Clyde Creek (PSP 54) and Thompsons Road (PSP 53) Precinct Structure Plans

Aboriginal Cultural Heritage Assessment

Sponsor: Growth Areas Authority

Cultural Heritage Advisor: Stacey Kennedy

Authors: Stacey Kennedy, Adrian Burrow & Elizabeth Foley

10th October 2012

AHMS

2/35 Hope St
BRUNSWICK, VIC, 3056
T: 03 9388 0622

E:info@arksolutions.com.au
ABN 45 088 058 388
ACN 088 058 388

ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD
Dear Mr Seamer

CLYDE CREEK AND THOMPSONS ROAD PRECINCT STRUCTURE PLANS

Thank you for your letter of 25 October 2012 seeking my endorsement of the report entitled Clyde Creek and Thompsons Road Precinct Structure Plans – Aboriginal Cultural Heritage Assessment by Stacey Kennedy, Adrian Burrow and Elizabeth Foley, dated 10 October 2012.

I endorse the recommendations of the report.

I can also confirm that the desktop and standard assessments undertaken for this report have been prepared to a standard normally sufficient in the preparation of a Cultural Heritage Management Plan. These assessments should be used as the basis for the development of future Cultural Heritage Management Plans for these areas.

Please contact Mr Harry Webber on (ph) 9208 3288 if you have any queries regarding this matter.

Yours sincerely

Corinne Young
Acting Executive Director
Aboriginal Affairs Victoria
CLYDE CREEK (PSP 54) AND THOMPSONS ROAD (PSP 53) PRECINCT STRUCTURE PLANS

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

10TH OCTOBER 2012

SPONSOR: GROWTH AREAS AUTHORITY

CULTURAL HERITAGE ADVISOR: STACEY KENNEDY

Authors: Stacey Kennedy, Adrian Burrow & Elizabeth Foley

LARGE SIZED ACTIVITY

DESKTOP & STANDARD ASSESSMENT

Prepared by Archaeological & Heritage Management Solutions (AHMS) Pty Ltd on behalf of Growth Areas Authority.

AHMS
UNIT 2, 35 Hope STREET
BRUNSWICK, VIC, 3056
T: 03 9388 0622
F: 03 9388 0677
info@arksolutions.com.au
ABN 45 088 058 388
ACN 088 058 388.
PLEASE NOTE - THIS REPORT CONTAINS PICTURES OF AND INFORMATION ABOUT PEOPLE WHO MAY HAVE PASSED AWAY
EXECUTIVE SUMMARY

The Growth Areas Authority (The Sponsor) (ABN: 77 803 352 468) engaged Archaeological and Heritage Management Solutions (AHMS) Pty Ltd to prepare a Cultural Heritage Management Plan (CHMP) to Standard Assessment for proposed precinct structure plans (PSP) at Clyde Creek (PSP 54) and Thompsons Road (PSP 53), situated within the vicinity of the Clyde township. The respective activity areas are situated within the municipality of City of Casey and are 1, 153ha (PSP 54) and 652ha (PSP 53).

A notice of intent to prepare the CHMP was lodged with Aboriginal Affairs Victoria (AAV) on the 13th February 2012 (Appendix 1). AAV issued a project number 12083 and advised that as there was no Registered Aboriginal Party, AAV are the evaluating authority.

We undertook a process of consultation with the Bunurong Land Council Aboriginal Corporation, the Boon Wurrung Foundation and the Wurundjeri Tribe Land and Compensation Cultural Heritage Council. All three groups participated in the fieldwork.

A search of the Victorian Aboriginal Heritage Register (VAHR) was undertaken to identify previously recorded sites within the geographic region (Bunyip River Basin) relevant to the activity area. Twelve places have been previously recorded within the activity area comprising isolated stone artefacts, surface and sub-surface stone artefact scatters.

Drawing on the desktop research and previous archaeological survey work, we make the following predictions:

- Stone artefact deposits are likely to be found at varying densities across most landforms within the PSPs;
- Higher density artefact scatters and sub-surface deposits may be found on crest landforms and the ‘Cranbourne sands’;
• Higher density artefact scatters and sub-surface deposits are likely to be found adjacent to creeks or wetlands. Artefact density and frequency is likely to increase with higher stream order (for creeks) and permanence (for wetlands);

• The density and complexity of artefact scatters and sub-surface deposits is likely to decrease with distance from water sources and wetlands;

• Higher density of artefact scatters and sub-surface deposits in close proximity to stone sources (either outcrops or river pebble sources);

• A particularly high density and complexity of archaeological deposits at major confluences and resource intersection zones;

• Stable Aeolian and alluvial landforms are likely to have deeper profiles and better preservation conditions. These landforms may contain greater archaeological integrity;

• Scarred trees may be present within areas containing mature remnant native trees of sufficient age and as isolated mature trees in agricultural settings;

• Isolated finds may be found anywhere across the landscape.

Due to the large area covered by the PSPs, we used MapInfo GIS (Geographical Information System) to develop and map the predictions made regarding archaeological potential. The purpose of the predictive model was to:

• Provide the Growth Areas Authority, individual landowners within the PSP and the Aboriginal community with information about areas of Aboriginal archaeological sensitivity to feed into constraints and opportunities analysis;

• Help inform early PSP planning and design work;

• Provide the Desktop and Standard Assessment component of CHMPs, and

• To assist in developing a methodology for Complex Assessments.

In developing the model, we drew on a number of environmental and disturbance variables that were used to identify areas of varying ‘archaeological sensitivity’. For the purposes of the model, the term ‘archaeological sensitivity’ is defined as a
combination of likely density, integrity and research value of archaeological deposits within any given area.

The modeling and mapping is based on a probabilistic approach, where a combination of traits was used to determine the combined level of potential. The model traits are as follows:

- Areas within 200m of high-mid order stream = Very High Sensitivity;
- Areas within 200m of lower-order stream or outer edge of swamp = Moderate Sensitivity;
- Areas within 200m of former waterway/seasonally inundated stream = Very High Sensitivity;
- Alluvial soils = Moderate Sensitivity;
- ‘Cranbourne Sands’ geological landform = High Sensitivity
- Crest landforms = Moderate Sensitivity;
- Crest and within 200m of former water (including all stream types and swamp) = Increased Sensitivity by One Level;
- Cut and Fill Disturbance = Disturbed;
- Horticultural/ Market Gardening Disturbance = Very Low Sensitivity;
- Within Wetland = Very Low Sensitivity; and
- All other areas = Low Sensitivity.

A total of 45 properties were surveyed within the activity area (Table 1; Figures 2 & 3). Details of the accessible properties and influences on survey coverage for each property are outlined in Tables 7 & 8.

Survey coverage aimed to balance sampling of areas of ground surface exposure on these properties with detailed coverage of areas of high to very high sensitivity.

1 Note that several landowners own more than one property
indicated in the predictive model developed during the Desktop Assessment. The survey also aimed to sample each of the landform types, providing coverage of crest, slope and floodplain landforms. Survey was particularly comprehensive in the areas of highest predicted sensitivity along the margins of Clyde Creek and the unnamed creek in property 53-01, as well as the area geologically mapped as comprising ‘Cranbourne Sand’ landform in the western part of PSP53.

Five (5) Aboriginal Cultural Heritage Places (Aboriginal Places) were recorded during the archaeological survey of the activity area, all along a short section of the unnamed former watercourse in property PSP53-01. The locations of these Aboriginal Places are shown on Figure 23.

An attempt was made to relocate the eleven (11) previously registered places within the activity area (see Table 4). Two (2) of these - Clyde North 1 and Clyde North 2 (VAHR 7921-CN1-11 & 7921-CN2-11) were relocated along the former stream within property PSP53-01, while the location of subsurface deposit Clyde North Artefact Deposit 5 (VAHR 7921-CNAD5-11) could be discerned from a backfilled trench excavated during the previous archaeological test excavation work. Good ground surface visibility along the stream bank facilitated the relocation of these places, as well as the identification of the five (5) previously unrecorded places found nearby (VAHR 7921-1410, 7921-1411, 7921-1412, 7921-1413, 7921-1415).

The remainder of the previously recorded places could not be re-located due to poor ground surface visibility in these areas (VAHR 7921-0416, 7921-0499, 7921-1129, 7921-1130, (7921-CN3-11, 7921-CNAD1-11, 7921-CNAD2-11, 7921-CNAD3-11, 7921-CNAD4-11)).

The results of the archaeological survey indicate that there is potential for low density artefact scatters to be distributed across the landscape. There is potential for low to medium density artefact scatters to be present within close proximity to

Young 2011
Young 2011
Young 2011
the former watercourse situated in the north-east corner of PSP 53. There is also some potential for higher density and frequency of surface sites in close proximity to current watercourses, such as Clyde Creek.

In general terms, the risk of impact on significant archaeological and Aboriginal cultural heritage values is likely to increase in accordance with sensitivity level. Therefore, areas that are in the very high sensitivity zone are likely to have the highest level of archaeological significance and as a result these areas are also likely to have the highest level of risk for development proponents. Likewise, areas of very low sensitivity or which are disturbed have a very low risk level.

We would recommend the following PSP design responses with reference to the sensitivity zones shown on Figure 29:

**Very High & High Sensitivity**: retain as much as possible in open space, riparian, bio-link, set-backs and asset protection zones. The aim of PSP design should be to minimize future development impact on these areas (particularly the Very High sensitivity zone). This approach will protect areas with high potential for significant archaeological deposits and cultural values. The approach will also save time and money in reducing the scope of mitigation and salvage of sensitivity areas;

**Moderate Sensitivity**: where there is an opportunity, development impact should be minimized where practicable. For instance, where there are opportunities to establish open space, these could be placed on areas of moderate sensitivity to protect Aboriginal heritage and reduce the scope of expensive and time consuming archaeological mitigation measures and salvage.

**Low Sensitivity**: no design and planning recommendations. These areas are essentially archaeologically ‘neutral’.

**Very Low Sensitivity and Disturbed**: these areas could be the focus of development, particularly high impact features of a subdivision like a town centre, medium or high density residential, industrial or commercial.

The following recommendations set out the key legal requirements that will apply to PSP planning and development within the activity area:
a. **Subdivision or development projects** (greater than 2 lots and/or two dwellings) located within or partly within areas of cultural heritage sensitivity (shown on Figure 30) will require completion of mandatory cultural heritage management plans (CHMPs) before Planning Permits can legally be approved for these projects. Prior to subdivision or development projects taking place a search of the Aboriginal cultural heritage sensitivity overlay on GeoVic or the Aboriginal Affairs Victoria website should be undertaken to ensure that areas of Aboriginal cultural heritage sensitivity are up to date;

b. Currently there is no Registered Aboriginal Party for both PSPs therefore, the current evaluating authority would be Aboriginal Affairs Victoria (AAV). CHMPs must be prepared by a qualified Cultural Heritage Advisor and must be approved by AAV before they are in force;

If individual development proponents believe their land has been subject to significant ground disturbance (either mechanical excavation disturbance and/or deep ripping) they could consider engaging a Cultural Heritage Advisor to undertake an assessment and make a determination;

c. **Areas where no development or ground disturbance is proposed** - no Complex Assessment will be required in areas where development and disturbance is not proposed. Inclusion of areas of high to very high sensitivity in conservation, open space, biolinks and/or riparian corridors will reduce the scope of Complex Assessment required and provide good outcomes in protecting significant Aboriginal heritage;

d. **Known Aboriginal Places** - known Aboriginal places registered on the Victorian Aboriginal heritage register (VAHR) and places found during the Standard Assessment described in this report (see Figures 5 & 23) are protected by the Aboriginal Heritage Act 2006. It is an offence to disturb or destroy these places without first obtaining either a Permit to Harm or an approved CHMP from AAV;

e. **Blanket Protection** - Irrespective of whether or not a CHMP is required for a particular development or activity, the Aboriginal Heritage Act 2006
provides blanket protection for all Aboriginal cultural heritage. If any Aboriginal objects (artefacts), sites, places or skeletal remains are identified at any time before or during development works, they cannot be harmed until either a Permit to Harm or a CHMP that specifically permits harm to that place has been approved by AAV.

