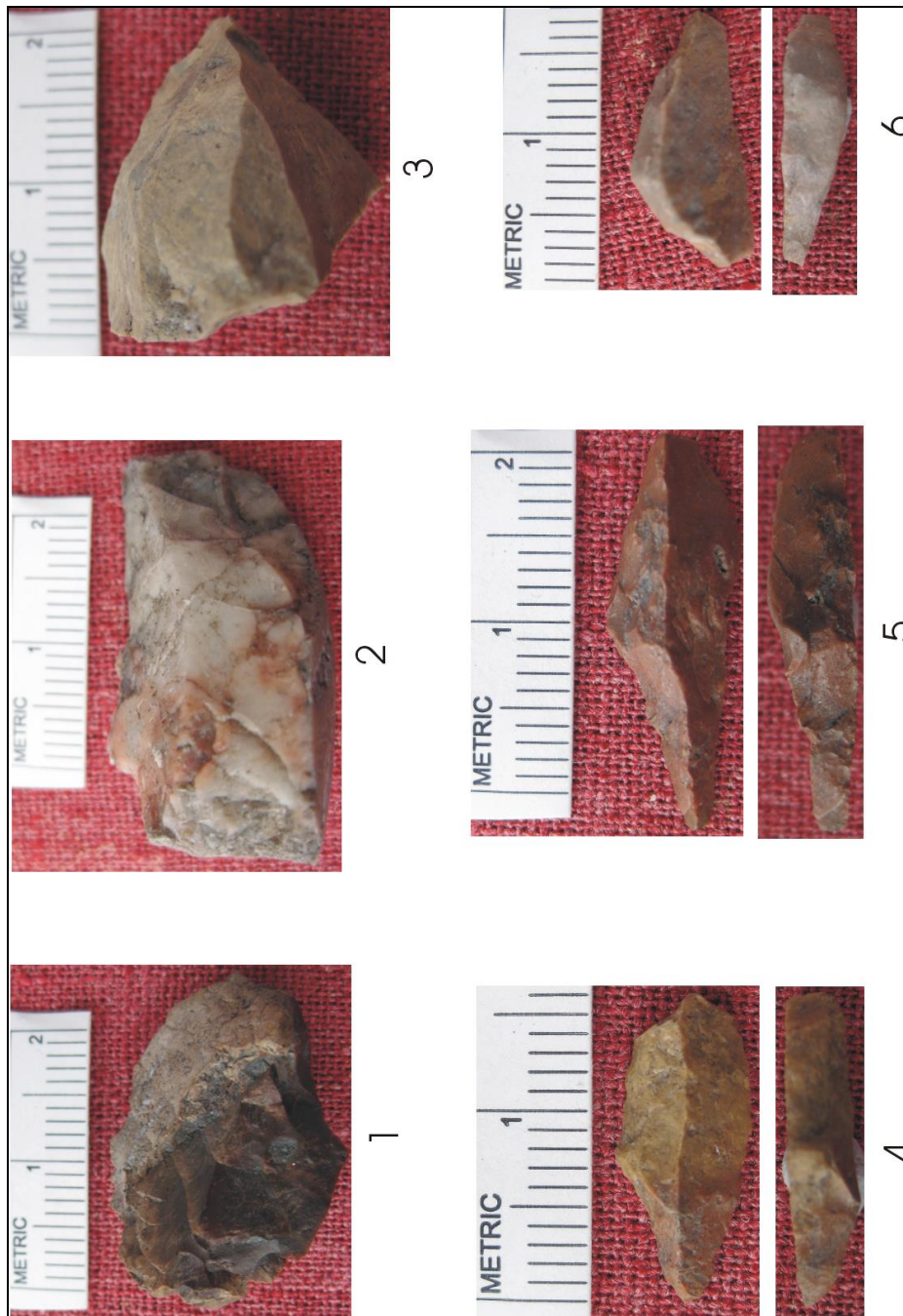
### Identifying Artefacts within the Stone Assemblage

In **Table 11** there is an analysis of the definite artefacts according to which stage of the flaking, or subsequent breakage, process they represent to calculate the total number of artefacts<sup>7</sup> from the test excavations. Using these principles, it can be concluded that the flaked artefacts excavated at Site 238 CC Drive sum to a total of at least 16 (see also **Figure 34**). How many more than 16 artefacts are represented in the additional category of distal parts of artefacts (27 pieces) would require an intensive programme of refitting broken edges that is not considered warranted in this case. The 16 artefacts include 3 complete flakes which are detailed in **Table 12**.

Kurnell 238 CC Drive	Complete Flakes count	Complete Flakes weight g.	Butt Flakes count	Butt Flakes weight g.	Distal Parts count	Distal Parts weight g.	Core count	Core weight g.	Backed blades count	Backed blades weight g
TrA Sq2 Unit0 Spit1					1	1.6				
TrA Sq2 Unit1 Spit3					1	1.0	1	1.6		
TrB Sq1 Unit1 Spit2					1	0.2				
TrC Sq1 Unit2 Spit1			1	0.3					1	0.3
TrC Sq1 Unit1 Spit3	1	0.4								
TrC Sq1 Unit1 Spit5	1	1.2								
TrC Sq1 Unit1 Spit6			1	0.6	8	2.0				
TrC Sq1 Unit1 Spit7	1	1.7			1	0.1			1	0.2
TrC Sq2 Unit0 Spit1					5	1.2				
TrC Sq2 Unit1 Spit4			1	0.3	2	0.3				
TrC Sq2 Unit1 Spit5					2	1.0				
TrD Sq1 Unit1 Spit2			1	0.1	0	0.0	1	2.4	1	0.3
TrG Sq1 Unit2 Spit1									1	0.3
TrG Sq1 Unit1 Spit4					4	0.2				
TrG Sq1 Unit1 Spit5			1	0.4						
TrG Sq1 Unit1 Spit6					2	0.7			1	0.6
TrH Sq1 Unit1 Spit2							1	4.8		

**Table 11. Details of artefact forms.**

<sup>7</sup> Totalling complete flakes, butts of flakes, finished implements and cores as described in **Section 4.1.5**.



**Figure 34. Selection of stone artefacts from 238-258 Captain Cook Drive.**

1. TrA Sq2 Unit1 Spit3. Bipolar core of chert. Note the scalar flaking on left of image.
2. TrH Sq1 Unit1 Spit2. Bipolar core of chert. Note the scalar flaking at both ends of image.
3. TrD Sq1 Unit1 Spit2. Pyramidal core. Note flake scars from striking platform on left of image.
4. TrC Sq1 Unit2 Spit1. Backed blade.
5. TrG Sq1 Unit1 Spit6. Backed blade.
6. TrG Sq1 Unit2 Spit1. Backed blade.





Unit	Weight g.	Length mm.	Width mm.	Thickness mm.	% cortex	Platform width mm.	Platform thickness mm.	Material
TrC Sq1 Unit1 Spit3	0.4	14.0	11.0	2.4	0	4.0	1.2	chert
TrC Sq1 Unit1 Spit5	1.2	19.0	16.0	9.0	0	9.0	4.0	chert
TrC Sq1 Unit1 Spit7	1.7	25.0	18.0	8.0	0	8.0	5.0	silcrete

Table 12. Details of complete flakes.

#### Examination of Artefact Forms

Details of the artefact forms are recorded in **Table 13**. This shows the site to have elements of a Bondaian industry, characterised by its backed blades (**Figure 34**). Backed blades look somewhat like the blade on a penknife - there is a sharp straight edge, and a curved back. The sharp edge is left over from the original sharp edge of the primary flake from which the backed blade is made. The curved back is delicately applied to the blade as a blunting procedure (Holdaway and Stern 2004; 261-262).

Unit	Weight g.	Length mm.	Width mm.	Thickness mm.	Material	Comment
TrA Sq2 Unit1 Spit3	1.6	25.0	17.0	5.0	chert	Bipolar core unidirectional
TrC Sq1 Unit2 Spit1	0.3	15.0	7.0	3.0	silcrete pink	Backed blade Bondi Point
TrC Sq1 Unit1 Spit7	>0.2	>17	7.0	3.0	chert	Backed blade incomplete mid section
TrD Sq1 Unit1 Spit2	>2.3	>19	>19	>26	silcrete gray	Broken single platform core
TrD Sq1 Unit1 Spit2	0.3	11.0	7.0	4.5	silcrete gray	Backed blade crescent
TrG Sq1 Unit2 Spit1	>0.3	>1.5	7.0	3.5	silcrete pink	Backed blade Bondi Point tip broken off
TrG Sq1 Unit1 Spit6	0.6	23.0	0.6	5.0	silcrete red	Backed blade Bondi Point
TrH Sq1 Unit1 Spit2	4.8	31.0	15.0	9.0	chert	Bipolar core unidirectional

Table 13. Properties of the worked artefact forms.



Backed blades figure importantly in the literature of Australian archaeology (Mulvaney & Kamminga, 1999). They served as barbs on spears (for hunting or fishing). It is also possible that they could be arranged to form points of spears. To serve their purpose they would have been attached with gummy resin to the wooden point of the spear (McDonald et al., 2007).<sup>8</sup>

Bipolar cores are also illustrated in **Figure 34**. They have a controversial history of interpretation. Currently they are thought of not as tools in own right, but as scalar cores - an economical method of obtaining sharp and thin flakes. The technique was invented in various parts of the world at different times. See, for example, Ballin (1999).

The total number of artefact forms is scanty at the site. Nevertheless the occurrence of backed blades and bipolar cores makes the industry much more like the adjacent sites at the McCue Midden (Mary Dallas Consulting Archaeologists, 2005, McDonald 2008:53) rather than the Landing Place midden site within Kamay Botany Bay National Park on the Kurnell Headland. In the case of the Landing Place midden, it is worth noting that in spite of the large assemblage (3,970 artefacts), not a single backed blade was recognised.

These Bondaian properties of the 238-258 Captain Cook Drive industry bear on the age of the deposit. Attenbrow gives a useful summary account of changes in the local Holocene (Attenbrow 2006, 196-198). In the case of the 238-258 Captain Cook Drive Bondaian industry, there is one example recovered of the specialised core used for the production of elongated flakes (blade cores). Their presence suggests that some flaking was being done on the spot during the local occupation of the area, and that the assemblage does not merely represent hunting tools that were dropped over a period of time. This conclusion is supported by a small collection of thin and narrow quartz flakes and distal parts that all come from a single spit TrC Sq1 Unit1 Spit6.

In summary, the scatter of artefacts from Site 238 CC Drive indicates some slight activity in the area, including flaking. There are no indications of intensive use of the area. This is not to say that other activities were not going on in the area excavated. Many activities such as basket making and food processing leave no material traces.

### **Examination of edges**

No indications of use wear were identified in the assemblage. The edges appear pristine.

### **Spatial Distribution**

Total frequencies of the 43 stone artefacts in each of seven squares are shown in **Table 8**. As well, there were four squares excavated that had zero artefacts or chips. The number of artefacts in the eleven excavated squares ranges between zero and 16. Monte Carlo based analysis for probability of a theoretically even spread across the area excavated is  $p = <0.0001$ . It can therefore be concluded that the artefacts are not drawn from an even spread across the area sampled for excavation.

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<sup>8</sup> Gum could not be expected to survive in the soil, which is repeatedly dried and wetted by rainfall. Survival of gum requires constantly wet or dry conditions, such as occur in swamps, or in certain deep and dry rockshelters and caves.



### **Vertical Distribution**

No indications were found of a pattern of vertical distribution, with the exception of the quartz already mentioned and found in TrC Sq1 Unit1 Spit6.

### **Origin of Stone Used for Flaking**

Pieces of stone were examined for cortex, which is the original outer surface of the stone used for flaking. Cortex was uncommon, but its presence nevertheless indicates that stone was being derived from river or beach pebbles. The remainder of the artefacts, that do not show cortex, may therefore represent pieces that were flaked off cores after cortex had been flaked away.

### **Site Taphonomy**

In this section site taphonomy is considered, which means looking at the processes that have affected the stone artefacts after their abandonment at the site. The potential processes to be considered include abrasion by wind (common near sand dunes), natural chemical corrosion in the soil, evidence that the artefacts were in situ while soil processes developed, cracking by fire, damage to edges by trampling, and bioturbation in general.<sup>9</sup> Examination of the artefacts from 238-258 Captain Cook Drive reveals no damage by taphonomic processes. The pieces are in a remarkably pristine condition.

It is assumed therefore that the deposits from which the artefacts come are relatively undisturbed. However, it is also assumed that even slight bioturbation will have destroyed micro-associations between artefacts. For example it must be expected that backed blades mounted in series on a spear will no longer retain their ordered distribution - the individual components will have shifted apart.

A thorough study of 'conjoins' could throw more light on the question of movement. The theory of conjoins is that if a flake fits to a core, or to the back of another flake, then we are looking at stones that were made on the spot where they were excavated. A succession of adjacent conjoins rules out mass movement of artefacts, since the probability is low of two conjoins remaining together after mixing of the deposit. Stratigraphic issues are not archaeologically important or controversial at the 238-258 Captain Cook Drive site. Therefore a study of conjoins was not carried out.

### **Age of the Site**

The artefacts in the upper levels are consistent with a late Holocene age (very roughly sometime in the last 3,000 years ago (Attenbrow, 2006; 196-198). More particularly, they are consistent with the McCue Midden, where the radiocarbon dates were considered: "indicative of at least intermittent usage of the McCue Midden throughout a 1,500 year period (75 or more generations), possibly up to or after the arrival of Europeans in the area . . ." (MDCA 2005, p.81). The same order of age was obtained from the excavations at the Landing Place Midden. The radiocarbon date obtained for the 238-258 Captain Cook Drive site is therefore consistent with both the stone industry represented at the site, and the dates of other similar assemblages across the Kurnell Peninsula.

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<sup>9</sup> Bioturbation includes disturbance to the artefacts by such living factors as earth worms and roots.



The difference in artefact types between The Landing Place Midden and the McCue Midden and 238-258 Captain Cook Drive site are unlikely to be due to differences in age but to differences in activities carried out. The Landing Place Midden has a location and artefacts that are consistent with its use as a foreshore fishing site, whereas the other sites are in a more generalised environment that could include hunting.

### **Conclusions**

The archaeological importance or significance of an artefact assemblage can be evaluated by three factors:

- sheer numbers of artefacts;
- specially rare quality of a few artefacts;
- special associations of artefacts (e.g. a single event around a fireplace)

Based on the above analysis the artefacts from the 238-258 Captain Cook Drive site do not meet any of these three requirements. Therefore it is not concluded that the stone artefacts from the site are of *archaeological* importance, though this does not indicate its possible importance to Aboriginal people.

### **4.2.6 Shell Analysis**

Three major questions can generally be asked of shellfish remains from midden sites.

1. What shellfish were consumed and in what quantities?
2. How and where were shellfish gathered and how were they prepared and eaten (or used for other purposes)?
3. Are there any differences in shell species distribution across the site which may indicate a patterning or 'layout' to the campsite?

At 238-258 Captain Cook Drive, midden was essentially only encountered in one square, and represented a sparse, thin layer of shell. Hence issues of intra-site patterning cannot be examined for the site, though some conclusions are made with reference to the extension of the same midden recorded by Dickson immediately adjacent to the subject land.

In the interests of readability, the common names of shellfish species are used in preference to their scientific names in the following discussions. The equivalent names are given in **Table 14** and the main species discussed are also illustrated in **Figure 35**.

#### **What shellfish were eaten?**

A total of just under three kilograms of shell was retrieved during the test excavations, almost all of which (98%) came from the midden lens in square TrC Sq1. Five species were documented at the site, with Sydney cockle and Hercules whelk being the most common by weight and number, as well as small quantities of rock oyster (**Table 15** to **Table 17**). A similar distribution of species was noted by Dickson in the adjacent midden along Captain Cook Drive. Triton and edible mussel were represented by one specimen only. The midden was





situated close to from extensive mudflats and mangroves lining Quibray Bay, most probably teeming with shellfish as well as numerous other food resources. It is therefore not surprising that the most common species were those found in this environment. The presence of a triton shell however demonstrates that Aboriginal people also brought shellfish from rock platforms some distance away either at Boat Harbour or the northern side of the Kurnell headland back to the site.

**Table 14. Shell species present at 238-258 Captain Cook Drive.**

Common Name	Scientific Name	Classification	Likely to have been eaten (y/n)	Environment		
				Estuary	Rocky shore /reef	Sandy beach
Sydney Cockle	<i>Anadara trapezia</i>	Deshayes, 1840	y	x		
Hercules Whelk	<i>Pyrazus ebeninus</i>	Bruguiere, 1792	y	x		
Rock Oyster	<i>Crassostrea commercialis</i>	Iredale & Roughley, 1933	y	x	x	
Edible Mussel	<i>Mytilus edulis planulatus</i>	Lamarck, 1819	y	x	x	
Triton	<i>Cabestana spengleri</i>	Perry, 1811	y		x	

**Table 15. Relative frequency of shell species by weight and MNI.**

Species	Total Weight (g)	% Total Weight	Total MNI	% Total MNI
Sydney Cockle	1576	52.9	42	30.4
Hercules Whelk	1258	42.2	93	67.4
Triton	76	2.5	1	0.7
Rock Oyster	42	1.4	2	1.4
Edible Mussel	1	0.1	0	0
Various Unid'd shell	28	0.9	0	0
TOTAL	2980	100	138	100

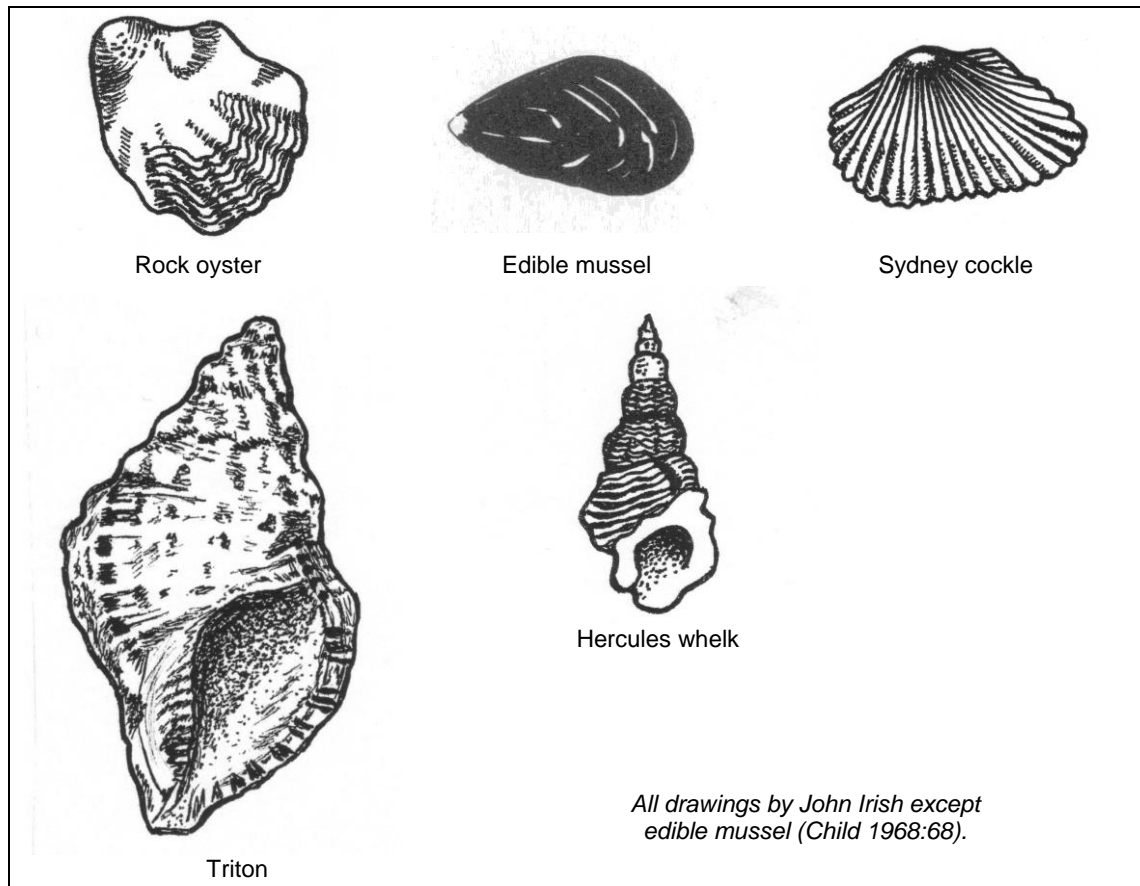
**Table 16. Total shell weights (g) per excavated units.**



Square	Unit	Spit	Unsorted (2mm)	Unid'd Shell	Hercules Whelk	Sydney Cockle	Rock Oyster	Triton	Edible mussel
TrA Sq 1	0	1		1					
TrC Sq1	0	1		1	22	1			
TrC Sq1	1	1		4	71	5	2		
TrC Sq1	1	2	30	7	518	444	13	76	1
TrC Sq1	1	3	64	5	598	1084	23		
TrC Sq1	1	4		2	5	28			
TrC Sq1	1	5			12	4			
TrC Sq1	1	6		1	3	6			
TrC Sq1	2	1				1			
TrC Sq1	2	2				1			
TrC Sq1	2	3				1			
TrC Sq2	1	4		1					
TrD Sq2	1	1		1					
TrD Sq2	1	4		1					
TrG Sq1	0/1	Bulk		1	7	1	4		
TrG Sq1	1	1		1	22				
TrG Sq1	1	2		1					
TrH Sq1	0	1		1					

**Table 17. Minimum number of individuals per excavated unit.**

Square	Unit	Spit	Hercules Whelk	Sydney Cockle	Rock oyster	Triton
TrC Sq1	0	1	2			
TrC Sq1	1	1	5			
TrC Sq1	1	2	39	12		1
TrC Sq1	1	3	39	29	2	
TrC Sq1	1	4	1	1		
TrC Sq1	1	5	3			
TrC Sq1	1	6	1			
TrG Sq1	0/1	Bulk	1			
TrG Sq1	1	1	2			



**Figure 35. Shellfish species from 238-258 Captain Cook Drive (approx. 2/3 natural size).**

#### **How were shellfish gathered and eaten (or used)?**

The excavated portion of the midden reveals no direct evidence about where and how shellfish were gathered except what can be inferred from the natural habitat of the shellfish and the known gathering practices amongst Aboriginal people in the Botany Bay area (as contained in surviving traditional knowledge, and European historical descriptions).

The main food species (cockle, Hercules whelk, rock oyster) were gathered from the estuarine/mangrove flats present along Quibray Bay. Early European visitors to Botany Bay (such as Captain Cook in 1770 and the First Fleet in 1788) noted Aboriginal people gathering and consuming shellfish close to the bay shore, and the middens formed from this practise over the years:

“On the Sand and Mud banks are Oysters, Muscles, Cockles &c which I believe are the chief support of the inhabitants, who go into shoald water with their little Canoes and pick them out of the sand and Mud with their hands and sometimes roast and eat them in the Canoe”

[Cook in Beaglehole 1955:312]



“I landed in two places one of which the people had but just left, as there were small fires and fresh muscles broiling upon them – here likewise lay vast heaps of the largest oyster shells [mud oyster] I ever saw.”

[Cook in Beaglehole 1955:306]

Although shellfish rarely form the major food source amongst Aboriginal people, they are often a regularly gathered food and it is quite common for campsites to be located in proximity to shellbeds or rock platforms. It is quite likely that the only major difference between shell middens and other coastal campsites is the presence of shell due to its location.

Historical and ethnographic evidence suggests that women, children and the elderly would have been largely responsible for the gathering of shellfish. A number of methods were used to gather shellfish from different environments. Sydney rock oysters and Hercules whelks attach to each other or solid objects in the mangrove mud and may have been gathered as individuals or clumps of shell, sometimes attached to roots (as noted in other sites on the Kurnell Peninsula e.g. Dallas *et al.* 2001). Cockles “float” in the mud and were most likely located with sticks and extracted by hand (on foot of from canoes as noted above).

The test excavations at 238-258 Captain Cook Drive revealed no direct evidence of methods used to collect and transport shellfish onto the site. However it is likely that shellfish were gathered from the mudflats in the manner described above by Captain Cook. Transport of shellfish from canoe or hand to the site may have been by a kind of bag or container of types known from the Sydney area. No physical evidence of this exists at the site, although Cook observed in Botany Bay that net bags were taken in canoes to hold gathered foods including shellfish (Beaglehole 1955:397).

Shellfish do not require cooking of any form to be eaten, and often heat is applied to shell merely to make extracting the flesh easier (e.g. see Meehan 1982:86-9, Isaacs 1997:171-180). This is particularly true for bivalves (such as cockles) where a short application of heat relaxes the hinge muscle and opens the shellfish. The absence of heavily burnt shell in most middens (including the current site), suggests that shellfish were not ‘cooked’ for any great length of time. Gastropods such as Hercules whelks are known to have been eaten by Aboriginal people elsewhere in Australia by extracting the flesh through the aperture (opening) with a pin or by breaking the shell open or at the spire (top) and pulling the flesh out.

No evidence for of shells being used or modified as implements (e.g. cockle shell scrapers) was noted at the site.

#### **The distribution of shellfish remains**

Almost all of the shell recorded at the site came from Square TrC Sq1. Shells were present in other squares as isolated fragments only, and do not represent midden deposit. The good overall condition of the foredune deposit has already been noted, and suggests that more midden was not formerly present across the site. It is also noted that Frank Dickson recorded a more substantial midden lens about 30m seaward of TrC Sq1 within the same foredune, on the northern side of Captain Cook Drive. This midden consisted of the same species, but also contained several fish bone fragments, whereas none were found within 238-258 Captain Cook Drive. This suggests that the midden present within the subject land represents the





edge of part of a broader midden deposit (AHIMS #52-3-0258) spread across parts of the foredune in this area.



## 5.0

# Archaeological Assessment Results

### 5.1 Aboriginal Objects within the Subject Land

The Aboriginal archaeological investigations documented in this report have resulted in the identification of Aboriginal archaeological remains within parts of the northern quarter of the subject land, equating with the extent of the former Quibray Bay foredune. Specifically, within this area, a low density scatter of stone artefacts was located, and a small midden lens was present within one square, which lacked fish or animal bones as is commonly present elsewhere along the Kurnell peninsula. No evidence of hearths or other site features was located during the test excavations. Several unworked pieces of red ochre were also retrieved from the site, and were clearly brought onto the site by Aboriginal people. A radiocarbon date obtained from this midden lens suggest the site was in use around 500 years ago, which accords well with other dated evidence along the peninsula.

The documented archaeological remains are almost entirely contained within a 30m (north-south) x 60m (east-west) area in the north-eastern corner of the subject land (**Figure 36**). This area accounts for 99% of the retrieved shell, all of the retrieved ochre fragments and 79% of all of the worked stone pieces. All excavated evidence suggests that the dune, apart from being impacted to some degree on its uppermost surface, is relatively intact. It is therefore likely that the type and frequency of Aboriginal archaeological remains documented during the archaeological test excavations is indicative of how the area was used in the past by Aboriginal people. That is, the area was used intermittently rather than intensively for activities such as consumption of shellfish and artefact production. Compared with other nearby sites however (e.g. MDCA 2005, JMcD CHM 2008), the evidence documented within 238-258 Captain Cook Drive is very sparse.

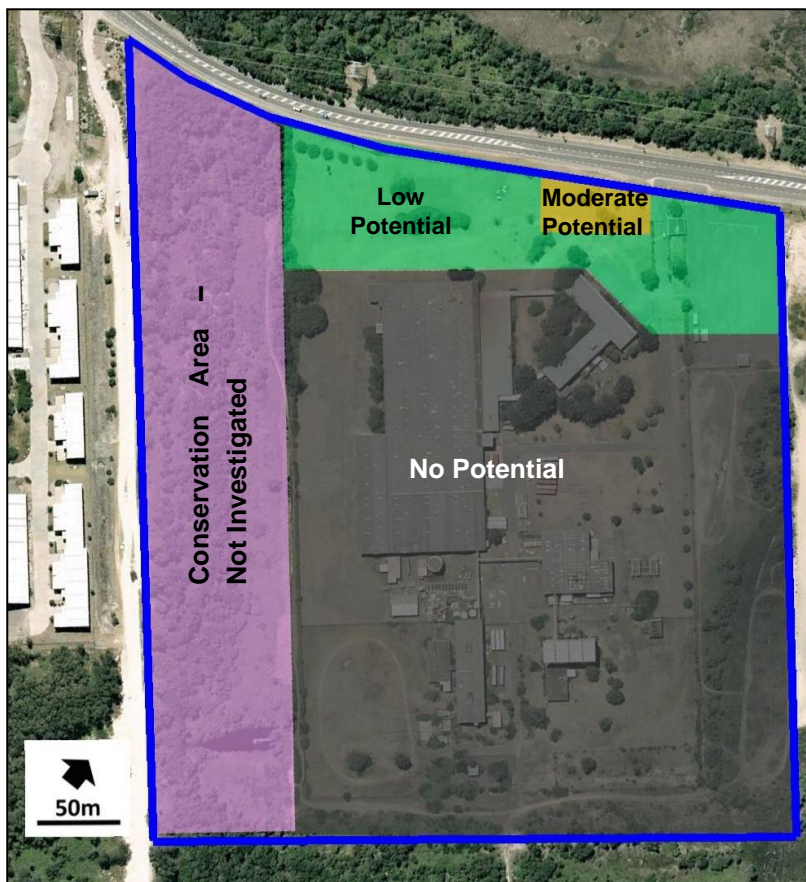
The Aboriginal archaeological remains documented within 238-258 Captain Cook Drive are clearly related to the adjacent midden (AHIMS #52-3-0258) recorded along Captain Cook Drive at the front of the subject land by Frank Dickson in 1980. They can be considered part of the same site and are regarded as such for the purposes of this assessment. The records for AHIMS #52-3-0258 have been updated on the AHIMS Register to reflect this.

No Aboriginal archaeological remains were located in other contexts apart from the foredune elsewhere within the subject land. Specifically, the swale deposits in the western portion of the subject land are not considered archaeologically sensitive as they appear to have been periodically inundated and are unlikely to have been used by Aboriginal people. The swale deposits on the eastern side of the property were test excavated. Square TrD Sq1 contained several stone artefacts, but is located on the rear edge of the foredune or transition into the interdune swale rather than the swale proper, which was found not to contain any Aboriginal archaeological remains (TrD Sq2). The rear dune has been truncated by the massive earthworks associated with the establishment of the Abbotts Pharmaceuticals facility in the 1960s, removing any dune horizons which may once have had archaeological potential. In the far southeastern corner of the site, sandstone was found at shallow depth below the surface, but the overlying deposits do not contain any Aboriginal archaeological remains.



Based on the archaeological test excavations, the Aboriginal archaeological potential of the subject land can be summarised as follows (and see **Figure 36**):

- The area in which the midden lens and majority of the Aboriginal archaeological remains were found can be considered to retain Moderate Archaeological Potential. It is likely that similar types and densities of archaeological remains are present across this area.
- The area in which the remainder of the original foredune is located, excluding areas highly disturbed by building construction works, is considered to retain Low Archaeological Potential. This area may contain further archaeological remains, but they are likely to be very sparse and scattered.
- The remaining portion of the subject land investigated during the current excavations is considered to retain No Archaeological Potential. This area is either highly disturbed or contains landforms with no archaeological sensitivity, and there is no potential for Aboriginal archaeological remains to occur within these contexts.
- The remainder of the subject land comprises the conservation area along its western edge. This area is to be preserved and was not investigated during the current assessment. The archaeological potential of this area is not known, but is likely to be similar to the remainder of the subject land, with greater archaeological sensitivity associated with the extent of the former foredune area.



**Figure 36. Assessed archaeological potential within the subject land.**



## 5.2 Significance Assessment

### 5.2.1 The Assessment of Significance

Significance assessment of Aboriginal archaeological sites and areas of land is based on three broad criteria. Namely, that they are important to:

- the scientific community for their potential research value
- the general public for their educational and broader heritage value
- the Aboriginal community.

With respect to Aboriginal community significance, all Registered Aboriginal Parties consulted during the 2013 and 2014 studies were specifically asked to provide and/or discuss any Aboriginal cultural or historical information relating to the subject land which they felt was pertinent to the assessment of Aboriginal heritage significance in relation to the current development proposal. No specific information (e.g. about historical Aboriginal associations with the specific subject land) was presented during this consultation to suggest that the subject land retains any specific or especial significance to the local Aboriginal community, however it is considered that the Kurnell peninsula area in general holds great significance to Aboriginal people in terms of its archaeological remains and more recent cultural and historical connections as discussed in **Section 2.2** (and see the LPLALC response to the 2013 AHCA report, **Appendix A4**).

The scientific and public significance of the site are considered together as they are related. That is, the sparse, discontinuous and low density nature of the Aboriginal archaeological remains retrieved during the test excavations, suggests that the site has limited potential for public education. The nature and condition of the site also suggest it will be of limited (if any) use in future scientific research.

The seven criteria on which the following Statement of Significance is based are summarised below:

- Criterion (a) is important in the course, or pattern, of NSW's cultural or natural history;
- Criterion (b) has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history;
- Criterion (c) is important in demonstrating aesthetic characteristic and/or a high degree of creative or technical achievement in NSW;
- Criterion (d) has strong or special association a particular community or cultural group in NSW for social cultural or spiritual reasons;
- Criterion (e) has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;
- Criterion (f) possess uncommon, rare or endangered (f) aspects of NSW's cultural or natural history;





- Criterion (g) is important in demonstrating the principal characteristics of a class of NSW's cultural places or natural environments.

### **5.2.2 Application of Significance Criteria**

- Criterion a: The archaeological remains within the subject land demonstrate the intermittent or occasional Aboriginal use of the area in the past. It contrasts strongly with much more substantial and diverse archaeological remains elsewhere along the same shoreline, as well as north and east along the Kurnell Peninsula. The remains within the subject land represent a small piece of a larger picture of Aboriginal use of the Kurnell Peninsula which has been important to document, but is unlikely to yield further significant information to advance our understanding of the Aboriginal use of the peninsula, nor is it likely to further contribute to a better understanding of past Aboriginal lifeways more generally.
- Criterion b: The Aboriginal community responses to the 2013 and current reports indicate that the Kurnell area in general retains considerable significance culturally and historically to local Aboriginal people. With respect to the archaeological remains within the subject land, and the subject land more generally, no specific or especial significance has been argued to exist beyond that latent in the general area.
- Criterion c: n/a
- Criterion d: n/a
- Criterion e: For the reasons outlined above the subject land area unlikely to contain extensive archaeological remains that, through further investigation, could advance our understanding of the past Aboriginal use of the local area or more broadly, especially by comparison with much more substantial remains elsewhere on the Kurnell peninsula.
- Criterion f: The archaeological remains within the subject land area of a type that is commonly found in the local area, and represents a comparatively sparse, discontinuous and low density example of such remains.
- Criterion g: n/a.

### **5.2.3 Summary Statement of Aboriginal Cultural Heritage Significance**

The evidence of the Aboriginal occupation of the subject land is limited in extent and concentration. It is of low archaeological significance, but retains significance to the local Aboriginal community as part of the broader Aboriginal landscape of the Kurnell peninsula.



## 6.0

## Mitigation and Management

### 6.1 Potential Impacts to Aboriginal Objects

Known or potential Aboriginal objects are restricted to the northern quarter of the subject land, equating to the areas of Moderate and Low Archaeological Potential as illustrated in **Figure 36**. This represents the documented extent of the buried former foredune within the subject land. Within the area of Moderate Archaeological Potential there is between 0.5m and 1.2m of imported fill between the current ground surface and the upper surface of the original foredune, which has been shown to contain sparse and discontinuous evidence of past Aboriginal use, in the form of stone artefacts and a thin lens of midden deposit. The original foredune is deeper in the area of Low Archaeological Potential, sitting between 1.0m and 1.2m below the current ground surface, and contains only occasional scattered shell or stone fragments. Excluding the area proposed for conservation along the western edge of the subject land, the remainder of the subject land has No Archaeological Potential (as illustrated in **Figure 36**), and there will be no potential impacts to Aboriginal cultural remains within this area from future development.

The current proposal involves the construction of a warehouse-distribution facility, associated office and canteen as well as carparks, service and drainage infrastructure, as shown in **Figure 37** to **Figure 40**. Most impacts from construction will occur within the area of No Archaeological Potential. Those which could potentially impact the buried foredune horizon include:

- **Office Buildings:** proposed at the front of the property, the two offices (including workers canteen) would be constructed on a concrete slab up to 0.5m thick with a spaced series of 8m long piles.
- **Electrical Substation:** proposed for the north-east of the subject land, this would sit on a concrete slab with 1.5m deep piers and cabling/conduits between 0.5m and 1m in depth.
- **Stormwater Basin:** also, in the north-eastern corner, this would drain the warehouse roofs and connect to existing stormwater pits along Captain Cook Drive.
- **Grease arrester:** proposed adjacent to the canteen and will involve excavation up to 2m in depth in a 3m x 1.5m area.
- **Rainwater and fire sprinkler tanks:** located in the north-east of the subject land.
- **Services:** including sewer, power and water as well as a hydrant ring, these services will be clustered across the proposed buildings, including the office buildings. As they require at least 0.6m – 0.7m clearance below ground, and some services may be stacked to minimise excavation, some trenches will require excavation up to 1.1m in depth.
- **Bio-retention Basin:** is proposed to be installed between Captain Cook Drive and the southern side of the proposed office buildings as a third tier of stormwater management, designed to be used only when existing stormwater basin and tanks overflow. The bio-retention basin would be several metres wide and of varying depth.

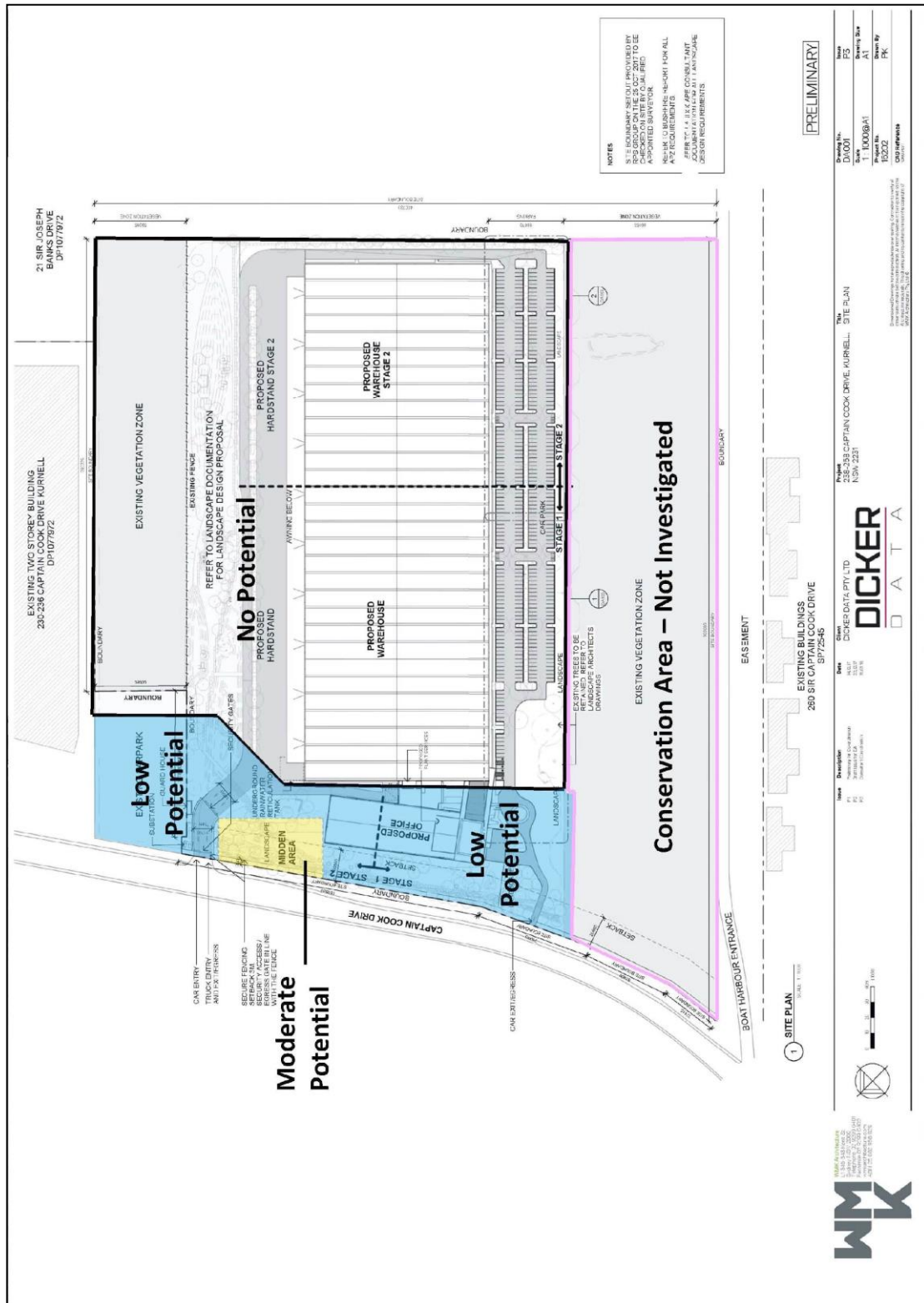


Figure 37. The current proposal in relation to assessed archaeological potential.











## 6.2 Minimising Harm

Avoidance of harm to identified Aboriginal objects is the preferred and first option considered in Aboriginal Cultural Heritage Assessment. In the current case, the documented Aboriginal archaeological remains within the subject land (extension to AHIMS #52-3-0258) are located around 1m below the current ground surface and only in the areas designated as retaining Moderate Archaeological Potential or Low Archaeological Potential as shown in **Figure 36** and **Figure 37**.

- Within the area of Moderate Archaeological Potential the current proposal has been designed to avoid impacts which may penetrate into the buried dune horizon containing archaeological remains, by moving buildings and services away from this area. Landscaping works are the main activity proposed within this area, including:
  - **Entrance Mound:** an earth mound around 15m long and 1m high is proposed to be created on the edge of the property along Captain Cook Drive and next to the main entrance road to highlight the property entrance. This area is where the buried foredune and midden are the shallowest (0.5 – 0.7m below the current surface), but the creation of the mound will not involve excavation. It will be created from deposited soil on top of the existing ground surface and will be planted out with native vegetation, adding protection to the underlying midden.
  - **Revegetation:** is proposed within the area of Moderate Archaeological Potential with appropriate local native trees and plants. This will include planting some mature trees which will require excavation up to 0.5m deep. This will occur in areas where the dune is up to 1.0m below the current surface and will therefore not involve any potential impacts to the underlying dune deposit.
  - **Walkway:** an footpath may be installed across the area of Moderate Archaeological Potential, however it would not involve any substantial subsurface impacts. It would be installed through the laying of recycled concrete blocks and the raising of surrounding ground to achieve a level surface.

In summary, no impacts are currently proposed within the area of Moderate Archaeological Potential that may potentially impact the buried foredune which is known to contain Aboriginal archaeological remains. Should any impacts below 0.5m prove necessary due to practical considerations during construction, these would be subject to the procedures outlined in **Section 6.3**.

- Within the area of Low Archaeological Potential there are a number of proposed impacts which may penetrate into the buried dune horizon as outlined in **Section 6.1**. The proximity of foredune to front of the property means services and access need to traverse this area, and drainage flows north forward towards existing infrastructure along Captain Cook Drive. It is therefore not practicable to avoid impacts to portions of the buried foredune. However, it is noted that the Aboriginal archaeological remains documented in this area are both extremely sparse and discontinuous. In addition it is noted that the vast majority of documented Aboriginal archaeological remains are to be preserved within the area of Moderate Archaeological Potential. For this reason, it is considered appropriate



that impacts be permitted as currently proposed across portions of the area of Low Archaeological Potential. However, to mitigate potential impacts from these activities, a series of further actions to monitor and potentially retrieve further archaeological remains are proposed, as outlined below in **Section 6.3**.

## **6.3 Mitigation and Management**

The following procedures are recommended to mitigate and manage potential impacts to Aboriginal cultural heritage within the subject land in relation to the current proposal.

### **6.3.1 Aboriginal Heritage Management Plan and Worker Induction**

The proposed management of Aboriginal heritage within the scope of the current proposal will involve a combination of archaeological monitoring and possible archaeological salvage excavation where warranted. These procedures, as well as an unexpected finds protocol are to be compiled in an Aboriginal Heritage Management Plan (AHMP) that will form part of construction documentation for the project as a condition of development consent.

The AHMP will be devised once a final design has received development approval, and the precise nature of potential impacts and proposed construction methods is known.

The AHMP will be the basis for an Aboriginal Heritage Induction to be provided to all workers involved in the construction of the current development proposal. This induction is to be delivered by a suitably qualified archaeologist in conjunction with a representative of the La Perouse Local Aboriginal Land Council.

### **6.3.2 Archaeological Monitoring**

Where excavation works are proposed more than 0.5m below the current surface within the assessed area of Low Archaeological Potential (and, in exceptional circumstances the area of Moderate Archaeological Potential) as shown in in **Figure 36** and **Figure 37**, monitoring of these works will need to be undertaken as a precautionary measure by a suitably qualified archaeologist in conjunction with a representative of the La Perouse Local Aboriginal Land Council.

Monitoring will enable recognition of buried foredune deposits should excavation be of sufficient depth to expose these. Where excavation works expose the buried foredune and are proposed to continue into it, monitoring will be targeted to the recognition of any intact archaeological remains in the form of layers of midden, or of bones which may potentially be human and therefore represent the remains of Aboriginal burials. Monitoring will lead to one of the following outcomes:

- Identification of midden deposits requiring salvage excavation, as per the procedures outlined in **Section 6.3.3**. It is noted that this is considered unlikely, given the extremely sparse and discontinuous nature of Aboriginal archaeological remains documented within the area of Low Archaeological Potential, but is included as a precautionary measure to ensure that any substantial archaeological remains are appropriately recorded.





- Identification of potential human remains, to be managed as per the procedures in **Section 6.3.4**.
- In the event that sparse or scattered shell or stone artefacts are noted during monitoring, these may be collected where it is safe to do so. In the event of any such finds, the location and depth should be recorded, and the retrieved materials subject to the analysis procedures outlined in **Section 6.3.3**.

### **6.3.3 Archaeological Salvage**

As noted above, archaeological salvage is a precautionary measure to ensure that in the unlikely event that substantial archaeological remains are uncovered within the area of Low Archaeological Potential, they can be appropriately recorded and analysed to provide further information about the use of the area in the past by Aboriginal people.

Archaeological salvage excavation will only be undertaken where intact midden layers or other archaeological features such as hearths are observed during archaeological monitoring. The methodology will be as follows, and in accordance with practical (WH&S) considerations.

- Any archaeological salvage will be undertaken in manual excavation squares (0.5m<sup>2</sup> or 1.0m<sup>2</sup> as appropriate). Excavation would proceed in 5-10cm spits or by context (as appropriate). All excavated material will be sieved onsite through nested 5mm and 2mm mesh sieves. Soil pH samples and where possible samples for radiometric dating will be taken and full recording of sections, plans and features will be made.
- All Aboriginal cultural remains (apart from human bone) retrieved during any archaeological salvage (or retrieved during monitoring or uncovered as an expected find), such as animal bone and shell, or artefacts from stone, bone or shell, will be recorded and bagged prior to specialist analysis in accordance with the procedures undertaken as part of the prior archaeological test excavations as outlined in **Section 4.1.5**. If obtained, radiocarbon dating samples will be submitted to Waikato Radiocarbon Laboratory in New Zealand for dating.

### **6.3.4 Unexpected Finds Protocol**

The unexpected finds protocol applies to the identification of potential human remains within areas subject to archaeological monitoring, as well as any Aboriginal cultural material or potential human remains uncovered anywhere within the subject land during construction. The protocol will form part of the Aboriginal Heritage Management Plan and will also be included in the Aboriginal Heritage Induction to be provided to all workers involved in subsurface works during construction.

If any previously undocumented Aboriginal objects or any bones suspected of being human are identified during construction, site workers must:

- Immediately cease all work at the particular location.
- Not further disturb or move these remains.



- Contact MDCA for advice.

**In the case of Aboriginal objects**, these objects will be managed as per the monitoring and/or salvage excavation procedures outlined in **Sections 6.3.2 & 6.3.3**.

**In the case of bone which may potentially be human**, specialist physical anthropologist and MDCA associate Emeritus Professor Richard Wright will be called in to determine whether the remains are definitely human, and whether they are likely to be Aboriginal or non-Aboriginal in origin. If they are confirmed as, or likely to be Aboriginal and old, discussions will be held with the relevant Local Aboriginal Land Council and the Office of Environment & Heritage to determine the most appropriate way to manage them. In all other cases, such as young Aboriginal bone or non-Aboriginal bone, the Police will be notified as it may be a potential coronial matter.

### **6.3.5 Reporting and Artefact Management**

The results of any monitoring and archaeological excavations that are undertaken will be fully documented in an updated Aboriginal Cultural Heritage Assessment report. Any Aboriginal archaeological remains uncovered during the recommended investigations will be recorded on the AHIMS Register.