Where a CHMP will be required we recommend the use of a landform based approach to Complex Assessment (test excavation). The landform based approach aims to systematically test each landform within an activity area to establish the extent of cultural material present. This approach is recommended because it is a very efficient and effective means of assessing the nature, extent and significance of Aboriginal cultural heritage across large landscapes. It also provides for a consistent approach across the PSPs and significant sampling efficiencies by using a common approach that can be utilized by all the landowners and proponents within the activity area.

The extent of testing and sample effort should be based on the level of sensitivity shown on the predictive sensitivity mapping shown on Figure 29. Areas which are disturbed or have very low sensitivity should not require further test excavation because they are considered ‘unlikely’ to contain Aboriginal cultural heritage the Aboriginal Heritage Regulations 2007 only require Complex Assessment in areas that are ‘likely’ to contain Aboriginal cultural heritage. However, areas ranging from low to very high sensitivity should be included in a systematic programme of landscape-based archaeological test excavation that aims to establish the extent nature and significance of the Aboriginal cultural material within areas of proposed development impact (NB: Areas set aside as open space, conservation or other uses that do not entail development disturbance will not be included in Complex Assessment and can therefore be excluded from Complex Assessment scope of work).

Proposed sampling densities for complex assessments are outlined in Table 9.
# Contents

**PART 1 - ASSESSMENT.**

1 Introduction  
1.1 Preamble  
1.2 Reason for the current study  
1.3 Cultural Heritage Advisor & Authorship  
1.4 Acknowledgements  

2 Activity Description  

3 Extent of Activity Area  

4 Documentation of Consultation  

4.1 Development of Consultation  
4.2 Outcomes of Consultation  

RESULTS OF ABORIGINAL CULTURAL HERITAGE ASSESSMENT  

5 Desktop Assessment  

5.1 Preamble  
5.2 Geographic Region  
5.3 Review of Aboriginal Places in the Region  
5.4 Review of Aboriginal Places in the Region  
5.5 Relevant Regional Studies  

5.5.1 Early Occupation  
5.5.2 Intensification during the Holocene Period  
5.5.3 Stone Artefacts and Raw Materials  

5.5.4 Relevant Regional Studies  

5.5.5 Smith 1989 & 1991  
5.5.6 du Cros & Rhodes 1998  
5.5.7 Feldman & Long 2004  

5.6 Review of Local Studies (Pre Aboriginal Heritage Act 2006)  

5.7 Review of Local Studies (Cultural Heritage Management Plans)
<table>
<thead>
<tr>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.7.1</td>
<td>Murphy &amp; Thomson 2008 (10125)</td>
</tr>
<tr>
<td>5.7.2</td>
<td>Clarke et al 2009 (10009)</td>
</tr>
<tr>
<td>5.7.3</td>
<td>Ford et al 2009 (10881)</td>
</tr>
<tr>
<td>5.7.4</td>
<td>Light 2009 (10569)</td>
</tr>
<tr>
<td>5.7.5</td>
<td>Long et al 2009 (10008)</td>
</tr>
<tr>
<td>5.7.6</td>
<td>Schell et al 2009 (10091)</td>
</tr>
<tr>
<td>5.7.7</td>
<td>Gilchrist 2011 (10646)</td>
</tr>
<tr>
<td>5.7.8</td>
<td>Murphy &amp; Rymer 2008 (10045)</td>
</tr>
<tr>
<td>5.7.9</td>
<td>Fiddian &amp; Lawler 2007 (10084)</td>
</tr>
<tr>
<td>5.7.10</td>
<td>Vines 2008 (10168)</td>
</tr>
<tr>
<td>5.7.11</td>
<td>Adams &amp; Stevens 2008 (10222)</td>
</tr>
<tr>
<td>5.7.12</td>
<td>Murphy &amp; Dugay-Grist 2009 (10531)</td>
</tr>
<tr>
<td>5.7.13</td>
<td>Light et al. 2009 (10568)</td>
</tr>
<tr>
<td>5.7.14</td>
<td>Murphy &amp; Thomson 2009 (10574)</td>
</tr>
<tr>
<td>5.7.15</td>
<td>Murphy &amp; Rymer 2009a (10659)</td>
</tr>
<tr>
<td>5.7.16</td>
<td>Murphy &amp; Rymer 2009b (10865)</td>
</tr>
<tr>
<td>5.7.17</td>
<td>Murphy &amp; Rymer 2009c (10939)</td>
</tr>
<tr>
<td>5.7.18</td>
<td>Murphy &amp; Rymer 2011a (10857)</td>
</tr>
<tr>
<td>5.7.19</td>
<td>Murphy &amp; Rymer 2011b (11636)</td>
</tr>
<tr>
<td>5.7.20</td>
<td>Day 2010 (11051)</td>
</tr>
<tr>
<td>5.7.21</td>
<td>Stevens &amp; Vines 2011 (11091)</td>
</tr>
<tr>
<td>5.7.22</td>
<td>Mathews et al. 2010 (11318)</td>
</tr>
<tr>
<td>5.7.23</td>
<td>Murphy &amp; Kennedy 2010 (11380)</td>
</tr>
<tr>
<td>5.7.24</td>
<td>Patton 2011 (11641)</td>
</tr>
<tr>
<td>5.7.25</td>
<td>Barker &amp; Hislop 2011 (11722)</td>
</tr>
<tr>
<td>5.7.26</td>
<td>Young 2011 (In Prep)</td>
</tr>
<tr>
<td>5.8</td>
<td>Aboriginal Ethno-history ..............................................................52</td>
</tr>
<tr>
<td>5.8.1</td>
<td>Preamble 52</td>
</tr>
<tr>
<td>5.8.2</td>
<td>The <em>Bun wurrung</em> Language Group 52</td>
</tr>
<tr>
<td>5.8.3</td>
<td>Food Resources 52</td>
</tr>
<tr>
<td>5.9</td>
<td>Review of Thomas Journal to identify Aboriginal use and occupation in the local area ..............................................................53</td>
</tr>
<tr>
<td>5.9.1</td>
<td>Movements and Camps 53</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>5.9.2</td>
<td>O'Connor’s Station (<em>Narmnup</em>)</td>
</tr>
<tr>
<td>5.9.3</td>
<td>Cardinia Creek</td>
</tr>
<tr>
<td>5.9.4</td>
<td>Settlement Patterns</td>
</tr>
<tr>
<td>5.9.5</td>
<td>Material Culture</td>
</tr>
<tr>
<td>5.9.6</td>
<td>Early Settlement &amp; Frontier Relations</td>
</tr>
<tr>
<td>5.10</td>
<td>Environmental Context (landforms and geomorphology)</td>
</tr>
<tr>
<td>5.10.1</td>
<td>Landscape</td>
</tr>
<tr>
<td>5.10.2</td>
<td>Drainage and Water Resources</td>
</tr>
<tr>
<td>5.10.3</td>
<td>Landforms within the activity area</td>
</tr>
<tr>
<td>5.10.4</td>
<td>Published Geological Information</td>
</tr>
<tr>
<td>5.10.5</td>
<td>Geomorphology &amp; Soils</td>
</tr>
<tr>
<td>5.10.6</td>
<td>1750 Ecological Vegetation Classes</td>
</tr>
<tr>
<td>5.11</td>
<td>Landuse Disturbance History in the Activity Area</td>
</tr>
<tr>
<td>5.12.1</td>
<td>Factors Included in the Model</td>
</tr>
<tr>
<td>5.12.2</td>
<td>Factors Not Included in the Predictive Model.</td>
</tr>
<tr>
<td>5.12.3</td>
<td>Predictive Sensitivity Mapping</td>
</tr>
<tr>
<td>6.1</td>
<td>Archaeological Survey Details</td>
</tr>
<tr>
<td>6.2</td>
<td>Survey Methodology</td>
</tr>
<tr>
<td>6.3</td>
<td>Survey Coverage</td>
</tr>
<tr>
<td>6.4</td>
<td>Aboriginal Cultural Heritage in the Activity Area</td>
</tr>
<tr>
<td>6.4.1</td>
<td>7921-1415: Pound Road 1</td>
</tr>
<tr>
<td>6.4.2</td>
<td>VAHR 7921-1415:Nature</td>
</tr>
<tr>
<td>6.4.3</td>
<td>VAHR 7921-1415: Extent</td>
</tr>
<tr>
<td>6.4.4</td>
<td>VAHR 7921-1415: Scientific Significance</td>
</tr>
<tr>
<td>6.4.5</td>
<td>7921-1410: Pound Road IA 1</td>
</tr>
<tr>
<td>6.4.6</td>
<td>VAHR 7921-1410:Nature</td>
</tr>
<tr>
<td>6.4.7</td>
<td>VAHR 7921-1410: Extent</td>
</tr>
<tr>
<td>6.4.8</td>
<td>VAHR 7921-1410: Scientific Significance</td>
</tr>
<tr>
<td>6.4.9</td>
<td>7921-1411: Pound Road IA 2</td>
</tr>
<tr>
<td>6.4.10</td>
<td>VAHR 7921-1411:Nature</td>
</tr>
<tr>
<td>6.4.11</td>
<td>VAHR 7921-1411: Extent</td>
</tr>
</tbody>
</table>
List of Figures (Including Maps)

Figure 1 - Location and Extent of PSP 53 & 54. Source: GAA. ................................. 9
Figure 2 - Extent of Activity Area in PSP 53 (activity area is shaded and outlined green).  .................................................................................................................. 10
Figure 3 - Extent of Activity Area in PSP 54 (activity area is shaded and outlined green). .................................................................................................................. 11
Figure 4 - Bunyip River Basin: Geographic Region. Source: GeoVic. ......................... 17
Figure 5 - Registered Aboriginal Places within 200m of the Activity Area. Source: Interactive maps. ................................................................. 21
Figure 11 - Landforms Present within the Activity Area ............................................. 68
Figure 12 - Geological Map of Activity Area and Immediate Surrounds. Source: GeoVic ................................................................................................. 71
Figure 13- Sargent Soil Mapping Westernport Bay Catchment (Source: Sargent 1975) 72
Figure 14 - 1750 & 2005 EVCs map of the Activity Area and Immediate Surrounds. Source: DSE. ................................................................. 74
Figure 15 - 1971 Historic Aerial of Activity Area and Immediate Surrounds (M36S 910 190).................................................................................................................. 77
Figure 16 - Cut and Fill Disturbance Present in PSP 53 .................................................. 78
Figure 17 - Cut and Fill Disturbance Present in PSP 54 .................................................. 79
Figure 18 - Predictive Archaeological Sensitivity Model ............................................. 87
Figure 19 - Clyde Creek ......................................................................................... 96
Figure 20 - Example of Dams Constructed along Unnamed Watercourse in North-East Section of the Activity Area ................................................................. 97
Figure 21 - Example of Small Discrete Aeolian Dunes Landform associated with the Cranbourne Sands ................................................................. 98
Figure 22 - Example of Market Gardening undertaken throughout the Activity Area ... 99
Figure 23: Aboriginal Places recorded during the current survey (yellow) and during previous survey (blue) (Young 2011) .......................................................... 102
Figure 24 - 7921-1415: location and stone artefacts .................................................. 103
Figure 25 - 7921-1410: location and stone artefacts .................................................. 105
Figure 26 - 7921-1411: stone artefact ........................................................................ 107
Figure 27 - 7921-1412: stone artefact ........................................................................ 109
Figure 28 - 7921-1413: location and stone artefact .................................................. 111
Figure 29 - Revised Predictive Archaeological Sensitivity Model .............................. 117