All archaeological remains from the 2014 archaeological test excavations have been transferred under a Care agreement to the La Perouse Local Aboriginal Land Council and it is proposed that any further archaeological remains which are uncovered during construction are also transferred to the custodianship of the La Perouse Local Aboriginal Land Council.

Archaeological material retrieved during the recommended monitoring and/or salvage excavation works will be stored temporarily at MDCA office premises.



## 7.0

## Recommendations

The following recommendations are based upon:

- the legal requirements and automatic statutory protection provided to items of Aboriginal heritage under the terms of the *National Parks and Wildlife Act 1974* (as amended), where it is an offence to knowingly or unknowingly harm an Aboriginal object;
- the results of the current study which are documented in this report; and,
- the views expressed by the Registered Aboriginal Parties to the current assessment.

It is recommended that:

1. An Aboriginal Heritage Management Plan (AHMP) should be prepared as part of construction documentation for the current proposal as a condition of development consent. The AHMP should detail the recommended archaeological works described in **Section 6.3** and with reference to **Figure 37**, and how these works are to be undertaken in conjunction with demolition, construction and landscaping activities associated with the current proposal. The AHMP should also contain the recommended Aboriginal Cultural Heritage Induction and an unexpected finds protocol to be followed by all site workers.
2. All workers on site for the duration of demolition and excavation works must be subject to an Aboriginal Heritage Induction to make them aware of the provisions of the AHMP, the required process for unexpected finds, and the legal protections afforded Aboriginal heritage under the *National Parks & Wildlife Act 1974*.
3. Sub-surface impacts within the assessed area of Moderate Archaeological Potential as shown in in **Figure 36** and **Figure 37** should continue to be avoided as per current plans.
4. Should any impacts more than 0.5m below the current surface be unavoidable during construction within the area of Moderate Archaeological Potential as shown in in **Figure 36** and **Figure 37**, these works would need to be subject to **Recommendation 5** and the procedures outlined in **Section 6.3**.
5. Within the assessed area of Low Archaeological Potential as shown in in **Figure 36** and **Figure 37**, any subsurface impacts more than 0.5m below the current surface would require archaeological monitoring and potentially salvage in accordance with the procedures outlined in **Section 6.3**.
6. On completion of any archaeological monitoring and excavation undertaken in relation to the current proposal, a report will be produced that fully documents these works, and a copy is to be provided to all Registered Aboriginal Parties to the current project.
7. Where archaeological remains are documented during archaeological monitoring or excavation, records of these are to be submitted to the AHIMS Register.
8. Any Aboriginal cultural remains retrieved from the subject land during the worked recommended above, be transferred under a Care Agreement to the Aboriginal heritage storage facility at the La Perouse Local Aboriginal Land Council office at Yarra Bay. The



Care Agreement, together with a full catalogue of all artefacts to which it extends, would be lodged with OEH.

9. It is proposed that consideration be given to the installation of some form of interpretive signage within the subject land which commemorates the Aboriginal heritage and history of the subject land and the local area.
10. One copy of this report should be forwarded to all Registered Aboriginal Parties.
11. One copy of this report should be forwarded to:

The Manager

Aboriginal Heritage Information Management System  
NSW Office of Environment and Heritage  
P.O. Box 1967  
Hurstville NSW 2770





## 8.0

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# **APPENDIX A**

## **ABORIGINAL COMMUNITY CONSULTATION RECORDS**

**APPENDIX A1 : Public & Direct Notice and Responses**

**APPENDIX A2 : Responses to Methodology Discussions**

**APPENDIX A3 : Responses to 2012 ACHA Draft Report**

**APPENDIX A4 : Responses to 2013 ACHA Draft Report**



**238-258 Captain Cook Drive, Kurnell NSW**  
Aboriginal Cultural Heritage Assessment

## **APPENDIX A1 : Public & Direct Notice and Responses**



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## Births

### HINCHEY

Chris and Sally are proud to announce the safe arrival of Braden Charles on 9 July 2013. 4.3kg 53.3cms Brother and playmate for Henry.



**It's a boy!**  
 To place your birth announcement call  
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**With love and joy** we welcome our newest family member

**Lauren Jane Millar**  
 Born 7 August 2013  
 3.395kg - 49cm  
 Loved by Nicola, Stefan, Tess & Tandi



**It's a girl!**  
 To place your birth announcement call  
**13 24 25**

## Public Notices

**AGM**  
 Shire Community Services Inc. will be holding AGM on Wednesday 9th October 2013 commencing at 1pm at Stapleton Avenue Community Centre, 3A Stapleton Ave, Sutherland. **RSVP 9521 8280**

**HOMEOPATH HERBALIST**  
 Rhonda Campbell  
 Cronulla Ph 0400 345 434

# NOTICE OF COUNCIL MEETING SEPTEMBER 2013

The following Regular Council Meeting is scheduled:

Monday, 23 September 2013

Council meetings are held at:

- Council Chambers  
 Level 2, Civic Centre,  
 2 Belgrave Street,  
 Kogarah

Meetings start: 7pm



**NSW GOVERNMENT** Department of Primary Industries

An aquatic reserve notification has recently been made for Cook Island, Barrenjoey Head, Narrabeen Head, Long Reef, Cabbage Tree Bay, North (Sydney) Harbour, Bronte-Coogee, Cape Banks, Towra Point, Boat Harbour, Shiprock and Bushranger's Bay aquatic reserves.

The aquatic reserve notification was published in the NSW Government Gazette No. 108 of 2 September 2013 on pages 3941 to 3944 and is in place for up to five years.

For a copy of the notification or further information please visit [www.nsw.gov.au/gazette](http://www.nsw.gov.au/gazette) (see Gazette for week 36: 6 September 2013), e-mail a request to [contact.us@marine.nsw.gov.au](mailto:contact.us@marine.nsw.gov.au) or phone 02 8437 4915.

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### Telemarketing

The Allen Group is an Australian market leader with 80yrs exp. We require Telemarketers/Appointment setters for PT/FT shifts between 8am & 5pm Mon-Fri. In return for excellent communication skills; a friendly outgoing positive can do attitude and loads of enthusiasm we offer great hourly rate, bonuses, outstanding incentives and opportunities for permanent placement. B2B experience an advantage. Kingsgrove location. Great atmosphere join today.

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To find out further details and apply for this exciting role, please follow the employment links on our website:

[www.aerocare.com.au](http://www.aerocare.com.au)



## Casual Work

School Crossing Supervisors - Work with your community  
 Casual Position - Sutherland Local Government Area (50009731)

An important person in a child's school life is the School Crossing Supervisor who ensures they cross the road safely. The role requires minimal hours out of your day and gives something worthwhile back to the community.

The hours are usually 8.00am to 9.30am and/or 2.30pm to 4.00pm Monday to Friday during school terms. The base rate is \$19.94 - \$23.93 per hour.

All the qualifications you need are community spirit, good communication skills, an alert and professional attitude to work and a reliable personality. The casual hours and school holidays would suit a parent or grandparent, a retiree or anyone wanting meaningful work - but not full-time.

Training for your key responsibilities of directing traffic to stop at the designated crossing and giving clear instructions to infants and primary school students to cross the road safely, will be provided. You may be required to attend a health assessment. Appointment is subject to a Working with Children check clearance. Roads and Maritime Services is an equal opportunity employer.

For further information on this exciting opportunity please contact Kristy Eagles on 02 9893 7555 or go to [www.rms.nsw.gov.au/careers](http://www.rms.nsw.gov.au/careers)

Applications close 29 September 2013

For further enquiries  
[www.rms.nsw.gov.au/careers](http://www.rms.nsw.gov.au/careers)



## Jobs

### Apprenticeship Air Conditioning

We are looking for a motivated, honest, individual interested in commencing a 4 year apprenticeship in air conditioning. Current 2nd, 3rd or 4th Year Apprentices may also apply. Our company specialises in the installation of pipe work for commercial and industrial HVAC systems.

Interested applicants send resume to  
**admin@ventrix.com.au**

or mail to:  
**The Manager,  
 P.O. Box 535,  
 KOGARAH  
 NSW, 1485**

Please send reply by 07/10/2013

### CARERS WANTED

Carers wanted for female client in Miranda. Short and long shifts.  
**Ph 8850 4212**

### Carpenter/Shopfitter

Kirrawee based building company requires a qualified carpenter/shopfitter to join its NSW team in installation team. Successful applicant must have a Green/Workcover OHS Card and be able to work out of hours and on away jobs. 1st aid certificate and MR truck licence an advantage. Remuneration to be negotiated.

Please forward resumes to the Office Manager at  
**admin@parkesconstructions.com**  
 Or by fax to (02) 9545 4999

### Trainee & Casual

Seeking trainee at Miranda and qualified casual at Carlton/Bexley qualified Cert 3's and Diplomas in ChildCare.

Please send resume to:  
**anastasia@apapbiz.com**

### DO YOU NEED LOCAL STAFF?

Call: 13 24 25  
 Email: [fcnclass@fairfaxmedia.com.au](mailto:fcnclass@fairfaxmedia.com.au)

## Jobs

### Koala Child Care Centre

Is a community based centre requires a full time trainee for 12 mths, 8 hrs per day.

Requires an enthusiastic person seeking a future in child care. We are also looking for Casual Staff. Must have their cert III in Child care.

Essential working with Children clearance numb. Award in accordance with Children services award.

Please mail or email resume with 2 references and 2 referees to:  
**Ms Catherine Wilson  
 Locked Bag 21  
 Taren Point 2229 or  
 koalacc@tpg.com.au**

Only successful apply will be called for an interview.  
**Closing date: 23/9/2013**

## Jobs

### Delivery Driver/Storeperson

Permanent position available (after qualifying period) for full time delivery driver/storeperson for a frozen food company based in Kirrawee. Applicants must be fit, has an MR license and knowledge of the Sydney metro roads. Immediate start available for the right applicant.

Email resume to:  
**phils@simpedfoods.com.au**  
 or fax to:  
**9542 3164**

**DENTAL ASSISTANT / RECEPTIONIST**  
 Part-Time or Full-Time. Exp. in Dentistry Essential.  
**Phone: 9525 2225**

### DRIVER MR (Tilt Tray)

Must be neat and tidy appearance to work for well established Tow company. Good money for right person.

Call 9533 2100

**Drivers & Offsiders**  
 Req. for furniture moving Exp. ess. with removal company. neat & tidy appearance  
**Drivers - MR lic. Phone BH 9525-5585.**

### DRIVERS

Upgrade to a Truck Licence  
 • No RTA Driving Test  
 • Need Licence quickly?  
 • One day course's available 7 days/week  
 • Phone for brochure  
 • Car Instructors needed  
**ABC Truck Training 9587 1344**

## Jobs

### FACILITY MANAGER PART TIME

A position as part time facility manager has become available at Kirrawee Self Storage, offering approx. 39 hrs per fortnight, including weekend hours on a rotating roster.

A background in retail customer service and sales is desirable and the ability to work unsupervised is essential.

The successful applicant will be given a probationary period of training with an experienced Manager before taking on full duties. Salary paid on an hourly rate basis in accordance with Industry practice.

Please send application and Resume in writing to:  
 The Manager  
**Kirrawee Self Storage**  
 70-72 Oak Road (North)  
 Kirrawee 2232

### FLORIST

Permanent part time, must be fully experienced, required for bundling of flowers. Mondays 9-2pm, Wed 9-12, Fri 9-2. Possible more hours.

**0412 485 348 or 9520 2006** ask for Eve

### HAIR SALON FOR RENT

In a Beauty Salon at Menai. Ph 0409 447 784

### HAIRDRESSER

1st year apprenticeship available at Sage Hair Design, for full time position.

Email your resume to:  
**sagehairdesign@yahoo.com.au**

### HAIRDRESSER

1st year Apprentice & Part time Senior  
 Required for busy salon in Kogarah.

**0418 467 009**

**Hairstylist/Beautician**  
 Full & Part time positions available at home service at Instant Hairdressing Supplies, Bexley  
 Ph 1300 018 848

### HAIRDRESSERS

15 qualified Hairdressers who love just cutting. Flexible hours available, working in our new salon & team at Westfield Miranda. \$650 per week clear training commissions, incentives.

Contact Annalisa:  
**0412 075 840**  
[www.justcuts.com](http://www.justcuts.com)

### HANDYMAN

Required for part time and casual position. Days and hours negotiable to carry out painting, carpentry and yard maintenance in Sutherland area.

Email applications to:  
**maindesk@ezylink.net.au**

### Horticulturist

Required for casual/part time position in local garden centre.

Email resume to:  
**sales@gardensrus.com.au**

### Saving For Something Special

Reach your goal faster! Drop/collect catalogues  
 8-10hrs/wk - Ph  
**1300 663 161**  
[www.pennymiller.com.au](http://www.pennymiller.com.au)

### MINING JOB WA, QLD, NT.

Train up now dump truck/ loader training courses.

Next course Fri/Sat 20/21 of September  
 Go to: [www.rideoutmining.com.au](http://www.rideoutmining.com.au)

16 September 2013

OEH EPRG Metropolitan Office  
Office of Environment & Heritage  
Planning and Aboriginal Heritage Section  
PO Box 668  
Parramatta NSW 2124

Dear Sir/Madam,

**RE: NOTIFICATION OF ABORIGINAL PEOPLE IN RELATION TO ABORIGINAL HERITAGE  
IMPACT PERMIT APPLICATION AT LOT 2 DP1088703 AND LOT 1 DP225973  
238-258 CAPTAIN COOK DRIVE, KURNELL NSW**

Proponent: Property Today Pty Ltd [PO Box 2869 Taren Point NSW 2229]

Property Today Pty Ltd is proposing light industrial development at the above location in South Sydney. This project will require an Aboriginal Heritage Impact Permit [AHIP] under s90 of the National Parks & Wildlife Act 1974. The proponent has engaged MDCA [Mary Dallas Consulting Archaeologists] to prepare an AHIP application and to coordinate Aboriginal community consultation as required by National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010 (Clause 80C).

Accordingly we are contacting you, as per S80C(2) of the above regulation, to seek the names and current contact details of any Aboriginal people of whom you are aware who may hold cultural knowledge relevant to determining the significance of Aboriginal objects at this location, such that we may notify them directly about the proposal.

Please forward the details of any such Aboriginal people in writing before 2 October 2013 to MDCA at:

<b>POST</b>	<b>FAX</b>	<b>EMAIL</b>
PO BOX A281 Arncliffe NSW 2205	(02) 8520 2006	admin@mdca.com.au

Please ensure that you provide us with current postal addresses and contact names. Any enquiries should be directed to Paul Irish on 0418 450 490 or our office on 02 4465 2546.

Yours sincerely,



Tamika Goward

Mary Dallas Consulting Archaeologists

## Admin

---

**From:** Margaret Bottrell <Margaret.Bottrell@cma.nsw.gov.au>  
**Sent:** Wednesday, 25 September 2013 7:30 AM  
**To:** admin@mdca.com.au  
**Cc:** Nerida Gill  
**Subject:** Aboriginal heritage impact permit application

To Tamika Goward,

Under the act that we work under I am not allowed to pass on the information that you requested in your letter dated 16 September 2013 **Re: Notification of Aboriginal people in relation to Aboriginal heritage impact permit application at Lot 2 DP1088703 and Lot 1 DP225973 238-258 Captain Cook Drive, Kurnell NSW.**

The Hawkesbury Nepean CMA has no interest in this project, and will pass your letters on to the members of our Advisory Committee for their information. If they comment on this, it is an individual person and not a representative of the Hawkesbury Nepean Catchment Management Authority.

Regards,

Margaret Bottrell Senior Strategic Land Services Officer (Aboriginal Communities)  
Hawkesbury-Nepean Catchment Management Authority  
NSW Government Office Block Level 4, 2-6 Station Street Penrith  
PO Box 4515 Penrith Westfields NSW 2750  
T: 02 472 53049 F: 02 4725 3088  
E: [margaret.bottrell@cma.nsw.gov.au](mailto:margaret.bottrell@cma.nsw.gov.au)  
W: [www.hn.cma.nsw.gov.au](http://www.hn.cma.nsw.gov.au)

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This message is intended for the addressee named and may contain confidential/privileged information. If you are not the intended recipient, please delete it and notify the sender.

Views expressed in this message are those of the individual sender, and are not necessarily the views of the Department.

You should scan any attached files for viruses.  
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18<sup>th</sup> September 2013 ref: OE&H 18-9 -13/3

Mary Dallas Consulting Archaeologists  
PO BOX A281  
Arncliffe NSW 2205

Dear Sir / Madam

**Notification of Aboriginal people in relation to Aboriginal Heritage impact  
permit application at Lot 2 DP 1088703 and Lot 1 DP 225973 238-258 Captain  
Cook Drive, Kurnell NSW**

I refer to your email of 16<sup>th</sup> September 2013 regarding the above matter.

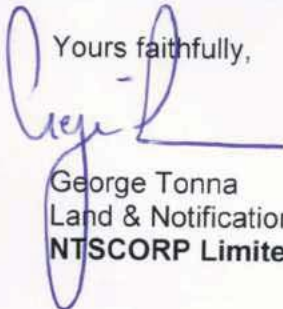
We acknowledge that section 4.1.2 of the Office of Environment & Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* require you to contact us in order to compile a list of Aboriginal people who may have an interest in the proposed project area and hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or places. **However, we advise that NTSCORP's privacy guidelines restrict us from providing proponents with contact details of traditional owners who may have such an interest or hold such knowledge.**

In response to your notification, NTSCORP will forward your correspondence to any individuals, groups and organisations whom NTSCORP is aware assert traditional interests within or hold cultural knowledge about the relevant area. **Recipients of our correspondence will be invited to register their interest in the project directly with by the 2<sup>nd</sup> October 2013.**

Please be aware that NTSCORP cannot make a guarantee or undertaking that the recipients of our correspondence represent the entirety of traditional owners for the relevant area.

**NTSCORP will require a minimum of 14 days from the date of receipt of completed notice in order to undertake the above process.**

Yours faithfully,



George Tonna  
Land & Notifications Officer  
NTSCORP Limited

Tamika Goward  
Mary Dallas Consulting Archaeologists  
PO Box A281  
ARNCLIFFE NSW 2205

Dear Tamika

**Re: Request - Search for Registered Aboriginal Owners**

I refer to your email dated 16 September 2013 regarding Aboriginal stakeholders within the Kurnell area in NSW.

I have searched the Register of Aboriginal Owners and the project area described *does not* have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act 1983 (NSW)*.

I suggest you contact the La Perouse Local Aboriginal Land Council. They will be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely



Tabatha Dantoine  
**Administration Officer**  
Office of the Registrar, *Aboriginal Land Rights Act (1983)*





23 September 2013

**Tamika Goward**  
Mary Dallas Consulting Archaeologists  
PO Box A281  
ARNCLIFFE NSW 2285

**Sydney Office, Operations East**

Level 16  
Law Courts Building  
Queens Square  
Sydney NSW 2000  
GPO Box 9973  
Sydney NSW 2001  
Telephone (02) 9227 4000  
Facsimile (02) 9227 4030

Our Ref: 5729/13SJ

Dear Ms Goward

**Native Title Search Results for Kurnell within the Sutherland Shire Local Government Area**

Thank you for your search request received on 17 September 2013 in relation to the above area.

**Search Results**

The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

Register Type	NNTT Reference Numbers
Schedule of Applications (unregistered claimant applications)	Nil.
Register of Native Title Claims	Nil.
National Native Title Register	Nil.
Register of Indigenous Land Use Agreements	Nil.
Notified Indigenous Land Use Agreements	Nil.

At the time this search was carried out, there were **no relevant entries** in the above databases.

**Please note:** There may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed with the Federal Court may not appear on the Tribunal's databases.

**Tribunal accepts no liability for reliance placed on enclosed information**

The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representation, either express or implied, as to the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.



If you have any further queries, please feel free to contact me via the details listed below.

Yours sincerely

*Sylvia Jagtman*

**Sylvia Jagtman** | SENIOR CASE MANGEMENT ASSISTANT

**National Native Title Tribunal | Sydney Office, Operations East**

**Telephone (02) 9227 4013 | Facsimile (02) 9227 4030 | Email [sylvia.jagtman@nntt.gov.au](mailto:sylvia.jagtman@nntt.gov.au)**

**Freecall 1800 640 501 | [www.nntt.gov.au](http://www.nntt.gov.au)**

*Facilitating timely and effective outcomes.*

# DARUG - LAND - OBSERVATIONS



ABN: 87239202455  
E-MAIL: [gordow51@bigpond.net.au](mailto:gordow51@bigpond.net.au)  
PO BOX: 571 Plumpton. NSW 2761  
Phone: 029831 8868 or 0415 663 763



17-9-2013

**Paul Irish**  
**Mary Dallas Consulting Archaeologists**

**Notification and Registration of ALL Aboriginal Interests**  
**Re: Lot 2 DP1088703 and Lot 1 DP225973 238-258 Captain Cook Dr Kurnell NSW**

**Please be advice that D.L.O is seeking to be involved in any and all consultation meetings and field work.**

**This office specializes in Aboriginal and community consultation. An has a membership that comprises of Traditional owners from the area in question those retain strong story and song lines and oral history and continued contact. We would also like to state that we do not except or support any person or organization that are NOT from the DARUG Nation that comments regarding the said area.**

**Please also be advised that this aboriginal Organization does not do volunteer work or attend unpaid meetings. I hope that you advise your client of this so that, This Group will not be discriminated against and refused paid field work.**

**All Correspondence should be emailed to the following**  
**[gordow51@bigpond.net.au](mailto:gordow51@bigpond.net.au)**

**Yours faithfully**

**Uncle**  
**Gordon Workman**  
**Darug Elder**

**Sites Officer**

## Paul Irish

---

**From:** Paul Irish <paul@mdca.com.au>  
**Sent:** Thursday, 19 September 2013 2:42 PM  
**To:** 'Gordon'  
**Subject:** RE: kurnell

Dear Gordon,

Thanks for your messages. We will be in touch soon with some information on the project.

Regards,

Paul

Paul Irish  
Principal Consultant  
**Mary Dallas Consulting Archaeologists**  
PO Box A281 Arncliffe NSW 2205  
Ph [02] 4465 2546 Fax [02] 8520 2006  
Mob 0418 450 490  
Email [paul@mdca.com.au](mailto:paul@mdca.com.au)  
[www.mdca.com.au](http://www.mdca.com.au)



---

**From:** Gordon [<mailto:gordow51@bigpond.net.au>]  
**Sent:** Wednesday, 18 September 2013 11:21 PM  
**To:** Paul Irish  
**Subject:** Re: kurnell

yes D.L.O is still put in intest

With Thanks

Uncle  
Gordon Workman  
Darug Elder

----- Original Message -----

**From:** [Paul Irish](#)  
**To:** 'Gordon'  
**Sent:** Wednesday, September 18, 2013 9:07 AM  
**Subject:** RE: kurnell

Dear Gordon,



Thanks for your message. You are of course welcome to register an interest in this project, but I just wanted to make sure that you are aware that it is on the southern side of Botany Bay, and outside the area of the former Darug Native Title Claim.

Could you please confirm via return email if you wish to proceed with Registration on this project?

Kind regards,

Paul Irish

Paul Irish  
Principal Consultant  
**Mary Dallas Consulting Archaeologists**  
PO Box A281 Arncliffe NSW 2205  
Ph [02] 4465 2546 Fax [02] 8520 2006  
Mob 0418 450 490  
Email [paul@mdca.com.au](mailto:paul@mdca.com.au)  
[www.mdca.com.au](http://www.mdca.com.au)



---

**From:** Gordon [<mailto:gordow51@bigpond.net.au>]  
**Sent:** Tuesday, 17 September 2013 11:32 PM  
**To:** Paul Irish  
**Subject:** kurnell

With Thanks

Uncle  
Gordon Workman  
Darug Elder

## Paul Irish

---

**From:** Gordon <gordow51@bigpond.net.au>  
**Sent:** Wednesday, 18 September 2013 11:20 PM  
**To:** Paul Irish  
**Subject:** Re: kurnell

Hi Paul

Darug Nation is the whole of the Sydney Basin white man put bounders

With Thanks

Uncle  
Gordon Workman  
Darug Elder

----- Original Message -----

**From:** [Paul Irish](#)  
**To:** 'Gordon'  
**Sent:** Wednesday, September 18, 2013 9:07 AM  
**Subject:** RE: kurnell

Dear Gordon,

Thanks for your message. You are of course welcome to register an interest in this project, but I just wanted to make sure that you are aware that it is on the southern side of Botany Bay, and outside the area of the former Darug Native Title Claim.

Could you please confirm via return email if you wish to proceed with Registration on this project?