List of Tables

Table 1 - Participating Properties .............................................................................. 7
Table 2 - Participants in the Standard Assessments ..................................................... 12
Table 3 - Aboriginal Community Correspondence ................................................... 13
Table 4 - VAHR Recorded Places within the Activity Area ...................................... 18
Table 5 - VAHR Recorded Places within 200m of the Activity Area ....................... 19
Table 6 - Survey Participants ................................................................................... 89
Table 7 - Survey Coverage Data - PSP 53 ............................................................... 92
Table 8 - Survey Coverage Data - PSP 54 ............................................................... 93
Table 9 - Proposed Sampling Densities

Abbreviations

AAV  Aboriginal Affairs Victoria
AHC  Australian Heritage Council
BP   Before Present
CHMP  Cultural Heritage Management Plan
EVC  Ecological Vegetation Communities
GAA  Growth Areas Authority
GSV  Ground surface visibility
LGA  Local Government Area
PSP  Precinct Structure Plan
RAP  Registered Aboriginal Party
SGD  Significant Ground Disturbance
VAHR  Victorian Aboriginal Heritage Register
VRO  Victorian Resources Online

Definitions

ACTIVITY AREA  The area or areas to be used or developed for the activity
PART 1 - ASSESSMENT.
1 INTRODUCTION

1.1 Preamble

The Growth Areas Authority (The Sponsor) (ABN: 77 803 352 468) engaged Archaeological and Heritage Management Solutions (AHMS) Pty Ltd to prepare a Cultural Heritage Management Plan (CHMP) to Standard Assessment for proposed precinct structure plans (PSP) at Clyde Creek (PSP 54) and Thompsons Road (PSP 53), situated within the vicinity of the Clyde township. The respective activity areas are situated within the municipality of City of Casey and are 1, 153ha (PSP 54) and 652ha (PSP 53).

A notice of intent to prepare the CHMP was lodged with Aboriginal Affairs Victoria (AAV) on the 13th February 2012 (Appendix 1). AAV issued a project number 12083 and advised that as there was no Registered Aboriginal Party, AAV are the evaluating authority.

The CHMP was prepared in accordance with the requirements of the Aboriginal Heritage Act 2006 and associated regulations and guidelines issued by AAV regarding preparation of CHMPs. The overriding purpose of the CHMP was to document and assess the Aboriginal heritage (archaeological and cultural) values of the activity area to assist in PSP design and planning work. The CHMP is also designed to provide management recommendations for future subdivision and development and to provide a Desktop and Standard CHMP assessment that can be utilized by landowners and developers to develop Complex CHMPs for specific development projects within both PSP areas.

1.2 Reason for the current study

A cultural heritage management plan (CHMP) is required if all or part of an activity area is situated within an area of cultural heritage sensitivity and if the proposed activity is defined as high impact.

- The activity area has several areas of legislated cultural heritage sensitivity: previously recorded Aboriginal cultural heritage places; land within 50
meters of a registered cultural heritage place; land within 200m of a named waterway (Clyde Creek); sand sheet including the Cranbourne Sand identified as “Qpd” on the Geological Survey of Victoria 1:250 000 map series SJ55-9 “Queenscliff” and the Koo Wee Rup Plain identified as “Qrm” on the Geological Survey of Victoria 1:250 000 map series SJ55-9 “Queenscliff” (Aboriginal Heritage Regulations 2007, r22, r22(2), r23 & r31);

- The activity is considered to be a high impact activity because a precinct structure plan is a form of residential subdivision (Aboriginal Heritage Regulations 46).

This CHMP has been prepared in accordance with the Aboriginal Heritage Act 2006. The CHMP is designed to identify and assess the nature, extent and significance of Aboriginal sites, objects and cultural heritage values within the subject land and to provide mitigation, protection and contingency procedures to manage those values before, during and after development of the land.

In accordance with Section 61 of the Aboriginal Heritage Act 2006, the following mandatory matters are considered by this CHMP:

- Whether the activity will be conducted in a way that avoids harm to Aboriginal cultural heritage;

- If it does not appear to be possible to conduct the activity in a way that avoids harm to Aboriginal cultural heritage, whether the activity will be conducted in a way that minimises harm to Aboriginal cultural heritage;

- Any specific measures required for the management of Aboriginal cultural heritage likely to be affected by the activity, both during and after the activity;

- Any contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity; and

- Requirements relating to the custody and management of Aboriginal cultural heritage during the course of the activity.
Specific aims of the CHMP were as follows:

- Identify any known Aboriginal sites, relics and any places of cultural significance to the Aboriginal community within the activity area;

- Assess the potential for Aboriginal cultural heritage in the form of subsurface deposits;

- Assess the heritage significance of any Aboriginal sites, relics, places and areas of archaeological potential in partnership with the local Aboriginal communities;

- Assess the impact of the activity on any Aboriginal sites, relics, places and significance values; and

- Make appropriate recommendations for protection of Aboriginal cultural heritage and/or mitigation of development impact, including contingency procedures in consultation with the local Aboriginal community.

### 1.3 Cultural Heritage Advisor & Authorship

The Cultural heritage advisor and principal author of this CHMP is Stacey Kennedy (B.Arch Hons (La Trobe)). Stacey has over six years experience in Aboriginal heritage consulting.

Adrian Burrow and Elizabeth Foley also contributed to this report. Adrian is a heritage consultant with over 12 years experience in archaeological consulting. Elizabeth has recently graduated from La Trobe University (BA Arch Hons) and specialises in stone artefact analysis.

Jim Wheeler (B.A. Hons Archaeology (ANU), MAACAI) reviewed the report. Jim has been a practicing archaeological consultant since 1997 and is a full member of the Australian Association of Consulting Archaeologists Inc.
1.4 Acknowledgements

AHMS acknowledges the assistance and valuable input provided by the Growth Areas Authority (The Sponsor), and in particular Belinda Smith (Structure Planning Manager). We especially acknowledge the assistance, input and support provided by the Aboriginal community representatives: Jaden Williams and Josh Luttrell (Boon Wurrung Foundation), Izzy Pepper and Dan Turnbull (Bunurong Land Council), Garry Galway, Trevor Downe and Kerrie Xiberras (Wurundjeri Tribe Land Compensation and Cultural Heritage Council), as well as, the staff of the Boon Wurrung Foundation, Bunurong Land Council and Wurundjeri Tribe Land Compensation and Cultural Heritage Council.
2 Activity Description

The land is currently zoned UGZ - Urban Growth Zone. This zone attempts to streamline planning controls within the Precinct Structure Plan (PSP) area - effectively removing the rezoning process. Therefore the current zoning of the land as UGZ will remain during the preparation of the PSP master plan.

The Sponsor (the Growth Areas Authority) does not intend to develop each individual allotment, nor would they undertake subdivision works. The role of the PSP is to undertake masterplanning and design work to assist in facilitating streamlined and high quality development within the Clyde Creek and Thompsons Road growth areas. Subdivision works and implementation of development projects within the Clyde Creek and Thompsons Road PSPs would be undertaken by individual landowners and/or developers.

This CHMP comprises Desktop and Standard Assessments designed to assist GAA in PSP design and planning and to provide a CHMP assessment that can be utilized by landowners and developers to develop Complex CHMPs for specific development projects within the Clyde Creek and Thompsons Road PSP areas.

The activity area will remain zoned ‘UGZ - Urban Growth Zone’ under the City of Casey Planning Scheme. The schedule to this zone is included in Appendix 2. Development within this area, in keeping with the PSP, will not require rezoning.

3 Extent of Activity Area

The activity area consists of 45 properties (Table 1; Figures 2 & 3). These properties were those where the landowners agreed to participate in the Standard Assessment and whose properties were accessible during the designated survey dates.
Table 1  Participating Properties

<table>
<thead>
<tr>
<th>Ascribed ID</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSP 53-01</td>
<td>1475 Pound rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-02</td>
<td>660 Berwick-Cranbourne road, Clyde North</td>
</tr>
<tr>
<td>PSP 53-03</td>
<td>1575 Pound rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-04</td>
<td>7 Hardys rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-05</td>
<td>1525 Pound rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-06</td>
<td>1850 + 1880 Thompsons rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-07</td>
<td>205 Hardys rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-08</td>
<td>225 Hardys rd, Clyde north</td>
</tr>
<tr>
<td>PSP 53-09</td>
<td>1790 Thompsons rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-10</td>
<td>1450 Pound rd, Clyde North</td>
</tr>
<tr>
<td>PSP 53-11</td>
<td>5 Hardys rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-01</td>
<td>90 Twyford rd, Clyde</td>
</tr>
<tr>
<td>PSP 54-02</td>
<td>275 Pattersons rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-03</td>
<td>5 Tuckers rd, Clyde North</td>
</tr>
<tr>
<td>PSP 54-04</td>
<td>30 Twyford rd, Clyde</td>
</tr>
<tr>
<td>PSP 54-05</td>
<td>350 Clyde-Fiveways rd Clyde</td>
</tr>
<tr>
<td>PSP 54-06</td>
<td>25 Bells rd, Clyde</td>
</tr>
<tr>
<td>PSP 54-07</td>
<td>Lot 2 Hardys rd, Clyde North</td>
</tr>
<tr>
<td>PSP 54-08</td>
<td>200 Tuckers rd, Clyde</td>
</tr>
<tr>
<td>PSP 54-09</td>
<td>420 Berwick-Cranbourne rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-10</td>
<td>444 Berwick-Cranbourne rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-11</td>
<td>275 Tuckers rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-12</td>
<td>60 Hardys rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-13</td>
<td>325 Tuckers rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-14</td>
<td>1625 Ballarto rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-15</td>
<td>195 Tuckers rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-16</td>
<td>290 Pattersons rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-17</td>
<td>130 Tuckers rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-18</td>
<td>1655 Ballarto rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-19</td>
<td>25 Tuckers rd Clyde</td>
</tr>
<tr>
<td>PSP 54-20</td>
<td>289 Pattersons rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-21</td>
<td>300 Tuckers rd Clyde</td>
</tr>
<tr>
<td>PSP 54-22</td>
<td>45 Tuckers rd Clyde</td>
</tr>
<tr>
<td>PSP 54-23</td>
<td>100 Pattersons rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-24</td>
<td>400 Clyde Fiveways rd Clyde</td>
</tr>
<tr>
<td>PSP 54-25</td>
<td>250 Hardys rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-26</td>
<td>1531 Ballarto rd Clyde</td>
</tr>
<tr>
<td>PSP 54-27</td>
<td>440 Berwick-Cranbourne rd</td>
</tr>
<tr>
<td>PSP 54-28</td>
<td>436 Berwick-Cranbourne rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-29</td>
<td>Lot 1- 275 Pattersons rd Clyde North</td>
</tr>
<tr>
<td>PSP 54-30</td>
<td>430 Berwick-Cranbourne rd Clyde North</td>
</tr>
<tr>
<td>Ascribed ID</td>
<td>Address</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>PSP 54-31</td>
<td>&quot;Fernlea&quot; 75 Tuckers rd, Clyde</td>
</tr>
<tr>
<td>PSP 54-32</td>
<td>35 Tuckers rd, Clyde</td>
</tr>
<tr>
<td>PSP 54-33</td>
<td>100 Pattersons Road</td>
</tr>
<tr>
<td>PSP 54-34</td>
<td>30 Hardys rd, Clyde North</td>
</tr>
</tbody>
</table>
Figure 1 - Location and Extent of PSP 53 & 54. Source: GAA.
Figure 2 – Extent of Activity Area in PSP 53 (activity area is shaded and outlined green).
Figure 3 - Extent of Activity Area in PSP 54 (activity area is shaded and outlined green).
4 DOCUMENTATION OF CONSULTATION