Kind regards,

Paul Irish

Paul Irish  
Principal Consultant  
**Mary Dallas Consulting Archaeologists**  
PO Box A281 Arncliffe NSW 2205  
Ph [02] 4465 2546 Fax [02] 8520 2006  
Mob 0418 450 490  
Email [paul@mdca.com.au](mailto:paul@mdca.com.au)  
[www.mdca.com.au](http://www.mdca.com.au)



---

**From:** Gordon [<mailto:gordow51@bigpond.net.au>]  
**Sent:** Tuesday, 17 September 2013 11:32 PM



**Office of  
Environment  
& Heritage**

Our reference: DOC13/64954

Mr Paul Irish  
Mary Dallas Consulting Archaeologists  
PO Box A281  
ARNCLIFFE NSW 2205

Dear Mr Irish,

Thank you for your letter dated 16/9/2013 to the Office of Environment and Heritage (OEH) regarding obtaining a list of the Aboriginal stakeholders that may have an interest in the project at 238-258 Captain Cook Drive, Kurnell (Sutherland LGA).

Before making an application for the issue of an Aboriginal Heritage Impact Permit, the applicant must carry out an Aboriginal community consultation process in accordance with the National Parks and Wildlife Regulation 2009 and completed to the stage described in subclause 80C.

Please find attached the list of Aboriginal stakeholders known to OEH that may have an interest in the project. OEH's list of regional stakeholders is a list of groups, organisations or individuals who may hold cultural knowledge relevant to a proposal in a region. Consultation with Aboriginal people should not be confused with employment. Inclusion on the OEH's list is not an automatic right to employment. It is the decision of a proponent on who they choose to engage to deliver services based on a range of considerations including skills, relevant experience, and OHS considerations. To be clear, the proponent is under no obligation to employ Aboriginal people registered for consultation.

Further, receipt of this information does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties. Consultation with Aboriginal stakeholders must be in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* which can be found on the Office of Environment and Heritage (OEH) public website by accessing the following link:

<http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf>

If you wish to discuss any of the above matters further please contact Miranda Morton, Aboriginal Heritage Planning Officer, on (02) 9995 5477.

Yours sincerely

**David Trewin**  
**Regional Manager**  
**Greater Sydney Region**  
**Regional Operations**

24/9/13

**Aboriginal Stakeholders that may have an interest (Sutherland)**

La Perouse Local Aboriginal Land Council	Chris Ingre	(02) 9311 4282	PO Box 365 Matraville NSW 2036
Ken Foster (individual)	Ken Foster	0411 818 091	68 Australia St Matraville
La Perouse Botany Bay Corporation	Yvonne Simms Norma Simms	04660 94491 Fax (02) 9311 3440 04660 94491	10 Murrong Place, La Perouse NSW 2036 10 Murrong Place, La Perouse NSW 2036
Scott Franks		0404 171 544	PO Box 76, Caringbah NSW 1495

September 26, 2013

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████████████████████  
  
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**RE: NOTIFICATION OF ABORIGINAL PEOPLE IN RELATION TO ABORIGINAL HERITAGE  
IMPACT PERMIT APPLICATION AT LOT 2 DP1088703 AND LOT 1 DP225973  
238-258 CAPTAIN COOK DRIVE, KURNELL NSW**

Proponent: Property Today Pty Ltd [PO Box 2869 Taren Point NSW 2229]

Property Today Pty Ltd is proposing light industrial development at the above location in South Sydney. This project will require an Aboriginal Heritage Impact Permit [AHIP] under s90 of the National Parks & Wildlife Act 1974 to undertake archaeological test excavations within the property to determine whether any Aboriginal cultural remains are present. The proponent has engaged MDCA [Mary Dallas Consulting Archaeologists] to prepare an AHIP application and to coordinate Aboriginal community consultation as required by National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010 (Clause 80C).

Accordingly we have received your details from Sutherland Shire Council as someone who may potentially hold cultural knowledge relevant to determining the significance of Aboriginal objects at this location. If this is the case, you are invited to register your interest in the current project to ensure that you are consulted in accordance with the above Regulation. The purpose of this consultation is to assist the proponent in the preparation of an AHIP application and to assist the Director-General in considering and determining the application.

Please note that details of Registered Aboriginal Parties will be forwarded to The Office of Environment & Heritage and the La Perouse Local Aboriginal Land Council as required under the above regulation. If you do not wish this to occur, please contact us in writing prior to **October 11, 2013** at one of the addresses listed below.

**IF YOU WISH TO BE REGISTERED** as a Registered Aboriginal Party, please notify MDCA in writing by **Monday October 11, 2013** at one of the following addresses:

<b>POST</b>	<b>FAX</b>	<b>EMAIL</b>
c/- PO Box A281 Arncliffe NSW 2205	(02) 8520 2006	admin@mdca.com.au





Please ensure that you provide us with current postal addresses and contact names. Any enquiries should be directed to Paul Irish on 0418 450 490 or our office on 02 4465 2546.

Yours sincerely,

Tamika Goward

Mary Dallas Consulting Archaeologists



**Tocomwall Pty Ltd**  
PO Box 76 Caringbah NSW 1495  
Tel: 02 9542 7714 Fax: 02 9524 4146  
Email: [info@tocomwall.com.au](mailto:info@tocomwall.com.au) [www.tocomwall.com.au](http://www.tocomwall.com.au)  
ABN: 13 137 694 618

02 October 2013

Mary Dallas Consulting Archaeologists  
Attention: Paul Irish  
PO Box A281  
ARNCLIFFE NSW 2205  
Via Fax: 02 85202006

Dear Paul,

**RE: Light industrial development Lot 2 DP1088703 and Lot 1 DP225973, 238-258 Captain Cook Drive, Kurnell NSW**

Tocomwall is seeking *primary involvement* in all consultation meetings and field work for the above mentioned project.

Tocomwall represents traditional owners from the local area and retains local and oral history on behalf of its membership. We do not accept or support any person or organisation that comments regarding the said area unless confirmed in writing by myself.

Please also be advised that this Aboriginal organisation does not do volunteer work or attend unpaid meetings.

All correspondence should be emailed to [scott@tocomwall.com.au](mailto:scott@tocomwall.com.au) and [sarah@tocomwall.com.au](mailto:sarah@tocomwall.com.au) or to the above postal address.

Yours faithfully

A handwritten signature in black ink, appearing to read "Scott Franks".

Scott Franks  
Native Title & Environmental Services Manager



**238-258 Captain Cook Drive, Kurnell NSW**  
Aboriginal Cultural Heritage Assessment

## **APPENDIX A2 : Methodology Document and Responses**

17 October 2013

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Dear Mr Ingrey,

**RE: PROPOSED ABORIGINAL ARCHAEOLOGICAL INVESTIGATIONS AT LOT 2 DP1088703  
AND LOT 1 DP225973, 238-258 CAPTAIN COOK DRIVE, KURNELL NSW**

Thank you for your interest in the above project. You have been listed as a 'Registered Aboriginal Party' as per the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* [Clause 80C (5)] in relation to an intended Aboriginal Heritage Impact Permit application to enable subsurface archaeological investigations to take place within the above property. Your details have accordingly been forwarded to the OEH and the La Perouse Local Aboriginal Land Council. As per Clause 80C (6) & (7) of the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* we are now contacting you to provide you with information about the proposed investigations and permit application and afford you with an opportunity to comment on the Aboriginal cultural significance of this area. Specifically this document contains the following information:

- A description of the project, and its potential impact on areas of potential Aboriginal archaeological sensitivity.
- A description of the timing of the proposed investigations and opportunities for Aboriginal comment and involvement.
- The proposed cultural and archaeological assessment methodology for your review and comment.
- Options for the management of any Aboriginal objects identified during the proposed subsurface Aboriginal archaeological investigations.

It is noted that comment and consultation on the current project is and will be considered separately by the proponent to any engagement in fieldwork proposed in this document or as a result of these investigations. If your organisation wishes to seek engagement on any such work, please submit a schedule of fees to the proponent directly<sup>1</sup>. In the absence of provision of these fee schedules, the proponent will not be able to consider your organisation for engagement in any such works. Please also note that you will need to confirm with the proponent the holding of relevant insurances and OHS 'white card' qualifications for all people proposed to work onsite.

---

<sup>1</sup> To Property Today Pty Ltd [PO Box 2869 Taren Point NSW 2229].



If you wish to make comments on the proposed assessment methodology, the potential management of any identified Aboriginal objects and/or the Aboriginal cultural significance of the subject land, we would prefer that you provide these in writing. Any submission must however be received by **15 November 2013**. Submissions can be sent to MDCA via:

**POST**

PO Box A281  
Arncliffe NSW 2205

**FAX**

(02) 8520 2006

**EMAIL**

admin@mdca.com.au

**1. Project Information**

The current project involves the proposed archaeological investigation of the subject land under a National Parks & Wildlife Act s90 Aboriginal Heritage Impact Permit (AHIP). The subject land is being considered for light industrial subdivision potentially comprising up to several dozen individual allotments with associated internal roadways.

The subject land is located about 5km north-east of Cronulla, and is known as 238-258 Captain Cook Drive (Lot 1 DP225973 and Lot 2 DP1088703). It is approximately 17 hectares in size and is situated along the southern side of Captain Cook Drive at Kurnell, and is bounded to the west by an existing light industrial subdivision at Lot 6 Captain Cook Drive, to the south by a timbered buffer zone to the desalination plant complex to the south, and to the east by another light industrial subdivision (**Figures 1 and 2**). North of Captain Cook Drive are wetlands associated with Quibray Bay.



Figure 1. The subject land (blue) in its local context on the Kurnell Peninsula.





Figure 2. Aerial view of the subject land (blue outline) and adjacent properties.



Figure 3. The subject land today showing former factory buildings and flat grassed surrounds.



The subject land is the site of the former Abbots Pharmaceuticals facility, which ceased operations in 2004. The subject land appears to have been undeveloped until the 1960s with the commencement in construction of the Abbots facility. It appears that some or all of the subject land was “raised by 0.75m – 1m by filling and grading” during the construction process.<sup>2</sup> A drainage ditch appears to have been excavated along the western boundary of the property, presumably to drain the marshy ground at the rear of the subject land. The site was in use for several years after 2004 as the offices of Serenity Cove Business Park Pty Ltd but no subsurface alterations appear to have been made during this time to the subject land. The subject land is currently largely cleared of vegetation (**Figure 3**), except that associated with the drainage channel along the western boundary of the site. Apart from these, all trees within the subject land are relatively recent regrowth.

The current surface of the subject land is made ground and is not indicative of the Aboriginal heritage sensitivity of the property. This has been ascertained through a review of historical and archaeological records relevant to the subject land, and is summarised in **Figure 4**. In particular, a number of archaeological assessments and some archaeological excavations over the last decade have revealed that the original foreshore of Botany Bay lies buried underneath existing land surfaces adjacent to the current alignment of Captain Cook Drive in the vicinity of the subject land. This shoreline has been covered by sands derived from large dunes to the south which were mobilised by the cutting down of timber which had previously stabilised them. When the current Captain Cook Drive was built in the 1950s, this drifting sand had blown over the top of the existing foreshore of Botany Bay (and the original ‘Kurnell road’ which went along it – see **Figure 4**) and partly infilled the bay, such that the new road had to be built on top of this infilled portion of Botany Bay.

Aboriginal people lived across the Kurnell Peninsula and the original foreshore of the bay was a particular focus of use. Excavations by Mary Dallas Consulting Archaeologists at Lot 8 Captain Cook Drive in 2002 revealed an extensive Aboriginal midden buried under recent drift sand which was associated with this dune. This foreshore dune has not survived everywhere, but where it has it should be considered to have high Aboriginal heritage sensitivity. Immediately adjacent to the subject land, along the edge of Captain Cook Drive, a midden (“Abbott Site”; AHIMS #52-3-0258) was recorded in 1980 by amateur archaeologist Frank Dickson during excavations for a gas pipeline. The pipeline trench had largely been backfilled but scattered shells were visible on the surface over about 50m and in a short section of exposed trench about 70cm below the surface was a thin layer of cockle and mud whelk shells as would have been available in the adjacent mudflats. Dickson sifted some of the trench spoil and found fish bone, charcoal and stone artefacts confirming the site as a shell midden. The extent of the site could not be determined and no further recording of the site appears to have occurred since that of Dickson. It is highly likely that the midden is associated with the original Botany Bay foredune as shown in **Figure 4**.

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<sup>2</sup> Dickson, F. 1980. *Report on the Abbott Site – Kurnell* (Report to the NPWS)p1-2. Dickson obtained this information from a Sutherland Shire Council engineer who had witnessed the development of the area from the 1950s.



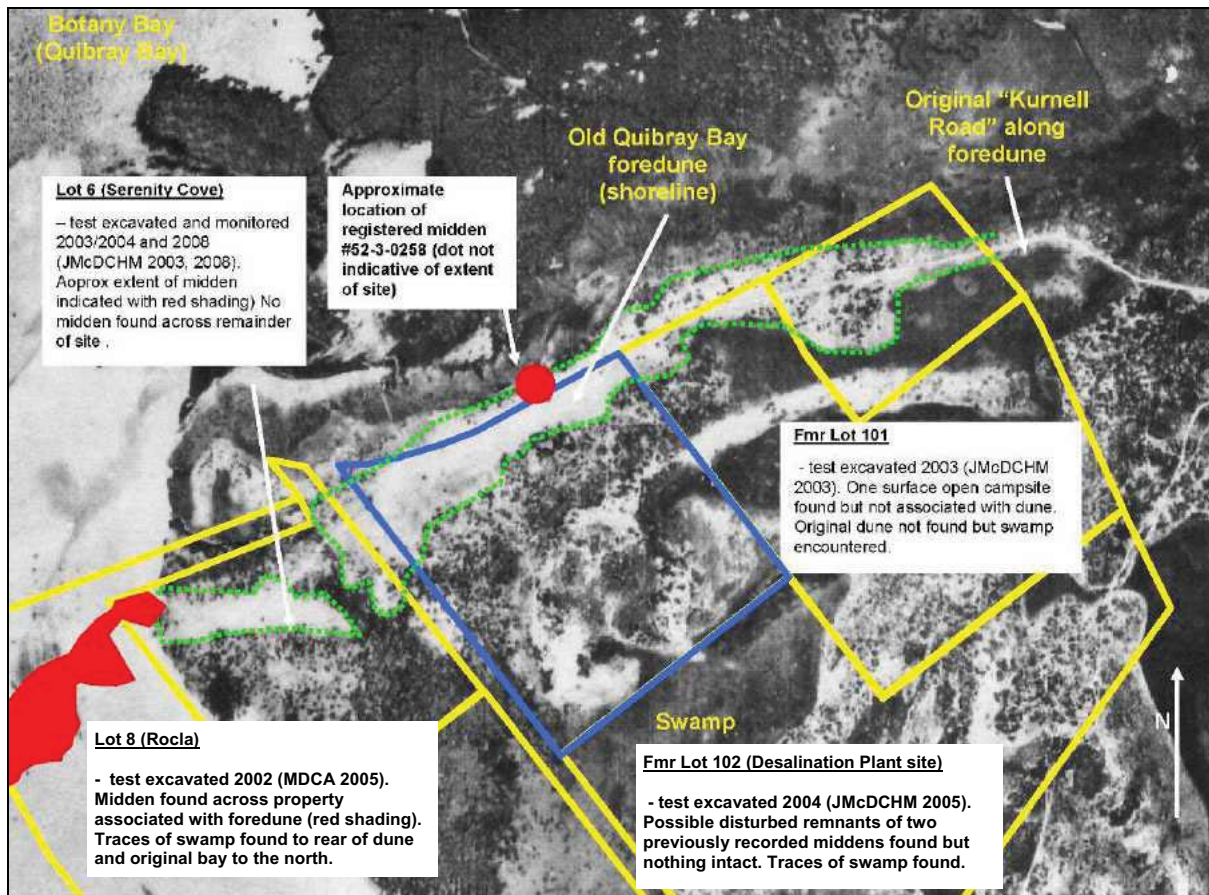


Figure 4. Historical landscape and archaeological features around the subject land (blue outline) and adjacent properties (yellow outline). The former foredune along Botany Bay is shown in green dotted outline. The approximate location of documented Aboriginal midden deposits are shown in red.

It is not known whether the original Botany Bay foredune is present within the subject land, but if it has partially or totally survived, it is the feature most likely to contain evidence of past Aboriginal use. Further south (inland) of this dune is a second dune and freshwater swamp, which may also have been used by Aboriginal people in the past. However archaeological investigations of adjacent properties containing these features have located little if any archaeological evidence of that use. Based on this archaeological and historical information, the **archaeological** sensitivity of the subject land has been assessed as follows, with reference to **Figure 5**:

- An area of high Aboriginal archaeological sensitivity is identified along the northern third of the subject land as the area in which the original Botany Bay foredune is likely to exist.
- The remainder of the property is considered to have moderate Aboriginal archaeological sensitivity.

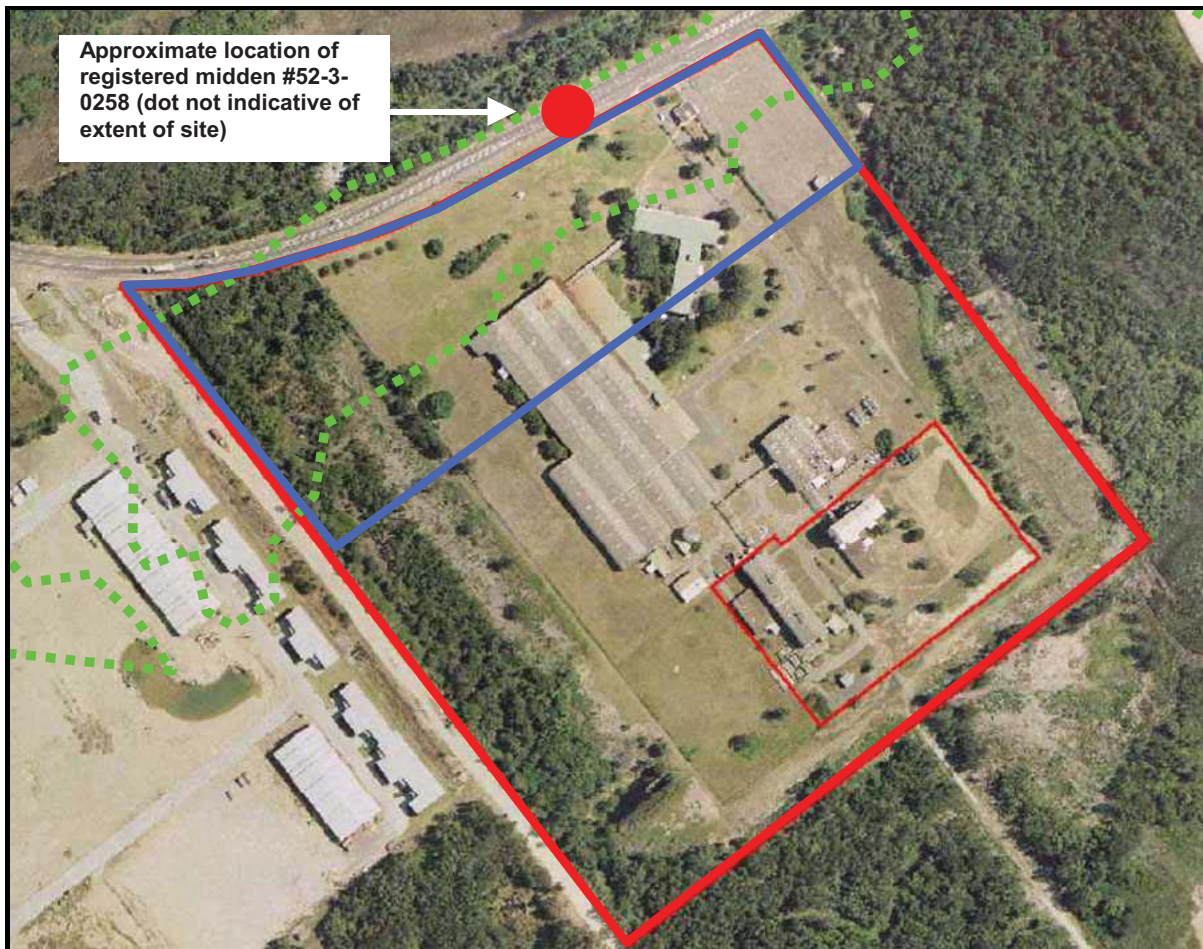


Figure 5. Preliminary assessment of the Aboriginal archaeological sensitivity of the subject land. Green dotted line represents approximate extent of original foredune. Blue outline represent area of high Aboriginal archaeological sensitivity. Remainder of the subject land has moderate Aboriginal archaeological sensitivity.

As any future development of the subject land has the potential to impact upon currently buried Aboriginal archaeological remains, subsurface Aboriginal archaeological investigations are required to determine whether any such remains are present within the subject land, and if so, define their extent and significance to provide a basis for future management requirements in this area. The proposed methodology for these investigations is outlined below, and will be focussed most intensively on the area of high Aboriginal archaeological sensitivity.

The proponent for these investigations is Property Today Pty Ltd<sup>3</sup> who have engaged MDCA (Mary Dallas Consulting Archaeologists) to prepare an Aboriginal Cultural Heritage Assessment to support an AHIP application for the proposed archaeological investigations.

<sup>3</sup> Postal address is PO Box 2869 Taren Point NSW 2229.





## 2. Project Timing and Aboriginal Community Consultation

The proposed Aboriginal archaeological investigations will inform a future development application for a light industrial subdivision within the subject land, which is intended to be lodged with Sutherland Shire Council. The current Aboriginal archaeological investigations are required to determine whether there are any Aboriginal heritage aspects which should be considered in such an application. Due to the requirement for an AHIP to undertake the archaeological investigations,<sup>4</sup> MDCA has undertaken, on behalf of the proponent, public and direct Aboriginal community notification as per the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* [Clause 80C]. This has resulted in the compilation of a list of Registered Aboriginal Parties ('RAPs').

This document has been sent by post and/or email on 17/10/2013 to all RAPs to provide information on the project and proposed Aboriginal archaeological investigations as well as providing RAPs with an opportunity to comment on the proposed assessment methodology for the Aboriginal Cultural Heritage Assessment report that is currently being prepared by MDCA in support of an AHIP application for the proposed subsurface Aboriginal archaeological investigations.

In addition, RAPs (individuals and/or members or organisations) are asked to identify whether they are aware of any objects or places of cultural value to Aboriginal people in the subject lands, and to provide information on these objects or places. A response time of 28 days has been provided to RAPs for comments relating to this document. Any comments provided to MDCA will be forwarded to the proponent for their consideration.

These comments will be documented and addressed in the draft Aboriginal Cultural Heritage Assessment Report ('ACHA Report') which is to be produced in support an AHIP application to allow the subsurface archaeological investigations to take place. This draft ACHA Report will then be distributed to all RAPs for a further 28 day review and comment period. Subsequent to this a final ACHA report will be produced, incorporating and detailing any comments received on the draft report from RAPs. The final ACHA report will be submitted to the OEH together with the AHIP application. A copy of this final report will also be made available to all RAPs at this time.

*Please note that if any information provided by RAPs to MDCA is of a culturally sensitive nature, please inform us so that appropriate protocols of access and use can be developed. It will otherwise be assumed that all information provided can be included and discussed in the Aboriginal Cultural Heritage Assessment report.*

In summary, there will be two main opportunities for RAPs to comment on the current proposal and project:

- The first opportunity is in relation to the current document, where input and information is sought on:
  - The proposed assessment methodology.
  - Any objects or places of cultural value to Aboriginal people which may be located within the subject lands, and any other Aboriginal cultural or historical information relevant to the current assessment and proposal.
  - Aboriginal cultural knowledge relating to subject lands proposed for light industrial subdivision.
  - The proposed management of any Aboriginal archaeological remains recovered during the proposed subsurface Aboriginal archaeological investigations.
- The second opportunity will be in relation to reviewing and commenting on a draft version of the Aboriginal Cultural Heritage Assessment report, which will incorporate and discuss comments received on the current document.

---

<sup>4</sup> As the investigations cannot be undertaken within the scope of the Code of Practice for Archaeological Investigations.





### 3. Proposed Assessment Methodology

The following methodology is proposed to be followed in relation to the assessment of archaeological and Aboriginal cultural values as part of the Aboriginal Cultural Heritage Assessment report to be prepared by MDCA on behalf of the proponent.