4.1 Development of Consultation

There was no Registered Aboriginal Party (RAP) appointed to the activity area at the time the notice of intent to prepare this CHMP was provided to AAV. The Wurundjeri Tribe Land and Compensation Cultural Heritage Council (Wurundjeri) currently have a RAP application before the Aboriginal Heritage Council which includes the activity area. Although the Boon Wurrung Foundation (Boon Wurrung) and Bunurong Land Council (Bunurong) do not have current RAP applications before the council, both groups are recognised as being Traditional Owners for the local area. On the advice of AAV we undertook a process of consultation with the Boon Wurrung, Bunurong and Wurundjeri.

Our approach to the Aboriginal community consultation was to undertake all components of the study in partnership with the Boon Wurrung, Bunurong, and Wurundjeri. In practice, we invited representatives of each group to participate in field work undertaken as part of the Standard Assessment. The representatives of the Aboriginal community stakeholders were consulted about key cultural and landscape values during the survey work.

The representatives that participated in the CHMP, including consultation and on-site attendance is shown in Table 2. The development of consultation with the Boon Wurrung, Bunurong, and Wurundjeri is set out in Table 3.

<table>
<thead>
<tr>
<th>Date</th>
<th>Wurundjeri</th>
<th>Boonwurrung</th>
<th>Bunurong</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/04/2012</td>
<td>Garry Galway</td>
<td>Jaden Williams</td>
<td>Izzy Pepper</td>
</tr>
<tr>
<td>17/04/2012</td>
<td>Garry Galway</td>
<td>Jaden Williams</td>
<td>Izzy Pepper</td>
</tr>
<tr>
<td>18/04/2012</td>
<td>Trevor Downe</td>
<td>Jaden Williams</td>
<td>Izzy Pepper</td>
</tr>
<tr>
<td>19/04/2012</td>
<td>Kerrie Xiberras</td>
<td>No representative available</td>
<td>Izzy Pepper</td>
</tr>
<tr>
<td>20/04/2012</td>
<td>Garry Galway</td>
<td>Jaden Williams</td>
<td>Dan Turnbull</td>
</tr>
<tr>
<td>23/04/2012</td>
<td>Garry Galway</td>
<td>Josh Luttrelle</td>
<td>No representative available</td>
</tr>
</tbody>
</table>
Table 3 - Aboriginal Community Correspondence

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>13/02/2012</td>
<td>NOI submitted to AAV</td>
<td>Email</td>
</tr>
<tr>
<td>05/04/2012</td>
<td>Invited members of the Boon Wurrung Foundation to participate in the survey</td>
<td>Email</td>
</tr>
<tr>
<td>05/04/2012</td>
<td>Invited members of the Bunurong Land Council to participate in the survey</td>
<td>Email</td>
</tr>
<tr>
<td>05/04/2012</td>
<td>Invited members of the Wurundjeri Tribe Land and Compensation Cultural Heritage Council to participate in the survey</td>
<td>Email</td>
</tr>
</tbody>
</table>

4.2 Outcomes of Consultation

The Aboriginal representative groups were closely consulted throughout the development of the CHMP and during the archaeological survey fieldwork. The issues discussed and raised by the groups were considered during preparation of and reflected in the final CHMP.

During the survey, the Aboriginal community representatives were asked to comment on any cultural values, particularly in regards to the importance of remnant native vegetation, traditional food plants and landscape values. Any comments were considered in finalising the report.
RESULTS OF ABORIGINAL CULTURAL HERITAGE ASSESSMENT
5 Desktop Assessment

5.1 Preamble

The information obtained during a Desktop Assessment assists in determining the archaeological potential of the activity area in a number of ways. For example, by considering the types of natural resources which may have been available within the activity area, or in the local region, can provide an indication of why Aboriginal people may have been attracted to the area and the potential resources which they may have exploited. Furthermore, by understanding the natural resources of the local region archaeologists can better identify the potential physical traces of past Aboriginal presence and resource exploitation.

Information about previously recorded archaeological sites in the region can provide an indication of the types and distribution of archaeological deposits and material that may be present, or may once have been present, within the activity area. It also provides comparative information that is essential for the assessment of the archaeological significance of any previously unrecorded archaeological material or deposits.

Environmental and historical information (particularly regarding past and present land use) may indicate the potential for post-depositional processes to have altered or disturbed any archaeological deposits or materials that may have once, or may still, exist within the activity area.

In short, knowledge of the environmental, cultural and historical contexts of the activity area is crucial for understanding the archaeological potential and significance of that area.

5.2 Geographic Region

The Geographic Region for the purpose of this CHMP is the Bunyip River Basin (Figure 4). Although the Basin includes the Mornington Peninsula it has been excluded from the overall Geographic Region for this investigation because it has its
own distinct characteristics which differ to those of the activity area and immediate surrounds.

The Bunyip River Basin is situated within the greater geological feature of the Westernport sunkland or West Gippsland Plains. The West Gippsland Plains are situated between Drouin and Melbourne. The Plains mainly comprise uplifted marine sediments, fluviatile sands and extensive swamp deposits occurring at Koo-wee-rup and Carrum.5

Many rivers and creeks within the Bunyip River Basin originate in the steep Dandenong mountains to the north and drain out through extensive plains into Western Port Bay. The majority of the basin has been cleared for agriculture. Land use within the region is predominantly rural although small urban zones are also present on the northern outskirts of Melbourne.

Prior to European settlement the Koo Wee Rup swamp covered a large area near Koo Wee Rup, Bayles and Drouin South. The swamp system was drained out during the 19th and 20th centuries to open up land for agricultural uses. As a result, many of the rivers and creeks in the area were highly modified by the construction of drains6.

Although the Geographic Region comprises the Bunyip River Basin, the Desktop Assessment summarized in the following sections of this report focuses on Clyde Creek and the surrounding landscape within a 3km radius of the activity area. This provides a suitable region for study because it shares common and distinct topographic, drainage, geological and soil landscape characteristics.

---

5 Hills 1940: 267
Figure 4 - Bunyip River Basin: Geographic Region. Source: Ge Vic.
5.3 Review of Aboriginal Places in the Region

A search of the Victorian Aboriginal Heritage Register (VAHR) was undertaken on the 14th March 2012. Over 1,165 Aboriginal cultural heritage places have been recorded within the Geographic Region, with the majority of sites situated within close proximity to major rivers and creeks, particularly Cardinia Creek. Twelve places have been previously recorded within the activity area (Table 4), and a further seven places are situated within 50 - 200m (Table 5). In the immediate area, Aboriginal cultural heritage places are predominantly located on elevated landforms such as hills and rises, and within close proximity to watercourses, former watercourses and around the edge of swamps/former swamps.

**TABLE 4 - VAHR Recorded Places within the Activity Area**

<table>
<thead>
<tr>
<th>VAHR Site #</th>
<th>Site Type</th>
<th>Site Name</th>
<th>Landform</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>7921-0416</td>
<td>Isolated Artefact</td>
<td>Patterson Road 1</td>
<td>Hill</td>
<td>Cekalovic 2000†</td>
</tr>
<tr>
<td>7921-0499</td>
<td>Isolated Artefact</td>
<td>Clyde Road 1</td>
<td>Floodplain</td>
<td>Muir 2003a</td>
</tr>
<tr>
<td>7921-CN1-11</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North 1</td>
<td>Bank of prior watercourse</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-CN2-11</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North 2</td>
<td>Bank of prior watercourse</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-CN3-11</td>
<td>Isolated artefact</td>
<td>Clyde North 3</td>
<td>Floodplain</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-CNAD1-11</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North Artefact Deposit 1</td>
<td>Sandy rise on floodplain</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-CNAD2-11</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North Artefact Deposit 2</td>
<td>Terrace of prior watercourse</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-CNAD3-11</td>
<td>Isolated Artefact</td>
<td>Clyde North Artefact Deposit 3</td>
<td>Crest of sandy rise</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-CNAD4-11</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North Artefact Deposit 4</td>
<td>Terrace of prior watercourse</td>
<td>Young 2011</td>
</tr>
<tr>
<td>7921-</td>
<td>Stone Artefact</td>
<td>Clyde North</td>
<td>Bank of prior</td>
<td>Young 2011</td>
</tr>
</tbody>
</table>

†This report is unavailable on ACHRIS but summarised in Muir 2003a
*Aboriginal places Clyde North 1-3 and Clyde North Artefact Deposit 1-5 have not yet been recorded on the VAHR and do not have VAHR numbers. (Will be referred to as 7921-CN#-11 to tie these sites to the Young 2011 report)
TABLE 5 - VAHR Recorded Places within 200m of the Activity Area

<table>
<thead>
<tr>
<th>VAHR Site #</th>
<th>Site Type</th>
<th>Site Name</th>
<th>Landform</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>7921-0442</td>
<td>Stone Artefact Scatter</td>
<td>Bath´mun 1</td>
<td>Sandy deposits (market gardening)</td>
<td>N/A</td>
</tr>
<tr>
<td>7921-0887</td>
<td>Stone Artefact Scatter</td>
<td>Cranbourne East 8</td>
<td>Crest of sandy rise</td>
<td>Clarke et al. 2009</td>
</tr>
<tr>
<td>7921-1028</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North 2</td>
<td>Moderate hillslope</td>
<td>Clarke et al. 2009</td>
</tr>
<tr>
<td>7921-1038</td>
<td>Stone Artefact Scatter</td>
<td>Thompson Road 1</td>
<td>Plain</td>
<td>Debney et al. 2009</td>
</tr>
<tr>
<td>7921-1058</td>
<td>Stone Artefact Scatter</td>
<td>Clyde North 3</td>
<td>Gentle hillslope</td>
<td>Clarke et al. 2009</td>
</tr>
</tbody>
</table>

Patterson Rd 1 (VAHR 7921-0416) comprises an isolated surface artefact found near the corner of Clyde-Five Ways and Pattersons Roads.

Clyde Road 1 (VAHR 7921-0499) comprises an isolated surface artefact recorded during a survey for a proposed road realignment\(^9\). The artefact was recorded as a silcrete microlith located at the base of a sandy rise which had been disturbed by market gardening.

Cleveland Park AS1 (VAHR 7921-1129) and Cleveland Park AS2 (VAHR 7921-1130) were recorded on gentle hillslopes during sub-surface investigations for a proposed powerline. Salvage excavation conducted on VAHR 7921-1129 recovered

\(^9\) Differentiated from the Aboriginal place of the same name within the activity area which was recorded by Young 2011

\(^\text{10}\) Differentiated from the Aboriginal place of the same name within the activity area which was recorded by Young 2011

\(^\text{11}\) Muir 2003a
96 artefacts, comprising broken and complete flakes, backed artefacts and a core. Raw materials found included silcrete, quartz and fine-grained silicious material. VAHR 7921-1130 comprises nine artefacts spread over an area of 10m x 2m. The artefacts were all manufactured from silcrete, and types include whole flakes, one angular flake, a Bondi point and a backed blade.

Clyde North 1 (VAHR 7921-CN1-11), Clyde North 2 (VAHR 7921-CN2-11) and Clyde North 3 (VAHR 7921-CN3-11) were recorded during a survey for a proposed residential sub-division. VAHR 7921-CN-1 and 7921-CN-2 were surface artefact scatters of less than 10 artefacts, manufactured from silcrete. VAHR 7921-CN-3 was an isolated surface quartz artefact.

Clyde North Artefact Deposit 1 (VAHR 7921-CNAD1-11), Clyde North Artefact Deposit 2 (VAHR 7921-CNAD2-11), Clyde North Artefact Deposit 3 (VAHR 7921-CNAD3-11), Clyde North Artefact Deposit 4 (VAHR 7921-CNAD4-11) and Clyde North Artefact Deposit 5 (VAHR 7921-CNAD5-11), were recorded during the sub-surface testing for the same residential development. VAHR 7921-CNAD-1 comprised an assemblage of five silcrete artefacts recovered from a sandy rise from a depth of 40cm. VAHR 7921-CNAD2-11 is located on a sandy rise that forms part of a terrace for a former watercourse, and comprises four silcrete and one quartz artefacts recovered between 30-40cm. VAHR 7921-CNAD3-11 is an isolated silcrete flaked piece found at a depth of 13cm from a sandy rise. VAHR 7921-CNAD4-11 consists of eight silcrete and three quartz artefacts recovered from a sandy terrace at depths ranging between 23 and 45cm. VAHR 7921-CNAD5-11 comprises 12 silcrete artefacts (mostlydebitage with one backed blade), recovered from a stream bank between depths of 20 to 50cm.

---

"ibid: 73-9
Young 2011: 23-4
Young 2011: 22-3
Figure 5 - Registered Aboriginal Places within 200m of the Activity Area. Source: Interactive maps.
5.4 Review of Regional Archaeological Context (including reports and published works)

5.4.1 Early Occupation

Physical evidence of Aboriginal occupation within the Geographic Region revealed during archaeological excavations indicates the majority of sites are likely to date from the Holocene period, in particular during the last 6,000 years. This is essentially the period after inundation of Port Phillip Bay and Western Port Bay. The sea-level changes that created Port Philip and Western Port Bays are also likely to have inundated Aboriginal sites that would have existed on the Pleistocene coastline.

There is potential for earlier sites to be present within the Geographic Region, particularly buried at depth within well-preserved soil deposits adjacent to Pleistocene watercourses and wetlands. In particular, undisturbed Pleistocene aeolian landforms distributed across the Geographic Region may contain evidence of Pleistocene occupation.

5.4.2 Intensification during the Holocene Period

The vast majority of dated sites in south-eastern Australia are less than 5,000 years old. It has been argued that this is a result of increased populations and ‘intensification’ of cultural activity during this period. The prevalence of sites dating to the last 5,000 years may also be a result of the last significant rise in sea level, approximately 6,000 years ago. The sea level rise would have submerged many of the older sites along the coastal fringe and forced Aboriginal groups westward to the current coastline.

5.4.3 Stone Artefacts and Raw Materials

Aboriginal stone artefacts are an important source of archaeological information because stone is preserved for long periods of time whereas organic materials such as bone, shell, wood and plant fibres decay. Stone artefacts provide valuable information about technology, economy, cultural change through time and
settlement patterning. Stone has also been used for ‘relative’ dating of sites where direct methods such as carbon dating cannot be applied.

There is considerable ongoing debate about the timing and nature of technological change in stone tool technologies in south-eastern Australia\textsuperscript{15}. In general, however, there is evidence of a shift from large core tools, horsehoof cores and scrapers during the Pleistocene and early Holocene towards the use of ground edged implements and small tools during the mid to late Holocene. In particular, small points, blades and scrapers characterised by a distinctive form of re-touch known as ‘backing’\textsuperscript{16} dominate many mid Holocene assemblages. There is some evidence of a shift in the last 1,500 years towards bipolar reduction technology, increased use of ground-edged artefacts and an increase in the use of bone and shell for making tools. Particular forms such as Eloueras, have been cited as characteristic of this recent period.

Dominant raw material types in the Geographic Region include silcrete, quartz, quartzite and chert, with other materials such as basalt, greenstone, granite, indurated mudstone, sandstone and glass also present\textsuperscript{17}.

5.5 Relevant Regional Studies

This section reviews key regional archaeological investigations to assist in understanding likely archaeological patterning within and near the activity area. The regional studies previously undertaken within the Geographic Region and therefore most relevant to this investigation are summarized below.

5.5.1 Smith 1989 & 1991

A regional study of the Berwick to Bunyip residential growth corridor was undertaken by Smith in 1989. The study area encompassed the Berwick-Pakenham corridor stretching from Dandenong to Bunyip. The aims of the study were to:

\textsuperscript{15}Hiscock & Attenbrow 2002; Hiscock & Attenbrow 1988; Hiscock 2001
\textsuperscript{16}This is known as Bondaian technology and includes formal types such as Bondi Points and Backed Blades
\textsuperscript{17}Smith 1989: 48
• Identify areas of high archaeological potential/significance;

• Determine whether corridor development poses any threat to archaeologically sensitive areas and to make management recommendations for those areas; and

• Consult with local Aboriginal communities to identify and document their views on cultural heritage with regards to the corridor.

Smith also developed a prediction model for site location based on ethnographic data and ground surface survey. The ground surface survey was undertaken over six weeks and identified 62 previously unrecorded sites of which 32 comprised stone artefact scatters, 13 were isolated artefacts, 15 scarred trees and 2 were collections made by local landowners. Smith divided her study area into landscape units comprising: the undulating hills along the northern boundary of the corridor (Landscape Unit 1), the lowland plains within the western port catchment (Landscape Unit 2), the floodplains of the Port Phillip catchment (Landscape Unit 3) and the Cranbourne Sands (Landscape Unit 4). The activity area is situated within Landscape Units 2, 3 and 4. Chert and quartz were identified as being the dominant raw material types for surface stone artefact scatters discovered by Smith within the Berwick-Pakenham corridor. Artefact types present within these scatters consisted of flaked pieces and flakes with less than 2% of the assemblages comprising formal tools.

Smith assessed the following landforms as having archaeological potential within Landscape Unit 2, 3 and 4:

• “The banks, flats and terraces of all permanent creek lines. In addition the temporary tributaries of the following major water courses are also considered to have high potential: Cardinia, Toomuc, Ararat, and Black creeks and the Bunyip River;

• Swamp margins;

18 Smith 1989: 47
• Hill slopes and hill tops overlooking Bunyip River; and

• In particular Cardinia Creek has been identified as the area within Landscape Units 1 & 2 most likely to contain sites”.

• All areas still retaining remnants of the river red gum forests (Landscape Unit 3);

• Cardinia and Toomuc Creek. These areas contain a high number of known sites and a high number of archaeologically significant sites. The sites in this area have the potential to answer research questions about the movement of people between the coast and corridor through the Koo-wee-rup Swamp;

• The Cranbourne Sands. Sites located in this area are different to sites in the remainder of the corridor. The sites appear to be larger and all contain unusually high proportions of quartz;

• The Garfield/Bunyip Area. This area also contains sites that are quite different to the remainder of the corridor and discrete manufacturing sites have been identified in this area. Due to limitations only a limited amount of survey work was undertaken in this area and it is considered that this area warrants further archaeological investigation.

Smith undertook another review of the Berwick-Pakenham corridor in 1991. Although the additional review did not identify any new sites, Smith identified permanent water courses and swamp margins as having higher potential for archaeological sites in accordance with her initial investigation.

19 Smith 1989: 73
20 Smith 1989: 74
21 Smith 1989: 74
22 Smith 1991
5.5.2  du Cros & Rhodes 1998

du Cros and Rhodes produced a report for Melbourne Water Corporation in 1998 which mapped the sensitivity of waterways within and surrounding Melbourne, thus encompassing the Geographic Region. A GIS database was constructed with waterways and floodplains graded into different levels of sensitivity and associated recommendations. The predictive models indicated that many waterways in and around Melbourne should be considered archaeologically sensitive. Sensitive areas identified within the report include high ground near waterways, well drained floodplains and areas containing mature eucalypts.

5.5.3  Feldman & Long 2004

An Aboriginal archaeological desktop review was undertaken by Feldman & Long 2004 for the Casey-Cardinia Growth Area. The overarching aim of the study was to identify, review and analyse the existing information for Aboriginal cultural heritage within the growth area and to provide technical advice to inform development. The key findings of the study were divided into six landscape zones each with discrete archaeological characteristics. Relevant aspects of these findings are provided below:

- **Zone 1: Major Drainage Corridors** - “the foothills and intermediate plains are drained by four major creek complexes (Cardinia, Toomuc, Deep/Pakenham and Ararat/Back Creeks), which have clearly acted as a focus for Aboriginal occupation in the recent past. The creek margins are associated with a range of comparatively dense artefact scatters and scarred trees, within both the surrounding foothills and plains”.

- **Zone 2: Intermediate Plains** - “a slightly elevated band of flat or undulating land bordering the northern foothills (Zone 5) and Koo-Wee-Rup Swamp (Zone 4) to the south, dominated by agriculture and urban development. The archaeological record is dominated by stone artefact occurrences on alluvial..."
flats and outwash fans associated with creek draining the foothills. These occur as comparatively dense, localized scatters and a broader backdrop of diffuse isolated finds. Recent research has demonstrated the potential for buried deposits to occur to a depth of 800mm, possibly in association with a complex of Paleo-landforms (prior and former stream channels), which are obscured below the current alluvial land surface. Scarred trees...may also occur within stands of native remnant vegetation in this zone”».

- **Zone 3: Urban Areas** - “Archaeological sites may still occur in open spaces within these areas, but the scope for identifying high integrity sites is limited”».

- **Zone 4: Koo-Wee-Rup Swamp** - “reclaimed lowlying swamp land in the south of the study area, characterized by irrigated agriculture. This zone has not been assessed in previous studies, and has received no effective survey coverage. On the basis of comparative research we can conclude that archaeological sites, notably surface scatters may occur on ridgelines, terraces and in the minor creek valleys which drain the zone. Scarred trees may occur in areas of remnant native vegetation, though much of this zone has been subject to land clearance and logging”».

- **Zone 5: Northern Foothills** - “steep, dissected foothills to the Great Dividing Range immediately north of the Princes Highway, characterized by agricultural land and regrowth forest. This area has been largely un-assessed in previous studies, and its archaeological values are uncertain. On the basis of comparative research we can conclude that archaeological sites, notably surface scatters may occur on ridgelines, terraces and in the minor creek valleys which drain the zone. Scarred trees may occur in areas of remnant

---

Feldman & Long 2004: 3

Ibid

Ibid
native vegetation, though much of this zone has been subject to land clearance and logging”.