#### ***Archaeological Assessment***

The archaeological assessment will largely comprise the results of a previous Aboriginal heritage assessment undertaken of the subject land undertaken by MDCA Principal Consultant Paul Irish in 2008,<sup>5</sup> and the results of other archaeological assessments of adjacent areas. Given the history of deposits and disturbance within the subject lands, no Aboriginal archaeological remains are likely to be currently located on the current ground surface and no further archaeological survey is proposed. The main focus of the current archaeological assessment will be to demonstrate the basis for the assessment of subsurface Aboriginal archaeological sensitivity across the subject land (but primarily within the northern portion of the subject land), and the need for subsurface Aboriginal archaeological investigations to investigate their archaeological potential. It is proposed that the investigations consist of the following:

- Initially, a series of mechanical trenches will be excavated at suitable intervals across the subject land, avoiding existing structures. A greater concentration of trenches will be excavated in the area of high Aboriginal archaeological sensitivity (the northern third of the subject land) and a lesser concentration across the remainder of the property. The purpose of these trenches will be to identify any buried former land surfaces, assess their integrity, and identify potential locations for further manual investigation.
- Should any buried land surfaces with Aboriginal archaeological potential or actual Aboriginal archaeological deposits be uncovered, a limited number of manual excavation squares (0.5m<sup>2</sup> or 1.0m<sup>2</sup> as appropriate) would be excavated to determine the presence/absence and/or nature of any archaeological remains which are present.

The proposed excavation methodology will be fully documented in the draft Aboriginal Cultural Heritage Assessment report.

#### ***Aboriginal Cultural Assessment***

The Aboriginal cultural assessment is proposed to contain the following two elements:

1. Background research by MDCA into documented Aboriginal cultural and historical associations with the study area; and
2. Seeking comment from Registered Aboriginal Parties (individuals and/or members of organisations) about:
  - the Aboriginal cultural significance of the subject land
  - any other places or objects of cultural significance to Aboriginal people which may be impacted by future development within the subject land.
  - appropriate management for Aboriginal objects retrieved during the proposed subsurface archaeological investigations.
  - any other Aboriginal cultural or historical knowledge which is relevant to the Aboriginal cultural assessment of the study area in relation to the proposed AHIP application and future development within the subject land.

---

<sup>5</sup> Paul Irish 2008. *Re: Aboriginal Heritage Due Diligence Assessment at 238-258 Captain Cook Drive, Kurnell* (Lot 2 DP 1088703 and Lot 1 DP225973).



Information received will be considered and included in the draft Aboriginal Cultural Heritage Assessment report for the project and distributed for review and comment by Registered Aboriginal Parties.

#### 4. Potential Management of Aboriginal Objects

At this stage no Aboriginal archaeological remains have been identified within the subject land. It is also not currently clear what type or quantity of Aboriginal archaeological remains (if any) may be encountered during the proposed subsurface archaeological investigations. Should Aboriginal archaeological remains located during the proposed Aboriginal archaeological test excavations, a management strategy for these objects will be determined with the RAPs as part of any subsequent AHIP application or, if warranted, as part of a conservation area. There are three main options for long term management of excavated Aboriginal objects:

1. Care and Control by an organisation or individual can occur where appropriate storage facilities are present and where there is agreement and consent from other RAPs. Should consent and agreement not be forthcoming, care and control cannot generally be granted under current OEH policy.
2. Artefacts may be transferred to the default repository for Aboriginal archaeological remains, the *Australian Museum*. However, there is a high threshold of significance for lodgement and it is unlikely that this will realistically be an option for any remains identified during the proposed archaeological test excavations.
3. Artefacts may be reburied at an appropriate location within the study area with the consent of the proponent.

At this stage no specific management strategy has been determined. But as noted in **Section 2**, comment is sought on which of the three options are preferred by each RAP. Final management will be determined based on the results of the Aboriginal archaeological test excavations.

#### 5. Conclusions

The current document has provided project information, a proposed assessment methodology and potential management strategy for Aboriginal objects which may be encountered during archaeological test excavations. Comment is sought from Registered Aboriginal Parties on the following matters:

- The proposed assessment methodology.
- Any objects or places of cultural value to Aboriginal people which may be located within the current study area, and any other Aboriginal cultural or historical information relevant to the current assessment and proposal.
- Aboriginal cultural knowledge relating to the subject lands.
- The potential management of artefacts retrieved during the proposed subsurface archaeological investigations.

As noted above, where requested and appropriate, protocols can be developed for culturally sensitive information provided to MDCA. It is however essential that comments and information, preferably in writing, be received by MDCA no later than **15 November 2013** if they are to be considered prior to the formulation of the draft Aboriginal Cultural Heritage Assessment report. The proponent would appreciate your response at your earliest convenience.



Please also note as described above, any engagement on fieldwork arising from the current proposal is a commercial matter and is separate from the current process. If your organisation wishes to seek engagement on any such work, please submit a schedule of fees to the proponent directly.

If you have any questions or require any additional information, please contact Paul Irish directly via telephone on 0418 450 490 or email at [paul@mdca.com.au](mailto:paul@mdca.com.au).

Yours sincerely,

A handwritten signature in black ink that reads "Paul Irish". The signature is written in a cursive style with a large, prominent 'P' and 'I'.

Paul Irish

Principal Consultant

Mary Dallas Consulting Archaeologists

17 October 2013



238-258 Captain Cook Drive, Kurnell NSW  
Aboriginal Cultural Heritage Assessment

## **APPENDIX A3 : Responses to 2013 Draft Report**



# LA PEROUSE

Local Aboriginal Land Council

11 December 2013

Mr Paul Irish  
Principal Consultant  
Mary Dallas Consulting Archaeologists  
PO Box A281  
ARNCLIFFE NSW 2205

**Via Email:** [paul@mdca.com.au](mailto:paul@mdca.com.au)

Dear Mr Irish,

**RE: PROPOSED ABORIGINAL ARCHAEOLOGICAL INVESTIGATION AT 238-258  
CAPTAIN COOK DRIVE, KURNELL NSW**

I write in reply to your letter dated 17 October 2013 regarding the above mentioned project. I have reviewed the report dated November 2013 and provide the following information and recommendations on behalf of the La Perouse Local Aboriginal Land Council (**La Perouse LALC**).

As you may be aware, the La Perouse LALC was established and operates within the provisions of the NSW *Aboriginal Land Rights Act 1983 (ALRA)* and currently represents a membership of 380 Aboriginal persons who reside within or have an association with the La Perouse LALC area. In accordance with Section 52 of the ALRA the La Perouse LALC has a statutory function to “*take action to protect the culture and heritage of Aboriginal persons in the Council’s area*”.

The La Perouse LALC and members of the La Perouse Aboriginal Community recognise that the Kurnell area is of great significance to the Aboriginal Community due to the past occupation of the area in both pre and post European contact periods.

In particular the Kurnell dune system holds significance due to the numerous discoveries of Aboriginal skeletal remains and the likelihood of many unrecorded burial sites that may be present in the dune system. The La Perouse LALC has had extensive involvement in the repatriation of Aboriginal ancestral remains that have been returned to the Aboriginal Community from Australian and International Institutions such as Universities and Museums. Some of the remains repatriated were recorded as being discovered close to the subject property.

In addition to the above mentioned significance it is well documented that traditional Aboriginal people of the area participated in the labour market in the area including employment with the local farmers and property owners throughout the 1800’s. This ensured their continual occupation and connection to their traditional lands.



It must be noted that it is widely accepted that the southern Botany Bay area, in particular the Kurnell area, is the traditional lands of the Gweagal clan of the Dharawal language group.

I have reviewed the report and provide the following recommendations:

**Recommendation 1:**

The La Perouse LALC supports the methodology and recommendations that are set out on page 37 of the Aboriginal heritage assessment report dated November 2013.

**Recommendation 2:**

The La Perouse LALC highly recommends a representative of the La Perouse LALC participation in the archaeological investigations to ensure the Aboriginal community is adequately represented.

If you would like to discuss this issue further please don't hesitate to contact the La Perouse LALC office on 9311 4282 during business hours.

Yours sincerely,



Chris Ingrey  
**Chief Executive Officer**

# DARUG - LAND - OBSERVATIONS



ABN: 87239202455  
E-MAIL: [gordow51@bigpond.net.au](mailto:gordow51@bigpond.net.au)  
PO BOX: 571 Plumpton. NSW 2761  
Phone: 029831 8868 or 0415 663 763



29-11-2013

**Paul Irish**

**Principal Consultant  
Mary Dallas Consulting Archaeologists**

**Re: 238 - 258 Captain Cook Dr Kurnell**

**D.L.O has no concerns with these Recommendations in this draft on 238-258  
Captain Cook Dr Kurnell**

**As always D.L.O would be involved in the monitoring of the top soil removal and  
all other form of works to be carried out on this job site**

**Yours faithfully**

**Uncle  
Gordon Workman  
Darug Elder**

**Sites Officer**



238-258 Captain Cook Drive, Kurnell NSW  
Aboriginal Cultural Heritage Assessment

## **APPENDIX A4 : Responses to 2014 Draft Report**



08 July 2014

Mr Paul Irish  
Principal Consultant  
Mary Dallas Consulting Archaeologists  
PO Box A281  
ARNCLIFFE NSW 2205

PO Box 365, Matraville  
New South Wales, 2036

T: (02) 9311 4282  
E: [admin@laperouse.org.au](mailto:admin@laperouse.org.au)  
ABN: 89 136 607 167

**Via Email:** [paul@mdca.com.au](mailto:paul@mdca.com.au)

Dear Paul,

**RE: Aboriginal Cultural Heritage Assessment Report for 238-258 Captain Cook Drive, Kurnell NSW**

I write in regards to the above mentioned report dated May 2014. I have reviewed the report and provide the following information and recommendations on behalf of the La Perouse Local Aboriginal Land Council (**La Perouse LALC**). I can confirm that the La Perouse LALC participated in the test excavations conducted on 10 March 2014 to 19 March 2014.

As you may be aware, the La Perouse LALC was established and operates within the provisions of the *Aboriginal Land Rights Act 1983* (NSW) (**ALRA**) and currently represents a membership of 405 Aboriginal persons who reside within or have an association with the La Perouse LALC area. In accordance with Section 52 of the ALRA the La Perouse LALC has a statutory function to "*take action to protect the culture and heritage of Aboriginal persons in the Council's area*".

The La Perouse LALC and members of the La Perouse Aboriginal community recognise that the Kurnell area is of great significance to the Aboriginal community due to the past occupation of the area in both pre and post European contact periods.

The La Perouse LALC fully supports the recommendations set out on pages 76 and 77 of the report. The La Perouse LALC

### **Recommendation 1:**

The La Perouse LALC fully supports the recommendations that are set out on pages 76 and 77 of the Aboriginal cultural heritage assessment report dated May 2014.

### **Recommendation 2:**

The La Perouse LALC supports the recommendation that the Aboriginal objects retrieved from the subject land during the recent archaeological test excavations and any future Aboriginal Heritage Impact Permits be subject to a Care and Control Agreement with the La Perouse LALC and for the cultural materials to be held at La Perouse LALC storage facility at Yarra Bay House, La Perouse.

If you would like to discuss this issue further please don't hesitate to contact the La Perouse LALC office on (02) 9311 4282 during business hours or via email at [admin@laperouse.org.au](mailto:admin@laperouse.org.au).

Yours sincerely,

A handwritten signature in black ink, appearing to read 'C Ingrey', written in a cursive style.

Chris Ingrey  
**Chief Executive Officer**



## Admin

---

**From:** Scott Franks <scott@tocomwall.com.au>  
**Sent:** Friday, 13 June 2014 8:08 AM  
**To:** admin@mdca.com.au  
**Cc:** fran.scully@environment.nsw.gov.au  
**Subject:** Draft ACHAR 238-258 Captain Cook Drive KURNELL

Paul,

As stated on the Phone we reject the way this project has been run, we feel that you and the cline have not reached the minum standard under section 90 k. as you will recall I rang and spoke to you regarding this project after I have spoken to the proponent, the proponent advised me that you inform him that he only need to deal with the group you recommended and he was recording the conversation.

### Recommendation

1. OEH obtain a statement and a copy of the recoding that the proponent has of the conversation between myself and the proponent regarding advise to possibly refuse involvement of RAPs in this project.
2. OEH should not issue any authority for this project to move forward until a full investigation is conducted with regard to deliberately refusing to allow Raps on Site.
3. OEH need to consult with all registered RAPs then consider section 90k of the NPWs Act before allowing this project to be approved.

Regards  
Scott Franks

Native Title & Environmental Services Manager

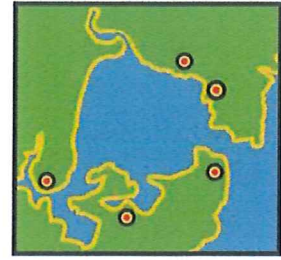
Tocomwall Pty Ltd  
PO Box 76  
CARINGBAH NSW 1495  
m: 0404 171544  
p: 02 9542 7714  
f: 02 9524 4146  
e: [scott@tocomwall.com.au](mailto:scott@tocomwall.com.au)  
[www.tocomwall.com.au](http://www.tocomwall.com.au)

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## **APPENDIX A5: Responses to 2018 Draft Report**

## LA PEROUSE



LOCAL ABORIGINAL LAND COUNCIL

21 March 2018

Mr Paul Irish  
Principal Consultant & Historian  
Mary Dallas Consulting Archaeologists  
PO Box A281  
ARNCLIFFE NSW 2205

PO Box 365, Matraville  
New South Wales, 2036

T: (02) 9311 4282  
E: [admin@laperouse.org.au](mailto:admin@laperouse.org.au)  
ABN: 89 136 607 167

Via Email: [paul@mdca.com.au](mailto:paul@mdca.com.au)

Dear Mr Irish,

### **RE: Aboriginal Cultural Heritage Assessment of 238-258 Captain Cook Drive, Kurnell**

I write in response to your email of 20 February, 2018, seeking comment and input from the La Perouse Local Aboriginal Land Council (**La Perouse LALC**) for the Aboriginal Cultural Heritage Assessment Report regarding the development proposal for 238-258 Captain Cook Drive, Kurnell. I have reviewed the draft report and I now provide the following information and recommendations on behalf of the La Perouse LALC and its membership.

As you may be aware, the La Perouse LALC was established and operates within the provisions of the *Aboriginal Land Rights Act 1983* (NSW) (**ALRA**) and currently represents a membership of 400 Aboriginal persons who reside within or have an association with the La Perouse LALC area. The site of the proposed development does fall within the geographical boundaries of the La Perouse LALC. In accordance with Section 52 of the ALRA the La Perouse LALC has a statutory function to "*take action to protect the culture and heritage of Aboriginal persons in the Council's area*".

The Kurnell area is a very significant region for La Perouse LALC and the La Perouse Aboriginal community as the area has both cultural significance and historical significance to many of our current members and their families. The broader area encompasses Aboriginal heritage items that have been registered by the National Parks and Wildlife Service (NPWS), and there are also recorded histories and oral histories that originate from the area.

Given the La Perouse LALC's significant association with the Kurnell area, we are concerned about the potential for the proposed development at 238-258 Captain Cook Drive, Kurnell, to impact upon both known and unknown Aboriginal heritage items in and around the subject area. As such, the La Perouse LALC provides the following comments and recommendations:

#### **Recommendation 1:**

The La Perouse LALC believes the draft Aboriginal Cultural Heritage Assessment report, prepared by MDCA and dated February 2018, is concerned with the potential impact upon Aboriginal heritage items in and around the subject area, by the proposed development at 238-258 Captain Cook Drive, Kurnell, and as such, the La Perouse LALC wholly supports all of the recommendations in the draft report, in their entirety.

**Recommendation 2:**

The La Perouse LALC and its members have a strong cultural and historic connection to the Kurnell area and to the subject area, and we hope that Aboriginal cultural protocols can be observed and followed by the proponent, through engaging the La Perouse LALC to guide the work around the protection and preservation of Aboriginal heritage items.

**Recommendation 3:**

The La Perouse LALC advises that if any Aboriginal objects (such as human or animal bone, shell material or stone artifacts) are impacted or unearthed during any activity on the property, the activity must cease and the NSW Office of Environment and Heritage and La Perouse LALC be contacted immediately.

If you would like to discuss this issue further please don't hesitate to contact the La Perouse LALC office on 9311 4282 during business hours.

Yours sincerely,



Carrine Liddell  
**Acting Chief Executive Officer**



**DARUG LAND  
OBSERVATIONS PTY  
LTD  
ABN 27 602 765 453**

---

**Email: daruglandobservations@gmail.com  
PO BOX 2006 BENDALONG NSW 2539  
Mobile: 0413 687 279**

9<sup>th</sup> March, 2018

Paul Irish  
Mary Dallas Consulting Archaeologists  
PO BOX A281  
ARNCLIFFE NSW 2205

Dear Paul,

**RE: 238 - 258 CAPTAIN COOK DRIVE, KURNELL**

Aboriginal Cultural Heritage Assessment Report

Darug Land Observations Pty Ltd (DLO) has reviewed the draft Aboriginal Cultural Heritage Assessment Report, and supports the methodology for the proposed development of a service station, take away food and drink retailers at Lot 8 DP industrial development, located at 238 – 258 Captain Cook Drive, in Kurnell.

In relation to the long-term storage of the recovered artefacts, we agree with the recommendations in the report that any retrieved artefacts from the archaeological test excavations will be transferred to the custodianship of La Perouse Local Aboriginal Land Council under a Care Agreement.

Furthermore, DLO would be involved in test excavations, monitoring of the topsoil removal and all other form of works to be carried out on the site.

Yours sincerely,

Jamie Workman  
Darug Land Observations Pty Ltd

Uncle Gordon Workman  
Darug Elder



## Paul Irish

---

**From:** Scott Franks <scott@tocomwall.com.au>  
**Sent:** Tuesday, 20 February 2018 4:33 PM  
**To:** Paul Irish  
**Subject:** Re: Draft Aboriginal Heritage Assessment report for 238-258 Captain Cook Drive Kurnell

**Importance:** High

Paul,

Thank you for confirming this for me. Tocomwall rejects to the recommendations and finding contained within Draft Aboriginal Heritage Assessment report for 238-258 Captain Cook Drive Kurnell,

Based on your admission that other disciplines were not used, I am at a loss as to how you your firm could form a view to support your recommendations and finding, I cannot support this nor Should OEH based on the following. It seems that you have not considered this relevant section in this project.

- ***Skills to investigate and assess Aboriginal cultural heritage***

*The investigation and assessment of Aboriginal cultural heritage should make use of all relevant disciplines. The assessment of cultural significance is more than a component of an **archaeological assessment or investigation**. It cannot be assumed that any one practitioner will have the full range of skills required to investigate and **assess cultural significance and harm**. During this task it may be necessary to engage additional practitioners with special expertise.*

- no anthropological research is has been considered or conducted and only an archaeologists has completed the assessment, Page 5 of OEH 2010 **Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW** contains the reference that you:
- <http://www.environment.nsw.gov.au/resources/cultureheritage/20110263ACHguide.pdf>

Regards  
Scott Franks

Native Title & Environmental Services Consultant

Tocomwall Pty Ltd  
PO Box 76  
CARINGBAH NSW 1495  
m: 0404 171544  
p: 02 9542 7714  
f: 02 9524 4146  
e: [scott@tocomwall.com.au](mailto:scott@tocomwall.com.au)  
[www.tocomwall.com.au](http://www.tocomwall.com.au)



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---

**From:** Paul Irish <paul@mdca.com.au>  
**Date:** Tuesday, 20 February 2018 at 4:07 pm  
**To:** Scott Franks <scott@tocomwall.com.au>  
**Cc:** "admin@mdca.com.au" <admin@mdca.com.au>  
**Subject:** RE: Draft Aboriginal Heritage Assessment report for 238-258 Captain Cook Drive Kurnell

Dear Scott,

I am not sure what you mean by 'Anthologist' but if you mean anthropologist then there was no anthropologist specifically engaged for the project.

Kind regards,

Paul

---

**From:** Scott Franks [<mailto:scott@tocomwall.com.au>]  
**Sent:** Tuesday, 20 February 2018 2:37 PM  
**To:** Paul Irish  
**Cc:** [admin@mdca.com.au](mailto:admin@mdca.com.au)  
**Subject:** Re: Draft Aboriginal Heritage Assessment report for 238-258 Captain Cook Drive Kurnell  
**Importance:** High

Dear Paul,

Could you please provide the name and qualifications of the Anthologist that was engaged for the project?

Regards  
Scott Franks

Native Title & Environmental Services Consultant

Tocomwall Pty Ltd  
PO Box 76  
CARINGBAH NSW 1495  
m: 0404 171544

p: 02 9542 7714  
f: 02 9524 4146  
e: [scott@tocomwall.com.au](mailto:scott@tocomwall.com.au)  
[www.tocomwall.com.au](http://www.tocomwall.com.au)



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**From:** Paul Irish <[paul@mdca.com.au](mailto:paul@mdca.com.au)>  
**Date:** Tuesday, 20 February 2018 at 1:00 pm  
**To:** Jennifer Norfolk <[jennifer@tocomwall.com.au](mailto:jennifer@tocomwall.com.au)>  
**Cc:** Scott Franks <[scott@tocomwall.com.au](mailto:scott@tocomwall.com.au)>, "[admin@mdca.com.au](mailto:admin@mdca.com.au)" <[admin@mdca.com.au](mailto:admin@mdca.com.au)>  
**Subject:** Draft Aboriginal Heritage Assessment report for 238-258 Captain Cook Drive Kurnell

Dear Ms Norfolk,

Please see the attached letter and follow the link below to access a copy of the draft Aboriginal Cultural Heritage Assessment report which has been prepared to inform a development proposal at 238-258 Captain Cook Drive, Kurnell.

Link: <https://app.box.com/s/nz1ckmwioaji0lqob3fejwq4kwjdcicu>

If you wish to comment on the draft report, your response must be received in writing by MDCA by 23 March 2018.

If you have any questions or require any additional information, please do not hesitate to contact me.

Kind regards,

Paul Irish

Dr Paul Irish  
Principal Consultant & Historian  
**Mary Dallas Consulting Archaeologists**  
PO Box A281 Arncliffe NSW 2205  
Ph 0418 450 490 Fax [02] 8520 2006  
Email [paul@mdca.com.au](mailto:paul@mdca.com.au)  
[www.mdca.com.au](http://www.mdca.com.au)





# **APPENDIX B**

## **Test Excavation Aboriginal Heritage Impact Permit**

# Aboriginal Heritage Impact Permit

Section 90 of the National Parks and Wildlife Act 1974



Office of  
Environment  
& Heritage

**AHIP number: C0000219**

(AHIMS Permit ID: 3672)

## AHIP Issued To:

Property Today Pty Ltd

PO Box 2869

Taren Point NSW 2229

## OEH Office issuing this AHIP

Office of Environment and Heritage

Department of Premier and Cabinet (NSW)

Regional Operations

Greater Sydney

PO Box 644

Parramatta NSW 2124

Telephone number: (02) 8837 6000

## Additional details for public register

a) Name of development or project	238-258 Captain Cook Drive, Kurnell
b) Location	238-258 Captain Cook Drive, Kurnell
c) Local Government Area(s)	Sutherland
d) Description of harm authorised	<ul style="list-style-type: none"><li>• Test excavations</li></ul>
e) AHIP commencement date and duration	<i>Commencement:</i> 19 February 2014 <i>Duration:</i> 2 years



## AHIP TO HARM ABORIGINAL OBJECTS

### A. Background

- (i) On 13/01/2014 an application was made to the Director-General of the Department of Premier and Cabinet (OEH) for an Aboriginal Heritage Impact Permit (AHIP) pursuant to s.90 of the *National Parks and Wildlife Act 1974* (the Act).
- (ii) The application was to allow harm to AHIMS #52-3-0258 as shown in **Attachment 1: Land to which this AHIP applies**, as a result of archaeological test excavations to inform a proposed development.
- (iii) OEH considered the application and supporting information provided, and matters under section 90K of the Act and decided to issue an AHIP subject to conditions.

### B. AHIP issued subject to conditions

An AHIP is issued to harm Aboriginal objects identified in Schedules B and C, in accordance with the conditions of this AHIP.

This AHIP is issued pursuant to section 90 of the Act.

### C. Commencement and duration of AHIP

This AHIP commences on the date it is signed unless otherwise provided by this AHIP.

Unless otherwise revoked in writing, this AHIP remains in force for 2 years from the date of commencement.

### D. Proposed Works

Archaeological test excavation to determine the nature and extent of AHIMS #52-3-0258, and any other Aboriginal archaeological site that may be present within the subject land.

**Note:** A Dictionary at the end of the AHIP defines terms used in this document. Further information about this AHIP is also set out after the Dictionary.

...*S. Harrison*.....

**Susan Harrison**  
**Senior Team Leader Planning**  
**Greater Sydney**

(by Delegation)

DATED: 19 February 2014

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## LAND TO WHICH THIS AHIP APPLIES

Land as shown in **Attachment 1: Land to which this AHIP applies.**

## CONDITIONS

The conditions of this AHIP specify the actions that are permitted and/or required in relation to areas and Aboriginal objects, which are detailed in the Schedules that follow.

### Administrative Conditions

#### Responsibility for compliance with conditions of AHIP

1. The AHIP holder must ensure that all persons involved in actions or works covered by this AHIP (whether employees, contractors, sub-contractors, agents or invitees) are made aware of and comply with the conditions of this AHIP.