- **Zone 6: Cranbourne Massif and Surrounding plains** - “an area of undulating plains centered on an elevated ridge of volcanics and sedimentary rock (the Cranbourne Massif), characterised by widespread sand drifts (the Cranbourne Sands). Today the area is dominated by irrigated agriculture and urban development. The archaeology is dominated by localized dense scatters of stone artefact associated with sand drifts, ridgelines and drainage lines, within a broader diffuse scatter of isolated artefacts occurring widely in the landscape. Burials may occur in sand deposits”.

### 5.6 Review of Local Studies (Pre Aboriginal Heritage Act 2006)

Prior to the commencement of the *Aboriginal Heritage Act 2006*, archaeological studies were often carried out to satisfy Aboriginal cultural heritage assessment of proposed development and varied significantly in methodology and content in comparison to CHMPs. These assessments generally do not provide as much detailed information as CHMPs, therefore a brief summary of key findings of the investigations undertaken within 3km of the activity area, is provided below.

A total of eleven small scale archaeological assessments have been previously undertaken within 3km of and including the activity area (Murphy*, Marshall and Webb*, Cekalovic*, Bell*, Bell*, Muir*, Muir*, Long et al.*, Long*, Murphy and Rymer*, Murphy*, Murphy and Kurpiel*).

---

* Feldman & Long 2004
* Murphy 2005
* Marshall & Webb 2001
* Cekalovic 2000, in Muir 2003a: 15
* Bell 2001
* Bell 2002
* Muir 2003a
These assessments comprised desktop studies, archaeological surveys and subsurface investigations undertaken prior to proposed infrastructure and residential developments, road realignments and a water pipeline alignment. Several of these local studies were undertaken within, or partially encompassed the current activity area, and these are discussed below.

Cekalovic conducted a survey of the Berwick-Cranbourne Road, which forms the western boundary of the activity area. As part of this investigation, Patterson Road 1 (VAHR 7921-0416), an isolated artefact, was identified.

Bell resurveyed a portion of the Berwick-Cranbourne Road that included the southwest of the activity area as part of his 80m long survey transect. Bell reported that VAHR 7921-0416 was no longer visible, and identified no Aboriginal cultural heritage. However, Bell did conclude that sandy slopes and rises in this region were archaeologically sensitive landforms with sub-surface cultural heritage potential.

Muir also undertook a desktop assessment and survey along the Berwick-Cranbourne Road, part of which encompassed the westernmost 500m of the activity area. As part of this investigation, Muir identified four Aboriginal cultural heritage places which included: three isolated artefacts (VAHR 7921-499, 7921-0501 & 7921-0569) and an artefact scatter (VAHR 7921-0500). All places were associated with sandy rise landforms.

Murphy and Kurpiel completed a due-diligence on a 26ha property located on the southern edge of the activity area. This assessment comprised a desktop analysis and a site visit, which did not identify any Aboriginal cultural heritage.
In addition to those places identified by these studies, local studies have identified an additional 22 Aboriginal places within 3km of the activity area (Marshall and Webb: VAHR 7921-0124, 7921-0125; Bell: VAHR 7921-0426, 7921-0427, 7921-0428, 7921-0429, 7921-0430, 7921-0431, 7921-0432, 7921-0433; Muir: VAHR 7921-0578, 7921-0579; Long: VAHR 7921-0804, 7921-0805, 7921-0806; Murphy: 7921-0492, 7921-0493, 7921-0494; Murphy and Rymer: VAHR 7921-0786, 7921-0832; 7921-0833, 7921-0834). These places comprise 12 artefact scatters and 9 isolated artefact occurrences situated on elevated landforms such as gentle rises, hills and hill slopes, as well as one artefact scatter found on a low-lying floodplain.

5.7 Review of Local Studies (Cultural Heritage Management Plans)

A total of 23 cultural heritage management plans have been undertaken within 3km of the activity area. A summary of these investigations and any implications for the activity area are provided below.

5.7.1 Murphy & Thomson 2008 (10125)

Devine Ltd sponsored a voluntary CHMP for 150 Berwick-Cranbourne Road, Cranbourne, approximately 1.6km west of the activity area. Ground surface survey, undertaken as part of the Standard Assessment, and controlled excavations involving test pit, probes and mechanical transects, undertaken as part of the Complex Assessment did not identify the presence of Aboriginal cultural heritage or any culturally sensitive landforms within the study area. No further specific management other than Contingency plans for unexpected Aboriginal cultural heritage was recommended.

5.7.2 Clarke et al 2009 (10009)

A CHMP was prepared for a residential housing subdivision in Clyde North, immediately west of the activity area and comprised Desktop, Standard and
Complex Assessments. The Desktop Assessment identified the presence of three Aboriginal places (VAHR 7921-0884, 7921-0885, 7921-0887) within the activity area which were relocated during archaeological survey undertaken during the Standard Assessment. Sub-surface testing undertaken during the Complex Assessment identified further Aboriginal cultural heritage associated with these sites and as a result the extent of each site was expanded. An additional three new Aboriginal places (VAHR 7921-1027, 7921-1028, 7921-1058) were also identified during sub-surface testing. Each of the above Aboriginal places comprised stone artefact scatters located on elevated landforms such as small rises and hills.

Raw materials identified within the assemblages included silcrete, quartz, crystal quartz, quartzite and basalt. Salvage was recommended for VAHR 7921-0885, 7921-0887, 7921-1027, 7921-1028 and 7921-1058, which were all assessed as having moderate significance. Two Aboriginal places (VAHR 7921-884 and 7921-1058) were assessed as having low scientific significance. These places had been disturbed through pipeline and dam construction, were not considered in situ, and therefore salvage of these sites was not recommended.

5.7.3 Ford et al 2009 (10881)

The Department of Sustainability and Environment commissioned a CHMP for the development of an 8km long powerline, the eastern extent of which crosses over the activity area. Ten Aboriginal places were located within the area of the proposed pipeline, two of which are located within the activity area (VAHR 7921-1129 & 7921-1130) (see Table 4; Section 5.3). It was recommended that stone artefact scatters (VAHR 7921-1129, 7921-1130, 7921-1131) be conserved where possible, otherwise salvage excavation should occur.

<sup>*</sup> ibid: 68
<sup>†</sup> ibid: 68-74
<sup>‡</sup> ibid: 88
<sup>§</sup> Ford et al. 2009: 16
Salvage was undertaken on Aboriginal places VAHR 7921-1129 and 7921-1132 by Kayandel Archaeological Services. Ninety-six artefacts were recovered from VAHR 7921-1129 between 15 and 25cm depth of a sandy rise. The artefact assemblage included broken and complete flakes, backed artefacts and a core made from silcrete, quartz and fine-grained siliceous materials. VAHR 7921-1132 comprised 319 stone artefacts recovered from a sandy rise, at depths between 60 and 80cm. Silcrete artefacts were found to predominate in the higher spits, and are associated with a radiocarbon date of 4,830 – 4,410 CalBP. Quartz artefacts dominated the lower spits indicating some change in raw material selection over time.

5.7.4 Light 2009 (10569)

Peet Cranbourne Central Syndicate Ltd sponsored a voluntary CHMP for 50 Berwick-Cranbourne Road, Cranbourne East, approximately 2.1km west of the activity area. During ground surface survey, undertaken as part of the Standard Assessment, four stone artefacts were identified. Two of the artefacts were considered to be isolated occurrences comprising a ground axe head (VAHR 7921-0998) and a silcrete core (VAHR 7921-1005). The other two artefacts were found eroding out of sandy rabbit burrows and thought to be representative of a greater sub-surface deposit, therefore further investigation in the form of sub-surface testing across the sandy rises landform present with the study area was considered warranted. Twenty-three transects of 167 shovel test pits were excavated across nine sandy rises. As a result of the excavations ten Aboriginal places were identified (VAHR 7921-0998 to 7921-1007). Two Aboriginal places (VAHR 7921-1007 & 7921-1002) demonstrated high concentrations of stone artefacts (n=18-22), therefore in order to gain additional information on each site further 1 x 1m test pits were excavated within each of the site’s boundaries.

2010
fn ibid: 73-9
fn ibid: 25-51
VAHR 7921-0998: comprised an isolated artefact (ground axe head). The artefact was located in a disturbed context and was assessed as having low scientific significance.

VAHR 7921-0999: comprised a surface and sub-surface stone artefact scatter. The site contained 19 stone artefacts comprising a tool, flakes and angular fragments made from silcrete, quartz and quartzite. Two artefacts were identified during the Standard Assessment within a rabbit burrow, and the remainder of the artefacts were recovered from sandy deposits at depths of 90-900mm. The overall extent of the site was 190 x 107m. The site was assessed as having moderate scientific significance.

VAHR 7921-1000: comprised a sub-surface stone artefact scatter containing silcrete, quartz, and basalt flakes and angular fragments (n=11). The artefacts were recovered from sandy deposits at depths of 500-900mm. The overall extent of the site was 15 x 10m. The site was assessed as having low scientific significance.

VAHR 7921-1001: comprised a sub-surface stone artefact scatter containing 4 stone artefacts (3 silcrete flakes and 1 quartz flake). The artefacts were recovered from sandy deposits at depths of 10-400mm. The overall extent of the site was 14 x 9m and was assessed as having low scientific significance.

VAHR 7921-1002: comprised a sub-surface stone artefact scatter. The site contained 36 stone artefacts (tools, flakes, angular fragments and a core) made from silcrete, quartz, and quartzite. The artefacts were recovered from sandy deposits at depths of 100-600mm. The overall extent of the site was 20x 30m and was assessed as having moderate scientific significance.

VAHR 7921-1003: comprised a sub-surface stone artefact scatter containing 4 stone artefacts (2 flakes and 2 tools composed of silcrete) recovered from sandy deposits at depths of 290-490mm. The overall extent of the site was 45 x 22m and was assessed as having low scientific significance.

VAHR 7921-1004: comprised a sub-surface stone artefact scatter. The site contained 28 stone artefacts (tools, flakes and angular fragments) made from silcrete, quartz
and fine-grained siliceous material. The artefacts were recovered from sandy deposits at depths of 90-500mm and the overall extent of the site was 52 x 17m. The site was assessed as having moderate scientific significance.

VAHR 7921-1005: comprised an isolated stone artefact found during the Standard Assessment. The site comprised a silcrete core found on exposed ground beneath pine trees. The artefact was not considered to be in situ and was assessed as having low scientific significance.

VAHR 7921-1006: comprised a sub-surface stone artefact scatter. The site contained 9 stone artefacts (6 flakes, 1 tool and 2 angular fragments) made from silcrete, quartz and indeterminate material. The artefacts were recovered from sandy deposits at depths of 350-900mm and the overall extent of the site was 8 x 18m. The site was assessed as having low scientific significance.

VAHR 7921-1007: comprised a sub-surface stone artefact scatter. The site contained 86 stone artefacts (3 cores, 6 tools, 9 angular fragments and 68 flakes) made from silcrete, quartz and quartzite. The artefacts were recovered from sandy deposits at depths of 70-860mm and the overall extent of the site was 43 x 26m. The site was assessed as having moderate scientific significance.