#### Project manager to oversee the actions relating to this AHIP

2. A suitably qualified and experienced individual must be appointed as a project manager who is responsible for overseeing, for and on behalf of the AHIP holder, all the actions relating to this AHIP.
3. The individual appointed as project manager must be the project manager nominated in the application form.
4. If an alternative to the nominated project manager is appointed, OEHL must be notified of their contact details within 14 days of this appointment.

#### Actions must be in accordance with AHIP application

5. All actions on the land must be carried out in accordance with the application except as otherwise expressly provided by a condition of this AHIP.

### Operational Conditions

#### Certain Aboriginal objects must not be harmed

6. All human remains in, on or under the land must not be harmed, other than any human remains identified in Schedule B4.

#### Test excavations

7. Test excavations may be carried out in, on or under each test excavation area described in Schedule B2.
8. Aboriginal objects that are recovered during the excavations may be analysed on-site and/or may be taken off-site for further analysis.
9. The excavations and analysis of Aboriginal objects must be carried out in accordance with the methodology provided in the report titled Aboriginal Cultural Heritage Assessment Report. 238-258 Captain Cook Drive Kurnell, NSW. Sutherland LGA. Mary Dallas Consulting



Archaeologists (MDCA). Report to Property Today Pty Ltd. Dated December 2013 and that was provided with the application.

## Temporary storage of certain Aboriginal objects

10. Any Aboriginal objects that are removed from the land by actions authorised by this AHIP, must be moved as soon as practicable to the temporary storage location in the table below, pending any agreement reached about the long term management of the Aboriginal objects.
11. The temporary storage location is as follows:

<b>Location name:</b>	Mary Dallas Consulting Archaeologists, office premises
<b>Address:</b>	7/31 Barden St., Arncliffe
<b>Storage particulars:</b>	In a locked room

12. Any Aboriginal objects stored at the temporary storage location must not be further harmed, except in accordance with the conditions of this AHIP.

## Notification and Reporting Conditions

### Notification of commencement and completion of actions

13. Written notice must be provided to the OEH office at least 7 days prior to the commencement of actions authorised by this AHIP.
14. Written notice must be provided to the OEH office within 7 days of the completion of actions authorised by this AHIP.

### Copy of this AHIP and notices to be provided to Registered Aboriginal Parties

15. A copy of this AHIP must be provided to each Registered Aboriginal Party, within 14 days of receipt of the AHIP from OEH.
16. Where this AHIP is varied or transferred, a copy of the AHIP variation or transfer notice must be provided to each Registered Aboriginal Party, within 14 days of receipt of the notice.

### Human remains

17. If any human remains (other than any human remains described in Schedule B4) are discovered and/or harmed in, on or under the land, the AHIP holder must:
  - (a) not further harm these remains
  - (b) immediately cease all work at the particular location
  - (c) secure the area so as to avoid further harm to the remains
  - (d) notify the local police and OEH's Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location, and
  - (e) not recommence any work at the particular location unless authorised in writing by OEH.

### Incidents which may breach the Act or AHIP

18. The AHIP holder must notify the OEH office in writing as soon as practicable after becoming aware of:

- (a) any contravention of s.86 of the Act not authorised by an AHIP, and/or
- (b) any contravention of the conditions of this AHIP.

## Reports about incidents which may breach the Act or AHIP

19. Where OEH suspects that an incident has occurred which may have breached the Act or AHIP, OEH may request a written incident report, which includes the following:
- (a) the nature of the incident
  - (b) the actual or likely impact of the incident on Aboriginal objects and/or Aboriginal places
  - (c) the nature and location of these Aboriginal objects and/or Aboriginal places, referring to and providing maps and photos where appropriate
  - (d) any conditions of an AHIP which may have been breached, and
  - (e) the measures which have been taken or will be taken to prevent a recurrence of the incident.
20. The incident report must be provided to the OEH office within the timeframe specified in the request.

## Provision of Aboriginal Site Impact Recording Form

21. An Aboriginal Site Impact Recording Form must be completed and submitted to the AHIMS Registrar, for each AHIMS site identified in Schedules B and C, within 4 months of the completion of the actions authorised by this AHIP.

### Note:

- (i) The Aboriginal Site Impact Recording Form can be found on the OEH website:  
<http://www.environment.nsw.gov.au/licences/DECCAHIMSSiteRecordingForm.htm>
- (ii) Contact details for the AHIMS Registrar can be found on the OEH website:  
<http://www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm>

## Report about harm to Aboriginal objects (Test Excavation Report)

22. A Test Excavation Report must be prepared in accordance with Requirement 11 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (24 September 2010, available online at:  
<http://www.environment.nsw.gov.au/licences/archinvestigations.htm>)
23. The Test Excavation Report must be submitted to the OEH office within 6 months of the completion of the test excavations.
24. A copy of the Test Excavation Report, including a summary of the report in plain English, must be sent by registered post to each Registered Aboriginal Party within 14 days of the report being submitted to OEH.

## General Conditions

### Indemnity

25. The AHIP holder agrees to indemnify and keep indemnified, the Crown in right of NSW, the Minister administering the Act, the Director-General of OEH, and their employees, agents and contractors, in the absence of any willful misconduct or negligence on their part, from



# Aboriginal Heritage Impact Permit

Section 90 of the National Parks and Wildlife Act 1974



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and against all actions, demands, claims, proceedings, losses, damages, costs (including legal costs), charges or expenses suffered or incurred by them resulting from:

- (a) any damage or destruction to any real or personal property; and
- (b) injury suffered or sustained (including death) by any persons arising out of or in connection with any actions undertaken pursuant to this AHIP.

## Release

26. The AHIP holder agrees to release to the full extent permitted by law, the Crown in right of NSW, the Minister administering the Act, the Director-General of OEH, and their employees, agents and contractors, in the absence of any willful misconduct or negligence on their part, from all suits, actions, demands and claims of every kind resulting from:
- (a) any damage or destruction to any real or personal property; and
  - (b) injury suffered or sustained (including death) by any persons arising from or in connection with any actions undertaken pursuant to this AHIP.

## Written notice

27. Any requirement to provide written notice to the OEH office in this AHIP may be complied with by faxing the notice to the OEH office's fax number or by sending by registered post to the OEH office's address. The OEH office's contact details are specified at the front of this AHIP.

## SCHEDULES

The following schedules identify the areas and Aboriginal objects that are subject to the conditions of this AHIP.

### Schedule A: Aboriginal objects which must not be harmed

#### A1 Human remains

All human remains in, on or under the land must not be harmed, other than any human remains identified in Schedule B4, as specified by the conditions of this AHIP.

#### A2 Aboriginal objects that are identified on AHIMS

N/A

#### A3 No-harm areas

N/A

### Schedule B: Aboriginal objects that may be harmed through the certain actions

#### B1 Movement only

N/A

#### B2 Test excavations

Test excavations may be carried out in the land as shown in **Attachment 1: Land to which this AHIP applies**, but only in accordance with the conditions of this AHIP.

The test excavation area comprises the following known Aboriginal objects, as identified on AHIMS (excluding any Aboriginal objects described in Schedule A):

Portion of Site (whole or part)	AHIMS Site ID	Site Feature	Site Name	Information access restriction? (Y/N)	Easting	Northing	Datum
Part	52-3-0258	Midden	Abbots Site; Botany Bay	N	333680	62340000	GDA

#### B3 Community collection

N/A

#### B4 Other

N/A

# Aboriginal Heritage Impact Permit

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## Schedule C: Aboriginal objects which may be harmed through the proposed works

N/A



## DICTIONARY

In this AHIP, unless the contrary is indicated the terms below have the following meanings:

<b>Aboriginal object</b>	has the same meaning as in the Act.
<b>Act</b>	means the <i>National Parks and Wildlife Act 1974</i> .
<b>AHIMS</b>	means the Aboriginal Heritage Information Management System maintained by OEH, as defined in s.90Q of the Act.
<b>AHIP</b>	means Aboriginal Heritage Impact Permit
<b>AHIP holder</b>	means the entity or person listed on the cover page under the heading "AHIP issued to".
<b>Application</b>	means the completed application form and all other documents in written or electronic form which accompanied the application when it was lodged or which were subsequently submitted in support of the application.
<b>Community collection</b>	means the collection of Aboriginal objects by one or all Registered Aboriginal Parties or their representatives.
<b>Community collection area</b>	means an area described as a community collection area in Schedule B3
<b>DPC</b>	Department of Premier and Cabinet (NSW).
<b>Director-General</b>	means the Director-General of the Department of Premier and Cabinet (NSW).
<b>EPRG</b>	means Environment Protection and Regulation Group (in OEH)
<b>Harm</b>	has the same meaning as in the Act. In relation to Aboriginal objects, harm means the movement, damage, defacement and/or destruction of Aboriginal objects. In relation to an Aboriginal place, harm means the damage, defacement and/or destruction of the Aboriginal place.
<b>Land</b>	means the land described under the heading "Land to which this AHIP applies".
<b>No-harm areas</b>	means those areas described in Schedule A3.
<b>OEH</b>	Office of Environment and Heritage within the Department of Premier and Cabinet (NSW).
<b>OEH office</b>	means the office listed on the cover page of this AHIP.
<b>Proposed works</b>	means the works described under the heading "D. Proposed Works" at the front of this AHIP.
<b>Public register</b>	means the public register established under s.188F of the Act, that contains details of AHIPs issued by the Director-General DPC, as described under the heading "Information about this AHIP".
<b>Registered Aboriginal Parties</b>	means the Registered Aboriginal Parties listed in the application.
<b>Salvage excavation</b>	means an archaeological excavation carried out in accordance with the methodology accompanying the application, as modified by the conditions of this AHIP. The purpose of salvage excavation is to

# Aboriginal Heritage Impact Permit

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recover a sample of Aboriginal objects as an archival record of Aboriginal life from a site that will be destroyed.

**Salvage excavation area**

means any area described as a salvage excavation area in Schedule B2.

**Test excavation**

means an archaeological excavation carried out in accordance with methodology accompanying the application, as modified by the conditions of this AHIP. The purpose of test excavation is to collect a sample of Aboriginal objects, in order to establish the nature and extent of sub-surface Aboriginal objects and to assist in the assessment of management options for the site.

**Test excavation area**

means any area described as a test excavation area in Schedule B2



## INFORMATION ABOUT THIS AHIP

### Public Register

Under section 188F of the Act, the Director-General is required to keep a public register containing the details of each AHIP issued. The details of this AHIP that will be published on the public register are outlined on the front page of this AHIP.

The public register is available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

### Appeals

Under section 90L of the Act, the AHIP holder may appeal to the Land and Environment Court if they are dissatisfied with any condition of this AHIP. The appeal must be lodged within 21 days of the date this AHIP was issued.

### Penalties for breach of the Act or AHIP condition

Significant penalties can be imposed by the Land and Environment Court for harm to an Aboriginal object or Aboriginal Place other than as authorised by a condition of an AHIP, or for a breach of an AHIP condition. OEH can also issue penalty notices for a breach of the Act or AHIP condition.

### Responsibility for obtaining all approvals and compliance with applicable laws

The AHIP holder is responsible for obtaining and complying with all approvals necessary to lawfully carry out the work referred to in this AHIP, including but not limited to development consents.

### Other relevant provisions of the *National Parks and Wildlife Act*

Newly identified Aboriginal objects must be notified to the Director-General under s.89A of the Act using the form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

Stop work orders, interim protection orders and remediation directions may be issued in certain circumstances to protect Aboriginal objects or places.

### Obligation to report Aboriginal remains under Commonwealth laws

The AHIP holder may have additional obligations to report any discovery of Aboriginal remains under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

### Exercise of investigation and compliance powers

Officers appointed or authorised under the Act may exercise certain powers and functions, including the power to enter land.

### Duration of AHIP

This AHIP remains in force for the period specified in the AHIP.

### Variation of AHIP

The AHIP holder may apply to the OEH office for a variation of any conditions of an AHIP, using the AHIP variation application form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au). Requests for significant variations must be accompanied by evidence of further consultation with Registered Aboriginal Parties and may include payment of fees.

The conditions of an AHIP may be varied at any time by the Director General in order to correct a typographical error or to resolve an inconsistency between conditions. The AHIP holder may appeal a decision of the Director General to vary the conditions of the AHIP.

## **Transfer of AHIP**

The AHIP holder may apply to transfer this AHIP to another person by using the AHIP transfer application form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au).

## **Surrender of AHIP**

The AHIP holder may apply to surrender this AHIP by using the AHIP surrender application form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au). The surrender must be approved by the Director-General and may be subject to conditions.

## **Suspension and revocation of AHIP**

An AHIP may be suspended or revoked at any time at the discretion of the Director-General. Prior to suspending or revoking the AHIP, the AHIP holder will be given notice and an opportunity to make submissions. The AHIP holder will be notified in writing of the final decision. The AHIP holder may appeal a decision to revoke the AHIP.

## **Entry to land**

An AHIP does not automatically entitle its holder to enter land for the purpose of conducting work related to the AHIP. The AHIP holder is responsible for obtaining permission to enter land from the owner and/or occupier of the land.

## **Disclosure of information pursuant to lawful requirement**

This AHIP does not prevent the disclosure of any information or document in OEH's possession in accordance with any lawful requirement.

## **Making copies of reports**

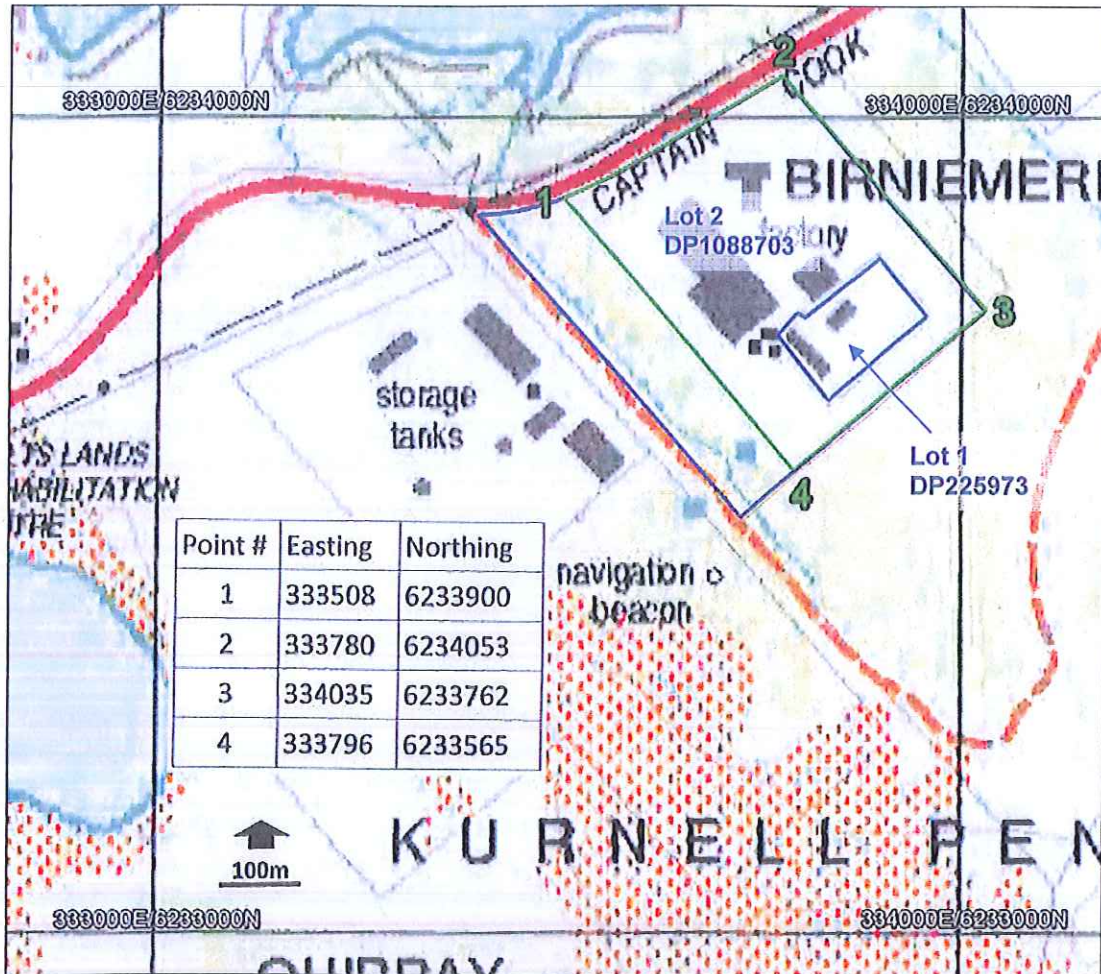
By providing a report, the AHIP holder acknowledges that OEH can use the information in that report to inform its regulatory functions, note details of that report in AHIMS and include a copy of the report in its library which may be available to members of the public.

OEH is able to make copies of any reports provided to OEH under this AHIP.



Attachment 1: Land to which this AHIP applies (outlined in green).

238-258 Captain Cook Drive, Kurnell NSW  
Aboriginal Cultural Heritage Assessment



*Map shows subject land and area for proposed Aboriginal Heritage Impact Permit.*

[Subject land boundary and lot numbers in blue, area proposed for permit shown in green outline with boundary coordinates indicated. Base map, Port Hacking 1:25,000 topographic map and all coordinates are AGD Zone 56. The property is located in Sutherland Parish].



# **APPENDIX C**

## **Archaeological Investigation Records**

**APPENDIX C1 : Mechanical Trench Context Summary**

**APPENDIX C2 : Manual Excavation Context Summary**



**APPENDIX C3 : Field Levels**

**APPENDIX C4 : pH Values**

**APPENDIX C5 : Glossary of Technical Terms**



## APPENDIX C1: MECHANICAL TRENCH CONTEXT SUMMARY



<b>Trench</b>	Tr A 1m	<b>Recorder</b>	Tamika	<b>Date of Recording</b>	10/3/2014
<b>MGA Easting</b>	333565	<b>MGA Northing</b>	6233922	<b>Dimensions</b>	1m x 8m
<b>Location</b>	1m from northern boundary fence line, along Transect A.				
<b>Surface Level (m AHD)</b>	2.995	<b>Top Natural Horizon (m AHD)</b>	1.856	<b>Base of Excavation (m AHD)</b>	1.856
<b>General Description</b>	Trench excavated initially as 1m x 3m trench and extended to determine nature of buried deposit. Uniform profile along trench. 0.5m of humic brown topsoil with occasional rubble on 0.7cm of clean white sand fill. This was then underlain by black humic sand which represents a buried original dune surface at 1.15m.				
<b>Photos</b>				View north showing exposed humic sand.	
<b>Photos</b>				View north over extended trench toward fence line.	







<b>Trench</b>	Tr A 20m	<b>Recorder</b>	Tamika	<b>Date of Recording</b>	10/3/2014
<b>MGA Easting</b>	333577	<b>MGA Northing</b>	6233907	<b>Dimensions</b>	1m x 3m
<b>Location</b>	20m from northern boundary fence line, along Transect A.				
<b>Surface Level (mAHD)</b>	2.8	<b>Top Natural Horizon (mAHD)</b>	1.846	<b>Base of Excavation (m AHD)</b>	1.846
<b>General Description</b>	Humic brown topsoil with occasional rubble on clean white sand fill. This was underlain by black humic sand which represents a buried original dune surface (A1 Horizon) at 1m.				
<b>Photos</b>					<p><b>View north over Tr A 20m showing buried land surface.</b></p>




<b>Trench</b>	Tr A 30-40m	<b>Recorder</b>	Tamika	<b>Date of Recording</b>	10/3/2014
<b>MGA Easting</b>	333584 (at TrA 30m)	<b>MGA Northing</b>	6233900 (at TrA 30m)	<b>Dimensions</b>	1m x 10m
<b>Location</b>	30m from northern boundary fence line, along Transect A.				
<b>Surface Level (mAHD)</b>	2.845	<b>Top Natural Horizon (mAHD)</b>	1.866 (at 30m), 1.67 (at 40m)	<b>Base of Excavation (m AHD)</b>	1.866 (at 30m), 1.67 (at 40m)
<b>General Description</b>	Pit extended 10m south from starting point to detect any change between buried former dune and possible swale or swamp to landward side. At 30m mark deposit consisted of humic brown topsoil with occasional rubble on clean white sand fill. This was then underlain by black humic sand which represents a buried dune surface (A1 Horizon) at 1m. Similar deposit encountered until the 39m mark, where transition to a darker black, moister, compact sand, representing a possible swale in the dune.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	TrA 39m z= -50cm TrA 40m z= -130cm		
<b>Photos</b>				View south over trench during excavation with buried land surface visible.	
<b>Photos</b>				Moister compact black sand encountered at 39m mark in trench	



<b>Trench</b>	Tr A 60m	<b>Recorder</b>	Tamika	<b>Date of Recording</b>	10/3/2014
<b>MGA Easting</b>	333603.1	<b>MGA Northing</b>	6233877	<b>Dimensions</b>	1m x 2m
<b>Location</b>	60m from northern boundary fence line, along Transect A.				
<b>Surface Level (mAHD)</b>	2.967	<b>Top Natural Horizon (mAHD)</b>	1.946	<b>Base of Excavation (m AHD)</b>	1.946
<b>General Description</b>	Loose grey sand on surface from use as horse walking area for adjacent business. This is underlain by humic brown topsoil with occasional rubble on clean white sand fill. This was then underlain by black humic sand which represents a buried former dune surface (A1 horizon) at 1.2m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -130cm		
<b>Photos</b>					West section of Tr A 60m at base of excavation.
<b>Photos</b>					View north from Tr A 60m along Transect A toward fence line.







<b>Trench</b>	Tr B 1m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	11/3/2014
<b>MGA Easting</b>	333638.2	<b>MGA Northing</b>	6233966	<b>Dimensions</b>	1m x 2.5m
<b>Location</b>	1m from northern boundary fence line, along Transect B.				
<b>Surface Level (mAHD)</b>	2.939	<b>Top Natural Horizon (mAHD)</b>	1.849	<b>Base of Excavation (m AHD)</b>	1.849
<b>General Description</b>	0.05-0.1m of humic brown soil with many roots on 0.9- 0.95m of clean white sand fill. This was then underlain by black humic sand which represents a buried former dune surface at 0.9m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -100cm		
<b>Photos</b>					<p><b>North section of Tr B 1m showing exposed black sand layer at base.</b></p>





<b>Trench</b>	Tr B 12.5m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	11/3/2014
<b>MGA Easting</b>	333646	<b>MGA Northing</b>	6233958	<b>Dimensions</b>	1m x 2.5m
<b>Location</b>	Initial pit excavated 15m along transect to avoid horse jumps and floodlights but was abandoned as one inch electrical conduit (not live) found in trench. New trench started at 12.5m along Transect B.				
<b>Surface Level (mAHD)</b>	2.803	<b>Top Natural Horizon (mAHD)</b>	1.609	<b>Base of Excavation (m AHD)</b>	1.609
<b>General Description</b>	0.1m of humic brown soil with many roots on 0.9- 0.95m of clean white sand fill. This was then underlain by black humic sand which represents a buried former dune surface at 1.2m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	<b>Z = -110cm</b>		
<b>Photos</b>					<b>Conduit in abandoned pit.</b>
<b>Photos</b>					<b>West section at end of excavation showing buried dune surface.</b>




<b>Trench</b>	Tr B 30m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	11/3/2014
<b>MGA Easting</b>	333656.5	<b>MGA Northing</b>	6233943	<b>Dimensions</b>	1m x 2.5m
<b>Location</b>	30m from northern boundary fence line, along Transect B.				
<b>Surface Level (mAHD)</b>	2.798	<b>Top Natural Horizon (mAHD)</b>	1.649	<b>Base of Excavation (m AHD)</b>	1.649
<b>General Description</b>	0.1m of humic brown soil with many grass roots on 1m of clean white sand fill. In the northwest portion of the trench is layered brown sandy fill with small brick fragments to 0.6m. Underneath the fill is black humic sand which represents a former buried land surface (A1 horizon) at 1.1 – 1.5m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -110cm		
<b>Photos</b>					<b>Base of trench.</b>
<b>Photos</b>					<b>East section.</b>





<b>Trench</b>	Tr B 50m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	11/3/2014
<b>MGA Easting</b>	333668.2	<b>MGA Northing</b>	6233927	<b>Dimensions</b>	1mx 2m
<b>Location</b>	50m from northern boundary fence line, along Transect B.				
<b>Surface Level (mAHD)</b>	2.895	<b>Top Natural Horizon (mAHD)</b>	1.599	<b>Base of Excavation (m AHD)</b>	1.599
<b>General Description</b>	0.1m of humic brown soil with many roots atop clean white sand fill. At 0.7m is a 0.05m lens of black sand which was probably upcast during distribution of sand fill in the 1960s. Underneath this lens is then further clean white sand which then begins to mottle into the underlying black sand. This black humic sand is fully exposed at 1.25m which represents a partly impacted former dune surface (A1 horizon).				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -125cm		
<b>Photos</b>					<b>Top of black sand-west section.</b>
<b>Photos</b>					<b>Black sand at base of excavation- east section.</b>




<b>Trench</b>	Tr B 63m	<b>Recorder</b>	Tamika	<b>Date of Recording</b>	11/3/2014
<b>MGA Easting</b>	333675.4	<b>MGA Northing</b>	6233917	<b>Dimensions</b>	1m x 2m
<b>Location</b>	63m from northern boundary fence line, along Transect B. Between two manholes.				
<b>Surface Level (mAHD)</b>	2.872	<b>Top Natural Horizon (mAHD)</b>	1.569	<b>Base of Excavation (m AHD)</b>	1.569
<b>General Description</b>	This area has been excavated and back filled prior to the test excavations. The profile consists completely of backfill. As a result the sand was very loose and the trench walls prone to collapse. The trench comprises a grassed surface on 0.1m of brown humic soil underlain by 0.3m of grey brown sand. At 0.4m depth is a 0.05m lens of black sand fill. Underneath this the grey brown sand continues for 0.6m laying on 0.35m of pale yellow sand mottled with black sand. At 1.2cm depth in the centre of the west wall of the trench is a visible cutting containing a concrete conglomerate. Underneath the mottled sand is the black humic sand layer representing a buried former dune surface at 1.3m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -135cm		
<b>Photos</b>					View north showing top of buried dune surface.