The two isolated artefacts (VAHR 7921-0998 & 7921-1005) were collected by the local Aboriginal community (BLCAC) and no further management recommendations were considered warranted. Harm to VAHR 7921-1000 & 7921-1001 was avoided by establishing a buffer zone around each site. Harm to the remaining sites (VAHR 7921-1004, 7921-1002 to 7921-1004, 7921-1006 and 7921-1007) could not be avoided by the activity but as they are assessed as having low scientific significance no further investigation was considered warranted50.

5.7.5 Long et al 2009 (10008)

Blue Hills Residences sponsored a CHMP for a proposed retirement village, golf course and shopping centre in Cranbourne East51, approximately 0.3km west of the...
activity area. A Desktop, Standard and Complex Assessment was undertaken as part of the investigation. Three Aboriginal places (VAHR 7921-0804, 7921-0805, 7921-0806) were discovered during an initial phase of sub-surface testing that consisted of auger and mechanical excavation. Stone artefacts were recovered from sandy deposits from depths ranging between 35 and 70cm.

VAHR 7921-0804 and 7921-0805 were further investigated through hand excavation, and described as low density stone artefact scatters. VAHR 7921-0806 comprised an isolated hornfels artefact and was conserved within a reserve. Silcrete was the dominant raw material recovered, followed by quartz. The low density of stone artefacts led Long et al to assess the above Aboriginal places as being of low scientific significance. However, the location of the Aboriginal places on sandy rises confirmed models for the region that stone artefacts were more likely to be found in this landform than the clay-rich flats.

5.7.6 Schell et al 2009 (10091)

A CHMP was prepared for a residential subdivision immediately west of the activity area. Two previously recorded places (VAHR 7921-0881 & 7821-0883), comprising a stone artefact scatter and scarred tree were reinvestigated, and one new place (VAHR 7921-1008), also comprising a stone artefact scatter was identified as part of the Standard and Complex Assessments. VAHR 7921-0881 comprised 75 stone artefacts manufactured from quartz, silcrete, basalt and sandstone, recovered from an Aeolian sand unit and VAHR 7921-0883 was a scarred tree in poor condition. VAHR 7921-1008 consisted of 36 stone artefacts manufactured from silcrete, quartz and basalt, also associated with an Aeolian sand unit. Both stone artefact scatters were assessed as having moderate scientific significance. Conservation was

---

55 ibid: 43-6
56 ibid: 4
57 Schell et al. 2009: 5
58 ibid: 7
recommended where possible, but where harm could not be prevented, salvage excavation was suggested.

5.7.7 Gilchrist 2011 (10646)

A CHMP was sponsored by the Brookford Estate for a residential subdivision, approximately 0.8km west of the activity area, which partially overlaps with the areas investigated by Schell et al and Clarke et al. The investigation comprised Desktop, Standard and Complex Assessments, with the Complex Assessment involving a combination of auger and shovel testing. The activity area had previously been investigated by Barker, in which Aboriginal places VAHR 7921-880, 7921-0881, 7821-0882, 7921-0883, 7921-0884, 7921-0885, 7921-0886, 7821-0887, seven stone artefact scatters and one scarred tree were recorded. A further two Aboriginal places (VAHR 7921-1056 & 7921-1057) were identified by Gilchrist. Both places were located on sandy rises. VAHR 7921-1056 was a stone artefact scatter comprising silcrete, quartz, quartzite and crystal quartz artefacts. Management recommendations for this place included a combination of conservation and some salvage, where harm could not be prevented. VAHR 7921-1057 comprised an isolated surface artefact with no sub-surface component. It was therefore recommended that this artefact be collected and relocated.

5.7.8 Murphy & Rymer 2008 (10045)

A voluntary CHMP was prepared for a 6km sewerage pipeline in Officer South, approximately 3km north of the activity area. The Desktop Assessment identified the pipeline easement as archaeologically sensitive due to its proximity to Cardinia Creek and its tributaries. The Standard Assessment relocated redeposited material from the monitoring of two previously identified sites (VAHR 7921-0737 & 7921-
0801), which were collected\. The Complex Assessment identified two sub-surface Aboriginal places (VAHR 7921-0866 & 7921-0867) and expanded one previously recorded Aboriginal place (VAHR 7921-0739).

The assemblage recovered from VAHR 7921-0739 comprises 156 artefacts manufactured from silcrete, quartz, crystal quartz and quartzite, with a range of artefact types identified, including cores, tools and debitage. The density of this site, combined with the range of tools lead to the place being ascribed moderate scientific significance. Conservation of this site and other sensitive areas along Cardinia Creek was recommended\.  

The low density of artefacts recovered from Aboriginal places VAHR 7921-0866 and 7921-0867 led to these sites being assigned low scientific significance ratings. Salvage was recommended for both these Aboriginal places\.  

5.7.9 Fiddian & Lawler 2007 (10084)

Stockland Development commissioned a CHMP for a development in Cranbourne, approximately 2km north-west of the activity area. Survey of the proposed development area identified archaeologically sensitive areas comprising undisturbed groves of trees, and a rise of Cranbourne Sands\. Sub-surface testing identified four Aboriginal cultural heritage places (VAHR 7921-0689, 7921-0690, 7921-0691, 7921-0692), all associated with the sandy rise landform\.  

VAHR 7921-0689 and 7921-0690 comprise isolated artefacts recovered from the top 5cm of ploughed soil. One of these artefacts (VAHR 7921-0689) was located at the base of the sandy rise, and was presumed to have washed downslope. Due to the
poor condition and low density of these sites, they were assessed as containing low scientific significance\(^\text{ibid: 54}\).

VAHR 7921-0691 comprises 22 artefacts manufactured from stone and modern glass. These artefacts were recovered from depths of 0.35m, and due to the density and undisturbed context of the sandy rise, were assessed as having moderate significance. VAHR 7921-0692 comprises 31 artefacts, including 18 yellow silcrete artefacts located within a 1m\(^2\) area, interpreted as deriving from a single knapping event. This place was therefore assigned a high significance rating. As harm could not be avoided for any of the cultural heritage identified, salvage was recommended for all four Aboriginal places\(^\text{ibid: 39-40}\).

### 5.7.10 Vines 2008 (10168)

Stockland commissioned a CHMP for a residential development in Cranbourne, approximately 2.8km north-west of the activity area. Investigations comprised surface survey and a combination of mechanical and shovel excavation methods. Four Aboriginal cultural heritage places (VAHR 7921-0861, 7921-0862, 7921-0868, 7921-0869) were identified on the sandy rises landform. No cultural heritage was located in low-lying areas associated with former swampland. Artefacts were recovered from depths between 10 and 95cm, with the majority of the artefacts recovered between 30 and 50cm\(^\text{Vines 2008: 51}\). Despite the high density of artefacts (20/m\(^2\)) and the interpretation of VAHR 7921-0861 as a base camp, all places were regarded as being of low significance due to condition and representativeness\(^\text{ibid: 59}\). Salvage was recommended for all Aboriginal cultural heritage places\(^\text{ibid: 61}\).

### 5.7.11 Adams & Stevens 2008 (10222)

A CHMP was completed for a residential subdivision in Cranbourne, approximately 1.6km north-west of the activity area. A program of survey, shovel testing and
mechanical excavation was employed across the low ridge line landform that made up the study area. No Cranbourne Sand landforms were identified. One silcrete artefact (VAHR 7922-0925) was located during mechanical testing, as well as a possible quartz manuport. Due to the amount of testing conducted and the low significance assigned to the isolated artefact, no further excavation was recommended.

5.7.12 Murphy & Dugay-Grist 2009 (10531)

A CHMP was prepared for a residential estate in Cranbourne North, approximately 1.3km north-west of the activity area. Investigations as part of this CHMP identified nine sub-surface Aboriginal cultural heritage places, all of which were located on the archaeologically sensitive Cranbourne Sands landform. Aboriginal places identified comprise:

VAHR 7921-0986, a low density artefact scatter comprising four silcrete artefacts.

VAHR 7921-0987, a low density artefact scatter comprising 30 stone artefacts, manufactured from crystal quartz, quartz, quartzite and silcrete. Artefact types identified include flakes, angular fragments and tools such as backed blades.

VAHR 7921-0988, a low density artefact scatter comprising 48 stone artefacts manufactured from quartz, quartzite, silcrete and basalt.

VAHR 7921-0989, a low density artefact scatter comprising 44 stone artefacts manufactured from quartz, crystal quartz, quartzite, silcrete and basalt.

VAHR 7921-0990, a low density artefact scatter comprising 5 artefacts manufactured from quartz, quartzite and silcrete.

\*Adams & Stevens 2008: 33
\*ibid: 57
\*ibid: 68
\*Murphy & Dugay-Grist 2009: 9
\*ibid: 42
\*ibid: 43
VAHR 7921-0991 and 7921-0992, both comprising isolated basalt artefacts.

VAHR 7921-0993, a low density artefact scatter comprising 15 silcrete and quartz stone artefacts.

VAHR 7921-0994, a low density artefact scatter comprising 27 artefacts manufactured from silcrete and quartz, that includes some backed artefacts.

Analysis undertaken on the material recovered from these Aboriginal places identified an upper (0-60cm) and lower (70-110cm) phase of artefact deposition across the Cranbourne Sands landform. As the average artefact density for each place was less than 1/m², each place was interpreted as a background scatter, and significance assessments were assigned as either low or very low. Management recommendations comprised the avoidance of harm to two places (VAHR 7921-0986, 7921-0989), and the salvage of two places with potential for further research (VAHR 7921-0987, 7921-0988). The remaining Aboriginal places (VAHR 7921-0990, 7921-0991, 7921-0992, 7921-0993, 7921-0994) were considered to have been sufficiently defined during testing and no further excavation was required.

5.7.13 Light et al. 2009 (10568)

Peet Gippsland Highway Pty Ltd sponsored a CHMP for a proposed residential estate, road and recreational reserve in Cranbourne East, approximately 2.5km west of the activity area. No Aboriginal cultural heritage was located during the Standard Assessment, however, 8 Aboriginal places were identified during the Complex Assessment. All sub-surface places were identified within sand deposits, with the majority of the artefacts being located between depths of 50-60cm.
suggesting ages of less than 12,000 years ago. Aboriginal places identified during the Complex Assessment comprise:

VAHR 7921-1041: 103 stone artefacts manufactured from silcrete, quartz, fine-grained siliceous, hornfels recovered from a large sandy rise. The high artefact density and condition of the place lead to the assessment of the place as having moderate scientific significance.

VAHR 7921-1042: 9 stone artefacts manufactured from silcrete, quartz, fine-grained siliceous and quartzite recovered from a small sandy rise.

VAHR 7921-1043: artefact scatter comprising 3 silcrete artefacts recovered from the base of a sand dune.

VAHR 7921-1044, 7921-1045: low density stone artefact scatters comprising 17 and 12 stone artefacts respectively, including raw materials such as silcrete quartz, quartzite, crystal quartz and chert, recovered from a dune slope.

VAHR 7921-1046: artefact scatter comprising 8 stone artefacts manufactured from silcrete, quartz, crystal quartz and fine-grained siliceous, recovered from the crest of a sand dune.

VAHR 7921-1047, 7921-1048: low density artefact scatters comprising 4 and 7 artefacts respectively, manufactured from silcrete, quartz and quartzite, recovered from a low sandsheet.