<b>Trench</b>	Tr C 1m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	12/3/2014
<b>MGA Easting</b>	333702.4	<b>MGA Northing</b>	6234004	<b>Dimensions</b>	2.5 x 3.5m
<b>Location</b>	1m south of the northern boundary fence, 3m west of a paddock fence.				
<b>Surface Level (mAHD)</b>	2.865	<b>Top Natural Horizon (mAHD)</b>	2.155	<b>Base of Excavation (m AHD)</b>	2.155
<b>General Description</b>	Under grassed surface is 0.1m of dark humic soil with frequent grass roots on 0.1m of light brown humic sand. This is underlain by 0.5-0.55m of pale clean white sandy fill. At 0.75m black sand occurs which represents the A1 horizon of the buried dune surface.				
<b>Photos</b>					<p><b>East section at base of mechanical excavation/ start of manual excavation.</b></p>




<b>Trench</b>	Tr C 15m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	12/3/2014
<b>MGA Easting</b>	333709.7	<b>MGA Northing</b>	6233992	<b>Dimensions</b>	1x2m
<b>Location</b>	15m along Transect C.				
<b>Surface Level (mAHD)</b>	2.887	<b>Top Natural Horizon (mAHD)</b>	1.837	<b>Base of Excavation (m AHD)</b>	1.837
<b>General Description</b>	0.1-0.15m of loose light grey humic sand under grass on 0.8-0.9m of pale clean loose sand. At 1.0m mottled black and pale sand with black sand becoming more uniform from 1.1m depth. Indicate probable partial impact of upper surface of original dune during levelling activities.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 115cm		
<b>Photos</b>					<b>East section at end of excavation.</b>





<b>Trench</b>	Tr C 30m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	12/3/2014
<b>MGA Easting</b>	333718	<b>MGA Northing</b>	6233980	<b>Dimensions</b>	1x2m
<b>Location</b>	30m along Transect C.				
<b>Surface Level (mAHD)</b>	2.998	<b>Top Natural Horizon (mAHD)</b>	1.55 (truncated)	<b>Base of Excavation (m AHD)</b>	1.55
<b>General Description</b>	0.1-0.15m of grey/brown humic sand with frequent grass roots on pale clean sand fill. From 0.5m down lenses of black sand occur every 0.5-0.10m, which represents soils disturbed from the original A1 horizon of the buried dune surface. The truncated A1 Horizon of the dune occurs at 1.45m depth.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 145cm		
<b>Photos</b>					North end of pit showing lenses at top of black sand.
<b>Photos</b>					West section at end of excavation.





<b>Trench</b>	Tr C 43m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	12/3/2014
<b>MGA Easting</b>	333726.7	<b>MGA Northing</b>	6233968	<b>Dimensions</b>	1m x 2m
<b>Location</b>	43 along Transect C.				
<b>Surface Level (mAHD)</b>	2.986	<b>Top Natural Horizon (mAHD)</b>	1.436 (truncated)	<b>Base of Excavation (m AHD)</b>	1.436
<b>General Description</b>	0.1-0.15m of loose grey humic sand with frequent grass roots on 1.4m of pale clean sand fill. From 0.5m down lenses of black sand occur every 0.5-0.10m, which represents sands disturbed from the buried dune A1 horizon below. The truncated dune A1 Horizon occurs at 1.55m depth.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 155cm		
<b>Photos</b>					<p><b>South section showing black sand and black lenses at base of excavation.</b></p>







<b>Trench</b>	Tr D 10m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014, 17/3/14
<b>MGA Easting</b>	333774.4	<b>MGA Northing</b>	6233963	<b>Dimensions</b>	1x2m
<b>Location</b>	10m along Transect D, 3m west of boundary fence to avoid boom gate.				
<b>Surface Level (mAHD)</b>	3.12	<b>Top Natural Horizon (mAHD)</b>	1.72 (truncated)	<b>Base of Excavation (m AHD)</b>	1.72
<b>General Description</b>	Under grassed surface is 0.1- 0.15m of dark humic soil with frequent grass roots on lency grey-brown loose sand. At 1m black sand occurs unevenly (up to 0.2m variation in depth) across square indicating probably disturbance of underlying original land surface. which represents the A1 horizon. This layer is uneven, being 0.2m lower in some areas caused by greater disturbance to surface. Trench reopened as buried A1 horizon found to be deeper in adjacent trench to the south. The re-excavation revealed that what was thought to be the A1 horizon at 1m was actually fill (probably upcast from the same pit as the cut was visible north-south along the pit). The actual A1 horizon occurs as moist black sand at 1.4m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 105cm (A1 horizon) z= -140cm		
<b>Photos</b>				Plan view of original pit showing uneven A1 horizon- base of initial excavation.	
<b>Photos</b>				Re-excavated pit-north section at end of excavation.	



<b>Trench</b>	Tr D 28m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333784.8	<b>MGA Northing</b>	6233947	<b>Dimensions</b>	1.5x2m
<b>Location</b>	28m along Transect D. 0.5m east of Transect D (1m east of gutter) widened east due to copper pipe at 0.7m depth along western wall.				
<b>Surface Level (mAHD)</b>	2.92	<b>Top Natural Horizon (mAHD)</b>	1.47	<b>Base of Excavation (m AHD)</b>	1.47
<b>General Description</b>	0.1m of loose humic dark soil with many grass roots under the grassed surface. Underlying this were bands of yellow and light grey sandy fill. Underneath the fill is black humic sand which represents a buried former land surface at 1.45m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z = - 160cm (A1 Horizon)		
<b>Photos</b>				<p>North section showing sandy fill lenses.</p>	
<b>Photos</b>				<p>South section at end of excavation.</p>	



<b>Trench</b>	Tr D 60m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333805.5	<b>MGA Northing</b>	6233924	<b>Dimensions</b>	1m x 2m
<b>Location</b>	Trench initially excavated at 70m but abandoned at 0.9m due to thick rubble fill. Tr D 60m excavated 2m east of gutter.				
<b>Surface Level (mAHD)</b>	2.99	<b>Top Natural Horizon (mAHD)</b>	1.79	<b>Base of Excavation (m AHD)</b>	1.79
<b>General Description</b>	0.1-0.15m of humic root rich brown sand on lency fill. This is underlain by black sand A1 horizon at 1.2m. The exposed A1 surface has fresh roots up to 20cm roots and soil is moist and silty.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 140cm		
<b>Samples</b>	Root	<b>Location of Samples</b>	z= - 120cm (A1 Horizon)		
<b>Photos</b>					Roots in base of trench.
<b>Photos</b>					End of excavation-north section.







<b>Trench</b>	Tr D 100m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333830	<b>MGA Northing</b>	6233891	<b>Dimensions</b>	1x2m
<b>Location</b>	100m along Transect D. 0.5m east of 100m flag.				
<b>Surface Level (mAHD)</b>	3.25	<b>Top Natural Horizon (mAHD)</b>	2.15	<b>Base of Excavation (m AHD)</b>	1.15
<b>General Description</b>	0.1m of humic root rich topsoil (brown sand) on 0.4m of light sand. This is underlain by 0.6m of dark brown lency sand with occasional rubble and charcoal. Underneath this is light grey sand (A2 horizon) at 1.1m which gets lighter with depth until it interfaces with orange/brown compact sand (B Horizon) at 1.5m. In this layer darker patches were observed until a uniform darker brown sand layer emerged at 2.05m (lower B horizon). Excavation continued to 2.1m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 120cm (A2 Horizon) z= - 170cm (B Horizon)		
<b>Photos</b>					<b>North section.</b>






<b>Trench</b>	Tr D 150m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	12/3/2014
<b>MGA Easting</b>	333862.4	<b>MGA Northing</b>	6233853	<b>Dimensions</b>	1m x 2m
<b>Location</b>	150m along Transect D.				
<b>Surface Level (mAHD)</b>	3.48	<b>Top Natural Horizon (mAHD)</b>	2.48	<b>Base of Excavation (m AHD)</b>	2.38
<b>General Description</b>	0.1m of humic grass root rich soil on layered brown sandy deposit. This is underlain by an abrupt transition to pale grey sand which represents the truncated A2 horizon at 1m, indicating removal of original A1 horizon during site establishment works in 1960s.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -110 cm (A2 Horizon)		
<b>Photos</b>					East section.



<b>Trench</b>	Tr D 188m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	12/3/2014
<b>MGA Easting</b>	333888.8	<b>MGA Northing</b>	6233823	<b>Dimensions</b>	1m x 2m
<b>Location</b>	188m along Transect D, 2m north of internal fence line.				
<b>Surface Level (mAHD)</b>	3.587	<b>Top Natural Horizon (mAHD)</b>	2.96	<b>Base of Excavation (m AHD)</b>	1.69
<b>General Description</b>	0.1m of grass on 0.3m of pale brown sand with bricks and building rubble. Underlying this is 0.2m of dark brown sand followed by a sharp transition into medium grey natural sand (A1/A2 interface) at 0.6m below surface which then grades into pale grey sand at 1.3m. At 1.8m depth brown compact sand appears (B horizon). Excavation ceased at 1.9m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -75cm (A2 Horizon) z= 135 (A2 horizon) z= - 185cm (B Horizon)		
<b>Photos</b>					East section.
<b>Photos</b>					South section at base of excavation showing B Horizon.



<b>Trench</b>	Tr D 250m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333927.7	<b>MGA Northing</b>	6233778	<b>Dimensions</b>	1x2m
<b>Location</b>	250m along Transect D.				
<b>Surface Level (mAHD)</b>	3.42	<b>Top Natural Horizon (mAHD)</b>	2.97	<b>Base of Excavation (m AHD)</b>	2.77
<b>General Description</b>	0.1m of grassy root rich humic soil on 0.25m of mixed sand lenses and rubble on grey sand. At 0.45m the profile grades into the medium grey sand of the A2 horizon. Excavation by sondage continued another 0.2m at which point the A2 sand was still present.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= -45 (A2 horizon/fill) z= - 60cm (A2 Horizon)		
<b>Photos</b>					<b>Section of Tr D 250m.</b>





<b>Trench</b>	Tr E 25m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333758.2	<b>MGA Northing</b>	6233673	<b>Dimensions</b>	1x2m
<b>Location</b>	25m along Transect E.				
<b>Surface Level (mAHD)</b>	3.175	<b>Top Natural Horizon (mAHD)</b>	2.51	<b>Base of Excavation (m AHD)</b>	2.31
<b>General Description</b>	0.1-0.15m of grass-root-rich brown sand onto lency sand fill. At 0.65m was an interface with dark grey black compact sand which is mixed natural and fill sands. At 0.7m this grades into pale grey sand (A2 horizon). A sondage was dug 0.2m deeper, which showed that the A2 continued to the base of the pit.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 70cm (A2 Horizon/fill) z= - 90cm (A2 Horizon )		
<b>Photos</b>					End of excavation with sondage-west section.







<b>Trench</b>	Tr E 69m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333788.3	<b>MGA Northing</b>	6233640	<b>Dimensions</b>	1x1.5m
<b>Location</b>	69m along Transect E.				
<b>Surface Level (mAHD)</b>	3.090	<b>Top Natural Horizon (mAHD)</b>	2.34	<b>Base of Excavation (m AHD)</b>	2.34
<b>General Description</b>	0.2m of dark brown loose sand with frequent grass roots on 0.55m of lency grey/brown sand underlain by medium grey sand (A2 Horizon) at 0.75m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 80cm (A2 Horizon)		
<b>Photos</b>					<b>North section.</b>




<b>Trench</b>	Tr E 97m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333811.6	<b>MGA Northing</b>	6233623	<b>Dimensions</b>	1m x 2m
<b>Location</b>	97m along Transect E on track surrounded by high grass.				
<b>Surface Level (mAHD)</b>	3.0	<b>Top Natural Horizon (mAHD)</b>	2.2	<b>Base of Excavation (m AHD)</b>	2.0
<b>General Description</b>	0.75m of mixed sand and rubble fill on grey natural sand (A2 Horizon) at 0.8m. Sondage excavation to 1m.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 90cm (A2 Horizon)		
<b>Photos</b>					<b>South section.</b>





<b>Trench</b>	Tr F 20m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	14/3/2014
<b>MGA Easting</b>	333640	<b>MGA Northing</b>	6233814	<b>Dimensions</b>	1m x 2m
<b>Location</b>	20m along Transect F.				
<b>Surface Level (mAHD)</b>	2.99	<b>Top Natural Horizon (mAHD)</b>	1.54	<b>Base of Excavation (m AHD)</b>	1.54
<b>General Description</b>	Sandy paddock surface underlain by 0.2m of loose grey sand on pale brown sand to 1.25m. In the eastern wall was a pipe trench at 0.4m depth. At 1.45m is an abrupt transition into dark humic moist compact black clayey sand (A1 Horizon). A large 0.1m diameter root was observed in this deposit.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 145cm (A1 Horizon)		
<b>Samples</b>	Root	<b>Location of Samples</b>	z= - 155cm (from swamp deposit)		
<b>Photos</b>					<b>Detail of A1 Horizon.</b>
<b>Photos</b>					<b>North section.</b>





<b>Trench</b>	Tr F 70m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	14/3/2014
<b>MGA Easting</b>	333669	<b>MGA Northing</b>	6233770	<b>Dimensions</b>	1m x 2m
<b>Location</b>	70m along Transect F.				
<b>Surface Level (mAHD)</b>	3.2	<b>Top Natural Horizon (mAHD)</b>	1.6	<b>Base of Excavation (m AHD)</b>	1.55
<b>General Description</b>	0.2m of loose grey sand from the horse paddock on 1.4m of brown sandy fill on black compact clayey moist sand (dune swale) with fine rootlets at 1.6m. Excavation ceased at 1.65m				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 160cm (A1 Horizon)		
<b>Photos</b>					<b>East section.</b>





<b>Trench</b>	Tr F 110m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	14/3/2014
<b>MGA Easting</b>	333698	<b>MGA Northing</b>	6233741	<b>Dimensions</b>	1m x 2m
<b>Location</b>	110m along Transect F.				
<b>Surface Level (mAHD)</b>	3.27	<b>Top Natural Horizon (mAHD)</b>	1.77	<b>Base of Excavation (m AHD)</b>	1.77
<b>General Description</b>	0.2m of loose grey sand (from horse paddock) on yellow/ brown sandy fill. A band of black sand at 0.25m which is 0.05m thick which may have been deposited here from the truncation of the adjacent dune to the south. At 1.5m the profile grades into black compact clayey sand (swale) with fine rootlets.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 25cm (black sandy fill) z= -155cm (A1 Horizon)		
<b>Photos</b>					East section showing band of black sandy fill.
<b>Photos</b>					East section end of excavation.





<b>Trench</b>	Tr F 140m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	14/3/2014
<b>MGA Easting</b>	333722	<b>MGA Northing</b>	6233717	<b>Dimensions</b>	1m x 2m
<b>Location</b>	140m along Transect F.				
<b>Surface Level (mAHD)</b>	3.31	<b>Top Natural Horizon (mAHD)</b>	2.61	<b>Base of Excavation (m AHD)</b>	2.41
<b>General Description</b>	Grass surface on 0.1m of root rich brown humic soil underlain by lency brown sand fill. At 0.7m is an abrupt transition to medium grey sand (A2 horizon) indicating truncation of deposit. A sondage was dug for a further 0.2m revealing deposit becomes paler with depth, including small flecks of black sand and charcoal.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 85cm (A2 Horizon)		
<b>Photos</b>				East section.	
<b>Photos</b>				North section- detail of sondage.	



<b>Trench</b>	Tr F 160m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	14/3/2014
<b>MGA Easting</b>	333734	<b>MGA Northing</b>	6233701	<b>Dimensions</b>	1m x 2m
<b>Location</b>	160m along Transect F.				
<b>Surface Level (mAHD)</b>	3.36	<b>Top Natural Horizon (mAHD)</b>	2.76	<b>Base of Excavation (m AHD)</b>	2.62
<b>General Description</b>	Grass surface on loose brown humic sand with root in top 0.1m. This is underlain by lensy pale sandy fill. At 0.6m is a transition into light- medium grey natural sand (A2 Horizon). This indicates that the A1 horizon was completely truncated here during levelling in the 1960s.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z = - 65cm (A2 Horizon)		
<b>Photos</b>					<b>East section.</b>





<b>Trench</b>	Tr J 0m	<b>Recorder</b>	Paul	<b>Date of Recording</b>	13/3/2014
<b>MGA Easting</b>	333990	<b>MGA Northing</b>	6233775	<b>Dimensions</b>	1m x 2m
<b>Location</b>	Within fenced area between main site complex and adjacent rear portion of neighbouring property to the east. Pit excavated along track with thick grasses on either side.				
<b>Surface Level (mAHD)</b>	2.86	<b>Top Natural Horizon (mAHD)</b>	2.86	<b>Base of Excavation (m AHD)</b>	2.45
<b>General Description</b>	0.2m of dark grey/ black humic soil (A1 Horizon) on 0.15m of paler grey sand (A2 Horizon). This is underlain by 0.05m of dark grey/black sand (Possible B Horizon) on a root mat atop pale sandstone bedrock.				
<b>Samples</b>	Soil	<b>Location of Samples</b>	z= - 5cm (A1 Horizon) z= - 25cm (A2 Horizon) z= - 40cm (Possible B Horizon)		
<b>Photos</b>					<b>Northeast section.</b>
<b>Photos</b>					<b>Northwest section.</b>









## APPENDIX C2: MANUAL EXCAVATION CONTEXT SUMMARY

Square	Tr A Sq 1	Excavator/s	Adam and Tamika		Recorder	Tamika	Date	10/3/2014	
MGA Easting	333567	MGA Northing	6233921	Accuracy (m)	+/- 0.1m	Location of Coordinate	northwest corner of square		
Dimensions	1.0m x 1.0m (0.5m x 0.5m from 45cm)		RL Top of Square	1.856 (A1)		RL Base of Square	0.78		
General Description	0.05m of overburden comprising clean white sand fill mottling into the black humic A1 horizon, mottling likely due to redistribution of sands in 1960s. Mottled layer underlain by 0.89m of black humic sand with charcoal flecked throughout and small lateral rootlets (A1 horizon). Concentration of charcoal occurred between 0.11-0.25m depth, particularly in the SE corner of square, most likely burnt vegetation. Sand becomes looser, wetter and paler with depth. At 0.94m depth, layer of uniform pale grey sand was exposed (A2 horizon). Excavation ended at 1.05m at the water table.								
Unit	0 (Overburden)	Spit	Bulk	Size (cm)	Bulk	End Depth (cms)	5cm	Total Buckets	10
Unit	1	Spit	1	Size (cm)	10cm	End Depth (cms)	15cm	Total Buckets	15
Unit	1	Spit	2	Size (cm)	10cm	End Depth (cms)	25cm	Total Buckets	19
Unit	1	Spit	3	Size (cm)	10cm	End Depth (cms)	35cm	Total Buckets	16
Unit	1	Spit	4	Size (cm)	10cm	End Depth (cms)	45cm	Total Buckets	5
Unit	1	Spit	5	Size (cm)	10cm	End Depth (cms)	55cm	Total Buckets	4
Unit	1	Spit	6	Size (cm)	10cm	End Depth (cms)	65cm	Total Buckets	3
Unit	1	Spit	7	Size (cm)	10cm	End Depth (cms)	75cm	Total Buckets	3
Unit	1	Spit	8	Size (cm)	Bulk	End Depth (cms)	94cm	Total Buckets	4
Unit	2	Spit	1	Size (cm)	Bulk	End Depth (cms)	105cm	Total Buckets	3
Photos			Tr A Sq 1 top of A1 horizon.				West section of Tr A Sq 1.		





<b>Square</b>	Tr A Sq 2	<b>Excavator/s</b>		Shane and Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	19/3/2014	
<b>MGA Easting</b>	333591.6	<b>MGA Northing</b>	6233891	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square		
<b>Dimensions</b>	1.0m x 1.0m (0.5m x 0.5m from 80cm)			<b>RL Top of Square</b>		1.67 (A1)	<b>RL Base of Square</b>		0.67	
<b>General Description</b>	0.05m of overburden comprising brown sand fill mottling into the black humic A1 horizon with few lateral rootlets and larger decaying vertical roots (2cm diameter). From 0.15m depth, the black sand begins to grade and mottle into a paler grey sand (A2 horizon) with few charcoal flecks. This mottling of the two layers continues for 0.6m, and includes pungent brown sand with some charcoal flecks and rootlets becoming compact from 0.9m depth (B horizon). From 0.95, a pale brown/yellow sand grades through and ground water encountered 0.98m.									
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	5cm	<b>Total Buckets</b>	9	
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	5cm	<b>End Depth (cms)</b>	10cm	<b>Total Buckets</b>	12	
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	20cm	<b>Total Buckets</b>	18	
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	30cm	<b>Total Buckets</b>	16	
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	40cm	<b>Total Buckets</b>	19	
<b>Unit</b>	2	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	50cm	<b>Total Buckets</b>	14	
<b>Unit</b>	2	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	60cm	<b>Total Buckets</b>	15	
<b>Unit</b>	2	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	70cm	<b>Total Buckets</b>	15	
<b>Unit</b>	2	<b>Spit</b>	6	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	80cm	<b>Total Buckets</b>	4	
<b>Unit</b>	3	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	90cm	<b>Total Buckets</b>	2	
<b>Unit</b>	3	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	100cm	<b>Total Buckets</b>	4	
<b>Photos</b>				<p>At end of excavation. View north.</p>					<p>North section of Tr A Sq 2.</p>	



<b>Square</b>	Tr B Sq 1	<b>Excavator/s</b>			Tamika	<b>Recorder</b>	Tamika	<b>Date</b>	11/3/2014
<b>MGA Easting</b>	333638.2	<b>MGA Northing</b>	6233966	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square	
<b>Dimensions</b>	1.0m x 1.0m (0.5m x 0.5m from 55cm)			<b>RL Top of Square</b>		1.849 (A1)	<b>RL Base of Square</b>		1.069
<b>General Description</b>	0.05m of overburden comprising clean white/yellow sand fill mottling into the black humic A1 horizon. Some gravel in the northwest corner, most likely from road construction. Mottling underlain by 0.5m of black humic uniform sand (A1) with few lateral rootlets and charcoal pieces and flecks. A large decaying tree root (10cm diameter) is exposed in the southwest corner of the square from 0.2-0.3m depth. From 0.55m depth, the black sand begins to grade into a paler grey sand (A2) with few charcoal pieces, with full change from 0.75m depth. Excavation was ceased at 0.78m at groundwater.								
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	5cm	<b>Total Buckets</b>	8
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	15cm	<b>Total Buckets</b>	13
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	25cm	<b>Total Buckets</b>	23
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	35cm	<b>Total Buckets</b>	15
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	45cm	<b>Total Buckets</b>	16
<b>Unit</b>	1	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	55cm	<b>Total Buckets</b>	6
<b>Unit</b>	2	<b>Spit</b>	Bulk	<b>Size (cm)</b>	23cm	<b>End Depth (cms)</b>	78cm	<b>Total Buckets</b>	9
<b>Photos</b>				<p>Pre excavation. View north.</p>				<p>West section of Tr B Sq 1.</p>	




<b>Square</b>	Tr B Sq 2	<b>Excavator/s</b>		Shane and Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	18/3/2014
<b>MGA Easting</b>	333662.4	<b>MGA Northing</b>	6233935	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square	
<b>Dimensions</b>	1.0m x 1.0m		<b>RL Top of Square</b>		1.62 (A1)	<b>RL Base of Square</b>		0.89	
<b>General Description</b>	0.14m of overburden comprising yellow sand fill mottling into the black humic A1 horizon. Mottling is much deeper in the northwest corner of the square. Top of A1 horizon is uneven due to truncation that would have occurred during redistribution of sand in the 1960s. The mottling was underlain by 0.05m of black humic uniform sand with few lateral rootlets, charcoal flecks and a small piece of clay in the west wall. From 0.2m the black sand begins to grade into paler grey sand with few charcoal pieces. From 0.54m the sand is uniformly pale (A2 horizon) with some patches of darker grey charcoal flecked patches and vertical roots (2cm diameter). This layer continues for 0.19m until excavation was ceased at 0.73m at groundwater.								
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	14cm	<b>Total Buckets</b>	9
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	24cm	<b>Total Buckets</b>	16
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	34cm	<b>Total Buckets</b>	15
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	44cm	<b>Total Buckets</b>	16
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	54cm	<b>Total Buckets</b>	13
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	64cm	<b>Total Buckets</b>	5
<b>Unit</b>	2	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	73cm	<b>Total Buckets</b>	2
<b>Photos</b>			Tr B Sq 2 at end of excavation.					North section of Tr B Sq 2.	







<b>Square</b>	Tr C Sq 1	<b>Excavator/s</b>		Adam, Shane and Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	12/3/2014
<b>MGA Easting</b>	333699.9	<b>MGA Northing</b>	6234002	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square	
<b>Dimensions</b>	1.0m x 1.0m (0.5m x 0.5m from 100cm)			<b>RL Top of Square</b>		2.155 (A1)	<b>RL Base of Square</b>		0.855
<b>General Description</b>	<p>0.14m of overburden comprising yellow sand fill mottling into black humic A1 horizon (mottling continues deeper in SW corner of square). Top of A1 is uneven due to truncation that would have occurred during redistribution of sand in the 1960s. This mottled layer was underlain by 0.37m of black humic uniform sand with few lateral rootlets, shell and charcoal flecks. A 0.07m lens of shell and charcoal occurs between 0.15-0.22m depth (shell and sand samples taken for dating), concentrated in SE corner. Both shell and charcoal decrease steadily with depth. At 0.28-0.35m depth a concentration of charcoal occurs, particularly in NW corner relating to large charcoal burnt root (15cm diameter) exposed in SW corner at this depth. As the shell material and charcoal decrease, the black sand become more uniform except for a few fragments of shell, lateral roots (2cm diameter) in SW corner and a decaying tree root in the northwest corner. From 0.6m depth, transition to paler grey A2 horizon, underlain by 0.65m of pale grey sand with occasional shell fragments. Groundwater reached at 1.29m and excavation ceased at 1.3m depth.</p>								
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	8cm	<b>Total Buckets</b>	8
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	7cm	<b>End Depth (cms)</b>	15cm	<b>Total Buckets</b>	22
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	5cm	<b>End Depth (cms)</b>	20cm	<b>Total Buckets</b>	9
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	5cm	<b>End Depth (cms)</b>	25cm	<b>Total Buckets</b>	10
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	5cm	<b>End Depth (cms)</b>	30cm	<b>Total Buckets</b>	7
<b>Unit</b>	1	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	40cm	<b>Total Buckets</b>	16
<b>Unit</b>	1	<b>Spit</b>	6	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	50cm	<b>Total Buckets</b>	19
<b>Unit</b>	1	<b>Spit</b>	7	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	60cm	<b>Total Buckets</b>	16
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	70cm	<b>Total Buckets</b>	15
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	80cm	<b>Total Buckets</b>	16
<b>Unit</b>	2	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	90cm	<b>Total Buckets</b>	14
<b>Unit</b>	2	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	100cm	<b>Total Buckets</b>	4
<b>Unit</b>	2	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	110cm	<b>Total Buckets</b>	4
<b>Unit</b>	2	<b>Spit</b>	6	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	120cm	<b>Total Buckets</b>	3
<b>Unit</b>	2	<b>Spit</b>	7	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	130cm	<b>Total Buckets</b>	2





<p>Tr C Sq 1 Photos</p>		<p>Darker patches in A2 horizon at end of unit 2 spit 7.</p>
<p>Tr C Sq 1 Photos</p>		<p>North section of Tr C Sq 1.</p>





<b>Square</b>	Tr C Sq 2	<b>Excavator/s</b>		Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	14/3/2014
<b>MGA Easting</b>	333709.9	<b>MGA Northing</b>	6233992	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square	
<b>Dimensions</b>	1.0m x 1.0m (0.5m x 0.5m from 55cm)			<b>RL Top of Square</b>		1.74 (A1)	<b>RL Base of Square</b>		0.91
<b>General Description</b>	0.05m overburden comprising yellow sand fill mottling into the black humic A1 horizon. This is underlain by 0.4m of black humic uniform sand with lateral rootlets throughout. In upper part of layer are a few pieces of slag and the lower most portion contains a few lateral roots (2cm diameter) in SE corner. Sand becomes slightly paler with depth until it becomes significantly paler at 0.55m depth (A2 horizon), underlain by 0.3m of uniform paler grey sand with some darker patches of charcoal flecked sand toward base of excavation. Groundwater at 83cm.								
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	5cm	<b>Total Buckets</b>	12
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	5cm	<b>End Depth (cms)</b>	10cm	<b>Total Buckets</b>	8
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	5cm	<b>End Depth (cms)</b>	15cm	<b>Total Buckets</b>	10
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	25cm	<b>Total Buckets</b>	21
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	35cm	<b>Total Buckets</b>	19
<b>Unit</b>	1	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	45cm	<b>Total Buckets</b>	16
<b>Unit</b>	1	<b>Spit</b>	6	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	55cm	<b>Total Buckets</b>	4
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	65cm	<b>Total Buckets</b>	4
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	75cm	<b>Total Buckets</b>	4
<b>Unit</b>	2	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	85cm	<b>Total Buckets</b>	4
<b>Photos</b>			<p>During excavation. End of unit 0 spit 1. View southwest.</p>					<p>North section of Tr C Sq 2.</p>	





<b>Square</b>	Tr D Sq 1	<b>Excavator/s</b>			Shane and Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	17/3/2014	
<b>MGA Easting</b>	333771	<b>MGA Northing</b>	6233965	<b>Accuracy (m)</b>	+/- 0.1m		<b>Location of Coordinate</b>	Southeast corner of square			
<b>Dimensions</b>	0.5m x 0.5m			<b>RL Top of Square</b>	1.72 (A1)		<b>RL Base of Square</b>	1.22			
<b>General Description</b>	0.06m of overburden comprising yellow sand fill mottling into the black humic sand of A1 horizon. This underlain by 0.22m of black humic uniform sand with few vertical roots (1cm diameter) in the west wall. Paler grey sand with charcoal flecks mottles into the black sand from 0.27m depth. Mottling decreases but grey sand does not become completely uniform. Ground water reached at 50cm.										
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	6cm	<b>Total Buckets</b>	2		
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	4cm	<b>End Depth (cms)</b>	10cm	<b>Total Buckets</b>	2		
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	20	<b>Total Buckets</b>	4		
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	30	<b>Total Buckets</b>	5		
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	40	<b>Total Buckets</b>	4		
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	50	<b>Total Buckets</b>	4		
<b>Photos</b>				Tr D Sq 1 at end of excavation.						North section of Tr D Sq 1.	







<b>Square</b>	Tr D Sq 2	<b>Excavator/s</b>		Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	18/3/2014	
<b>MGA Easting</b>	333802	<b>MGA Northing</b>	6233932	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square		
<b>Dimensions</b>	0.5m x 0.5m		<b>RL Top of Square</b>		1.79 (A1)		<b>RL Base of Square</b>		1.26	
<b>General Description</b>	[Overlying fill in ca 1m fill includes brick, corrugated iron, tile and other building rubble as well as yellow/brown lency sandy fill]. 0.05m of overburden comprising yellow sand fill mottling into the black humic sand A1 horizon. Tree root exposed in south wall. Underlain by black sand mottling into paler grey sand (A2 horizon) with occasional charcoal pieces and getting paler with depth. Some tree roots (2cm diameter) run from NW to SW corner. Pale grey sand completely uniform from 0.45m depth. Ground water reached at 53cm.									
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	5cm	<b>Total Buckets</b>	2	
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	15cm	<b>Total Buckets</b>	8	
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	25cm	<b>Total Buckets</b>	4	
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	35cm	<b>Total Buckets</b>	4	
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	45cm	<b>Total Buckets</b>	4	
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	7cm	<b>End Depth (cms)</b>	53cm	<b>Total Buckets</b>	2	
<b>Photos</b>				Tr D Sq 2 at end of excavation.					North section of Tr D Sq 2.	





<b>Square</b>	Tr G Sq 1	<b>Excavator/s</b>		Paul and Adam		<b>Recorder</b>	Paul	<b>Date</b>	17/3/2014
<b>MGA Easting</b>	333664	<b>MGA Northing</b>	6233981	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Southeast corner of square	
<b>Dimensions</b>	1.0m x 1.0m		<b>RL Top of Square</b>		2.21 (A1)		<b>RL Base of Square</b>		1.41
<b>General Description</b>	0.05m of overburden comprising yellow sand fill mottling into the black sand A1 horizon. This is underlain by 0.2m of black sand with occasional charcoal fragments, grading into paler grey (A2 horizon) sand with small lateral rootlets. Pale grey sand becomes completely uniform from 0.6m depth. Excavation ceased at 80cm.								
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	5cm	<b>Total Buckets</b>	9
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	cm	<b>End Depth (cms)</b>	10cm	<b>Total Buckets</b>	15
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	cm	<b>End Depth (cms)</b>	20cm	<b>Total Buckets</b>	11
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	cm	<b>End Depth (cms)</b>	30cm	<b>Total Buckets</b>	17
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	40cm	<b>Total Buckets</b>	18
<b>Unit</b>	1	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	50cm	<b>Total Buckets</b>	17
<b>Unit</b>	1	<b>Spit</b>	6	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	60cm	<b>Total Buckets</b>	16
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	70cm	<b>Total Buckets</b>	17
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	80cm	<b>Total Buckets</b>	12
<b>Photos</b>				Tr G Sq 1 at end of excavation.					North section of Tr G Sq 1.



<b>Square</b>	Tr H Sq 1	<b>Excavator/s</b>			Paul	<b>Recorder</b>	Paul	<b>Date</b>	19/3/2014
<b>MGA Easting</b>	333692	<b>MGA Northing</b>	6233977	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>		Northwest corner of square	
<b>Dimensions</b>	0.5m x 0.5m			<b>RL Top of Square</b>	1.68 (A1)		<b>RL Base of Square</b>	0.98	
<b>General Description</b>	0.1m of dark clayey fill and concrete fragments underlain by the A1 Horizon, black sand with several lateral roots (1cm diameter) across the surface and an ochre fragment found at 0.3m depth. This then grades into 0.4m of grey sand (A2) before a layer of moist pale sand is reached at 0.7m depth.								
<b>Unit</b>	0 (Overburden)	<b>Spit</b>	Bulk	<b>Size (cm)</b>	Bulk	<b>End Depth (cms)</b>	10cm	<b>Total Buckets</b>	5
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	20cm	<b>Total Buckets</b>	5
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	30cm	<b>Total Buckets</b>	5
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	40cm	<b>Total Buckets</b>	5
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	50cm	<b>Total Buckets</b>	4
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	60cm	<b>Total Buckets</b>	5
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	70cm	<b>Total Buckets</b>	5
<b>Photos</b>				<p>End of excavation, view north.</p>				<p>North section of Tr H Sq 1.</p>	



<b>Square</b>	Tr J Sq 1	<b>Excavator/s</b>		Shane and Tamika		<b>Recorder</b>	Tamika	<b>Date</b>	17/3/2014
<b>MGA Easting</b>	333988	<b>MGA Northing</b>	6233776	<b>Accuracy (m)</b>	+/- 0.1m	<b>Location of Coordinate</b>	Southeast corner of square		
<b>Dimensions</b>	0.5m x 0.5m		<b>RL Top of Square</b>		2.86 (A1)		<b>RL Base of Square</b>	2.35	
<b>General Description</b>	0.2m of humic black sand with an abundance of lateral rootlets and some charcoal pieces. From 0.2m depth, paler grey sand begins mottling into the black sand. Roots and charcoal as well as small quartz gravels are present in this layer. Mottling continues until pale grey sand becomes completely uniform from 0.5m depth (A2 horizon). A dark grey humic 'root mat' about 1cm thick underlies this, on top of sandstone bedrock.								
<b>Unit</b>	1	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	0cm	<b>Total Buckets</b>	5
<b>Unit</b>	1	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	10cm	<b>Total Buckets</b>	6
<b>Unit</b>	1	<b>Spit</b>	3	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	20cm	<b>Total Buckets</b>	5
<b>Unit</b>	1	<b>Spit</b>	4	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	30cm	<b>Total Buckets</b>	4
<b>Unit</b>	1	<b>Spit</b>	5	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	40cm	<b>Total Buckets</b>	5
<b>Unit</b>	2	<b>Spit</b>	1	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	50cm	<b>Total Buckets</b>	5
<b>Unit</b>	2	<b>Spit</b>	2	<b>Size (cm)</b>	10cm	<b>End Depth (cms)</b>	60cm	<b>Total Buckets</b>	1
<b>Photos</b>				<p>Spit 1 of Tr J Sq 1. View east.</p>				<p>East section of Tr J Sq 1.</p>	





## APPENDIX C3: pH VALUES

Transect	Square	Depth below A1 surface (cm)	pH
A	Sq 1	10	7.5
A	Sq 1	20	8
A	Sq 1	30	6.5-7
A	Sq 1	40	6.5
A	Sq 1	50	6
A	Sq 1	60	6.5
A	Sq 1	70	6.5
A	Sq 1	80	6.5
A	Sq 1	90	6
A	Sq 1	100	6- 6.5
A	Sq 2	10	8-8.5
A	Sq 2	20	7.5-8
A	Sq 2	30	7-7.5
A	Sq 2	40	7
A	Sq 2	50	7
A	Sq 2	60	7-7.5
A	Sq 2	70	7-7.5
A	Sq 2	80	7.5
A	Sq 2	90	7.5
A	Sq 2	100	7.5
B	Sq 1	10	8.5
B	Sq 1	20	8
B	Sq 1	30	7.5-8
B	Sq 1	40	7.5
B	Sq 1	50	7.5-8
B	Sq 1	60	7.5
B	Sq 1	70	7.5
B	Sq 2	10	8.5
B	Sq 2	20	7.5
B	Sq 2	30	7.5
B	Sq 2	40	7.5
B	Sq 2	50	7.5-8
B	Sq 2	60	8
B	Sq 2	70	7.5-8
C	Sq 1	10	8.5
C	Sq 1	20	8
C	Sq 1	30	8
C	Sq 1	40	8
Transect	Square	Depth below A1	pH



		surface (cm)	
C	Sq 1	50	7.5
C	Sq 1	60	7.5
C	Sq 1	70	7.5
C	Sq 1	80	7.5
C	Sq 1	90	7-7.5
C	Sq 1	100	7
C	Sq 1	110	8.5-9
C	Sq 1	120	8.5
C	Sq 1	130	8.5
C	Sq 2	10	8
C	Sq 2	20	7
C	Sq 2	30	7.5
C	Sq 2	40	7
C	Sq 2	50	7-7.5
C	Sq 2	60	7
C	Sq 2	70	8
C	Sq 2	80	8
D	Sq 1	10	8
D	Sq 1	20	7
D	Sq 1	30	7-7.5
D	Sq 1	40	7-7.5
D	Sq 1	50	7.5
D	Sq 2	10	6.5-7
D	Sq 2	20	7
D	Sq 2	30	7-7.5
D	Sq 2	40	7.5
D	Sq 2	50	7.5
G	Sq 1	10	8
G	Sq 1	20	8
G	Sq 1	30	8.5
G	Sq 1	40	8
G	Sq 1	50	8
G	Sq 1	60	7.5-8
G	Sq 1	70	7.5
G	Sq 1	80	7.5-8
H	Sq 1	10	7.5-8
H	Sq 1	20	7.5
H	Sq 1	30	7.5-8
H	Sq 1	40	8
H	Sq 1	50	8-8.5
Transect	Square	Depth below A1 surface (cm)	pH



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H	Sq 1	60	8.5-9
H	Sq 1	70	8.5-9
J	Sq 1	10	8.5
J	Sq 1	20	7.5-8
J	Sq 1	30	7.5
J	Sq 1	40	7-7.5
J	Sq 1	50	7
J	Sq 1	60	7
J	Sq 1	70	6-6.5



## APPENDIX C4: FIELD LEVELS

All elevations in metres AHD.

Manual Square/ Mechanical Pit	Name	Surface Elevation	A1 Top	A2 Top	Base of Excavation
Manual	TrA Sq1	2.995	1.856	n/a	0.78
Manual	TrA Sq2	2.873	1.67	n/a	0.67
Manual	TrB Sq1	2.939	1.849	n/a	1.069
Manual	TrB Sq2	2.91	1.62	n/a	0.89
Manual	TrC Sq1	2.865	2.155	n/a	0.855
Manual	TrC Sq2	2.887	1.74	n/a	0.91
Manual	TrD Sq1	3.1	1.72	n/a	1.22
Manual	TrD Sq2	2.95	1.79	n/a	1.26
Manual	TrG Sq1	2.911	2.21	n/a	1.41
Manual	TrH Sq1	2.97	1.68	n/a	0.98
Manual	TrJ Sq1	2.86	2.86	n/a	2.35
Mechanical	TrA 1m	2.995	1.856	n/a	1.856
Mechanical	TrA 20m	2.8	1.846	n/a	1.846
Mechanical	TrA 30m	2.845	1.866	n/a	1.866
Mechanical	TrA 35m	2.878	1.946	n/a	1.866
Mechanical	TrA 40m	2.873	1.67	n/a	1.67
Mechanical	TrA 60m	2.967	1.946	n/a	1.946
Mechanical	TrB 1m	2.939	1.849	n/a	1.849
Mechanical	TrB 12.5m	2.803	1.609	n/a	1.609
Mechanical	TrB 30m	2.798	1.649	n/a	1.649
Mechanical	TrB 50m	2.895	1.599	n/a	1.599
Mechanical	TrB 63m	2.872	1.569	n/a	1.569
Mechanical	TrC 1m	2.865	2.155	n/a	2.155
Mechanical	TrC 15m	2.887	1.837	n/a	1.837
Mechanical	TrC 30m	2.998	1.55	n/a	1.55
Mechanical	TrC 43m	2.986	1.436	n/a	1.436
Mechanical	TrD 10m	3.12	1.72	n/a	1.72
Mechanical	TrD 28m	2.92	1.47	n/a	1.47
Mechanical	TrD 60m	2.99	1.79	n/a	1.79
Mechanical	TrD188m	3.587	n/a	2.96	1.69





Manual Square/ Mechanical Pit	Name	Surface Elevation	A1 Top	A2 Top	Base of Excavation
Mechanical	TrD 100m	3.25	n/a	2.15	1.15
Mechanical	TrD 150m	3.48	n/a	2.48	2.38
Mechanical	TrD 250m	3.42	n/a	2.97	2.77
Mechanical	TrE 25m	3.175	n/a	2.51	2.31
Mechanical	TrE 69m	3.09	n/a	2.34	2.34
Mechanical	TrF 20m	2.99	n/a	1.54	1.54
Mechanical	TrF 70m	3.2	n/a	1.6	1.55
Mechanical	TrE 97m	3	n/a	2.2	2
Mechanical	TrF 110m	3.27	n/a	1.77	1.77
Mechanical	TrF 140m	3.31	n/a	2.61	2.41
Mechanical	TrF 160m	3.36	n/a	2.76	2.62
Mechanical	TrJ 0m	2.86	2.86	2.71	2.45



## APPENDIX C5: GLOSSARY

Term	Definition
Biomantle	The region of the soil profile in which bioturbation may occur.
Bioturbation	Includes disturbance to the artefacts by such living factors as earth worms and roots.
Butts of Flakes	The parts of broken flakes that carry with them the striking platforms.
Core	A piece of stone (e.g. cobble or pebble or fragment thereof) from which a flake has been detached, as indicated by the presence of negative flake scars only.
Cortex	The weathered or worn outside of the original nodular core from which flakes were struck.
Distal flakes	The parts of broken flakes that do not carry with them the striking platform. A broken flake can yield only one butt end, but has the potential for yielding multiple distal flakes.
Flake	Any piece of stone detached from a core or another flake, that possesses one or a combination of the following: ring crack, platform, erailure scar, positive bulb of force, or clearly discernable dorsal and ventral surface.
Striking Platform	The target that the stone flaker hits with a hammerstone when knocking off a flake.
Taphonomy/site taphonomy	Examination of the processes that have affected archaeological material (such as stone artefacts) after their abandonment at a site.



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# APPENDIX D

## Radiometric Dating Records



## Radiocarbon Dating Laboratory

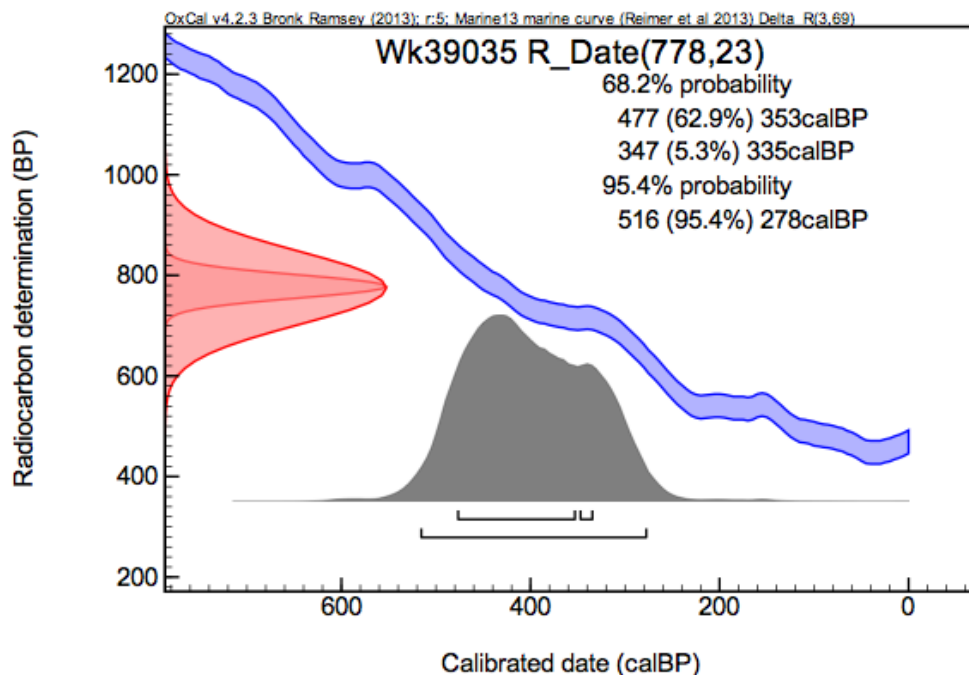
Monday, 19 May 2014

### Report on Radiocarbon Age Determination for Wk- 39035

<b>Submitter</b>	T Goward
<b>Submitter's Code</b>	238 CCDR TEXT EX
<b>Site &amp; Location</b>	238-258 Captain Cook Drive, Kurnell, Australia
<b>Sample Material</b>	Cockle
<b>Physical Pretreatment</b>	Surfaces cleaned. Washed in an ultrasonic bath. Tested for recrystallization: aragonite.
<b>Chemical Pretreatment</b>	Sample acid washed using 2 M dil. HCl for 120 seconds, rinsed and dried.

$\delta^{13}\text{C}$	0.6 ± 0.2 ‰
D <sup>14</sup> C	-92.3 ± 2.6 ‰
F <sup>14</sup> C%	90.8 ± 0.3 %
<b>Result</b>	<b>778 ± 23 BP</b>

#### Comments



- Explanation of the calibrated Oxcal plots can be found at the Oxford Radiocarbon Accelerator Unit's calibration web pages (<http://c14.arch.ox.ac.uk/embed.php?File=explanation.php>)
- Result is *Conventional Age or Percent Modern Carbon (pMC)* following Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation,  $\delta^{13}\text{C}$ , is expressed as ‰ wrt PDB and is measured on sample CO<sub>2</sub>.
- F<sup>14</sup>C% is also known as *Percent Modern Carbon (pMC)*.

*Ally Hoag*