With the exception of VAHR 7921-1041, all other Aboriginal places were assessed as being of low scientific significance, due to low density and representativeness.

\[ \text{ibid: 54} \]
\[ \text{ibid: 58} \]
\[ \text{ibid: 59} \]
\[ \text{ibid: 60-61} \]
\[ \text{ibid: 61} \]
\[ \text{ibid: 62} \]
\[ \text{ibid: 63} \]
\[ \text{ibid: 64} \]
Management recommendations included partial conservation and salvage for VAHR 7921-1041 and 7921-1045, whereas the remaining Aboriginal places were considered to have been sufficiently defined during the Complex Assessment and no further management actions were required.

### 5.7.14 Murphy & Thomson 2009 (10574)

Murphy & Thomson completed a CHMP for a proposed school, sponsored by the Department of Education and Early Childhood Education. The study area for this investigation is located approximately 1km west of the activity area. Extremely poor visibility was encountered during the Standard Assessment, and one Aboriginal cultural heritage place (VAHR 7921-0975) was identified during the Complex Assessment. VAHR 7921-0975 comprises 63 artefacts recovered from within the ploughed unit on a slope, between depths of 20 and 33cm. The Aboriginal place was assessed as being of low scientific significance due to their presence within a disturbed soil profile and the low density of artefacts spread over an area 35m x 15m. VAHR 7921-0975 was considered to have been sufficiently salvaged during the Complex Assessment and no further excavation was required.

### 5.7.15 Murphy & Rymer 2009a (10659)

Hunt Club Pty Ltd sponsored a CHMP for a residential subdivision in Cranbourne East, approximately 1.9km west of the activity area. The investigation area for this study comprised the intersection of a low Cranbourne sand dune and Carrum swamp landforms. During the Standard Assessment, an isolated silcrete artefact (VAHR 7921-0664) was located on the surface outside of the study area. Complex

---

*ibid: 71
*Murphy & Thomson 2009: 1
*ibid: 28
*ibid: 32
*ibid: 35
*Murphy & Rymer 2009a: 30
Assessment identified two sub-surface Aboriginal places (VAHR 7921-1080; 7921-1081) on the elevated dune landform.

VAHR 7921-1080 comprised 13 silcrete stone artefacts recovered from the upper 30cm of the soil profile. VAHR 7921-1081 comprised 24 stone artefacts, manufactured from silcrete, quartz and crystal quartz, recovered from the upper 45cm of the soil profile. Both Aboriginal places were characterised as low density scatters and evaluated as having low scientific significance. A proportion of VAHR 7921-1080 and 7921-1081 were recommended to be preserved within a heritage conservation zone.

5.7.16 Murphy & Rymer 2009b (10865)

Murphy & Rymer prepared a CHMP adjacent to the above (Murphy & Rymer 2009a), for a residential subdivision, approximately 1.6km west of the activity area. The investigated area comprised a ridge of Cranbourne Sand and the swampy low-lying plains. An isolated silcrete flake (VAHR 7921-0664) was recorded on the surface during the Standard Assessment. The Complex Assessment expanded VAHR 7921-0664 to incorporate 54 sub-surface stone artefacts, as well as locating an additional sub-surface Aboriginal cultural heritage place; VAHR 7921-1119.

VAHR 7921-0664 comprised artefacts manufactured from silcrete, crystal quartz and basalt, recovered from an area spanning 50m by 20m, from depths up to 95cm. The average low artefact density was used to evaluate the place as containing low scientific significance. As harm could not be avoided at this location, a salvage program was recommended to further investigate this place.

---

100 ibid: 42-44
101 ibid: 54
102 Murphy & Rymer 2009b: 42
103 ibid: 39
104 ibid: 51-54
105 ibid: 66-67

AHMS
ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD
October 2012
VAHR 7921-1119 comprised an isolated silcrete scraper recovered from a shovel test probe from a depth of 30cm. This artefact was ascribed low scientific significance, and was considered to be isolated, therefore no further salvage was required\(^\text{106}\).

### 5.7.17 Murphy & Rymer 2009c (10939)

A CHMP was prepared for a residential subdivision in Officer, approximately 2.9km north-east of the activity area. One sub-surface Aboriginal place (VAHR 7921-1137) was located as part of this investigation, comprising 13 artefacts manufactured from silcrete and quartz\(^\text{107}\). The artefacts were recovered from a single shovel test probe from the upper 30cm of a sandy silt horizon on the lowland plain. Extent testing recovered no further cultural heritage material\(^\text{108}\). VAHR 7921-1137 was therefore characterised as a low density scatter of material with limited research potential, and assessed as being of low scientific significance\(^\text{109}\).

### 5.7.18 Murphy & Rymer 2011a (10857)

A CHMP was prepared for a residential and retail subdivision in Clyde North, approximately 1.3km north of the activity area. Standard Assessment did not locate any Aboriginal cultural heritage, and identified two landforms: the alluvial plain, and the slopes of a gentle rise\(^\text{110}\). Complex Assessment located one sub-surface Aboriginal place (VAHR 7921-1174) on the gentle rise landform. VAHR 7921-1174 comprised 3 silcrete artefacts recovered from depths between 25 and 30cm\(^\text{111}\). The low density of artefacts recovered from a ploughed context was used to assess the place as being of low significance\(^\text{112}\). The place was considered to have been

\(^{\text{106}}\) ibid: 66-67  
\(^{\text{107}}\) Murphy & Rymer 2009c: 43-4  
\(^{\text{108}}\) ibid: 46  
\(^{\text{109}}\) ibid: 47  
\(^{\text{110}}\) Murphy & Rymer 2011: 45  
\(^{\text{111}}\) ibid: 60-62  
\(^{\text{112}}\) ibid: 65
sufficiently salvaged during the Complex Assessment and therefore no further management actions were required. 

5.7.19 Murphy & Rymer 2011b (11636)

Murphy and Rymer prepared a CHMP comprising Desktop, Standard and Complex Assessments, for a proposed residential subdivision in Clyde North, approximately 1km north of the activity area. It was suggested that as the area under investigation had been frequently inundated in the past, and the archaeological potential was therefore very poor. The area was investigated in two land units, the floodplain and alluvial plain. No Aboriginal cultural heritage was located on either of these landforms, which in some areas had been built up by introduced fill.

5.7.20 Day 2010 (11051)

A CHMP was prepared for a residential subdivision within a PSP, just north-west of the activity area. Desktop, Standard and Complex Assessments were undertaken as part of these investigations, which divided the PSP area into four land units: Cranbourne Sands, Gentle/flat terrain, Gentle hill and slopes, and Alluvial terrain. During the Standard Assessment, the conservation area for a previously recorded site was identified (VAHR 7921-0989), and recommendations made for this conservation to be ongoing.

During Complex Assessment, one sub-surface Aboriginal place was located within the Gentle hill and slopes land unit (VAHR 7921-1158). This place comprised 2 quartz artefacts recovered from a depth of 47cm on a gentle hill slope. This place was assigned a low significance rating based on a scoring system of contents, condition and representativeness. The Complex Assessment also revealed that the

\[ \text{\textsuperscript{113}} \text{ibid: 76} \]
\[ \text{\textsuperscript{114}} \text{Murphy & Rymer 2011b: 1} \]
\[ \text{\textsuperscript{115}} \text{ibid: 44} \]
\[ \text{\textsuperscript{116}} \text{ibid: 56} \]
\[ \text{\textsuperscript{117}} \text{Day 2010: 45} \]
\[ \text{\textsuperscript{118}} \text{ibid: 32} \]
\[ \text{\textsuperscript{119}} \text{ibid: 24} \]
Cranbourne Sands landform was not as extensive as suggested by published Geological mapping. Day therefore suggested that the low density of cultural heritage material encountered as part of the investigations was due to the preferred use of the more prominent Cranbourne Sand landforms to the west by past Aboriginal groups.

5.7.21 Stevens & Vines 2011 (11091)

A CHMP was prepared for the residential and mixed-use development of a PSP area in Officer, approximately 3km north of the activity area. The investigated area comprised two land units: gentle rises on the open plain, and swamp floodplain. Five Aboriginal places (Surface: VAHR 7921-590; Sub-surface: 7921-0630, 7921-0631, 7921-0637) were previously recorded within the PSP, and a further three new sub-surface places (VAHR 7921-1225, 7921-1226, 7921-1227) were all located on the elevated open plain landform. Raw materials recovered were predominantly silcrete, with low numbers of quartz, quartzite and chert also recorded. All sub-surface artefacts were observed to have derived from the interface between the A1 and A2 soil horizons, at approximately 25-40cm depth. Significance was assessed at a local and regional level, and all places were assessed as having low scientific significance due to the low density of artefacts with limited research potential.

Management recommendations comprised the salvage of VAHR 7921-1226 to investigate the potential for further artefacts within a minimally disturbed context. All other Aboriginal places were considered to have been sufficiently salvaged during the Complex Assessment testing, and no further management actions were required.

---

ibid: 31
Steven & Vines 2011: 79
ibid: 74
ibid: 112-118
ibid: 136
ibid: 120
ibid: 147
ibid: 151
5.7.22 Mathews et al. 2010 (11318)

A CHMP was prepared for a proposed residential subdivision with associated infrastructure in Cranbourne East, approximately 2.8km west of the activity area. The area investigated comprised the Cranbourne Sands landform, which was analysed in two units, a low rise, and the flat terrain. As part of the Complex Assessment, one Aboriginal cultural heritage place (VAHR 7921-1220) was identified on the flat land unit. VAHR 7921-1220 comprised 3 stone artefacts, manufactured from silcrete and quartz, recovered from depths between 48 and 74cm. This Aboriginal place was assessed as being of low scientific significance, and it was recommended that no specific management actions were required.

5.7.23 Murphy & Kennedy 2010 (11380)

Hunt Club Pty Ltd sponsored a CHMP for a residential and retail development in Cranbourne East, approximately 2.3km west of the activity area. The investigated area was highly disturbed, containing a water drain and imported fill soils. Complex Assessment demonstrated that across the area, imported fill overlaid sterile clay. No Aboriginal places were located, and the potential for cultural heritage within the study area considered unlikely.

5.7.24 Patton 2011 (11641)

A CHMP was prepared for a Neighbourhood Activity Centre, comprising a medical centre, retail and infrastructure developments, located in Cranbourne East, approximately 3km west of the activity area. The area was identified to have been highly disturbed by drainage works, lowering the archaeological potential of the

---

Mathews et al. 2010: 5
ibid: 28-9
ibid: 43
ibid: 47
Murphy & Kennedy 2010: 1
ibid: 46-8
ibid: 57
Patton 2011: 6
area under investigation\textsuperscript{136}. Standard and Complex Assessments demonstrated that one previously recorded Aboriginal place (VAHR 7921-0364) had been destroyed by these works, and that no new Aboriginal cultural heritage was located in the study area\textsuperscript{137}.

5.7.25 Barker & Hislop 2011 (11722)

A CHMP was prepared for a residential subdivision in Cranbourne East\textsuperscript{138}, approximately 2.5km west of the activity area. No Aboriginal cultural heritage was located during the Standard Assessment, and two sandy rises within the area were identified as having archaeological potential\textsuperscript{139}. Complex Assessment of these landforms located two Aboriginal places, one low density scatter (VAHR 7921-1319) across the crest of a small rise, and an isolated artefact on the rise slope (VAHR 7921-1320)\textsuperscript{140}.

VAHR 7921-1319 comprises 23 artefacts, predominantly manufactured from silcrete, with 1 mudstone artefact\textsuperscript{141}. VAHR 7921-1320 comprises an isolated silcrete artefact\textsuperscript{142}. Due to the low density of artefacts, and the commonness of these place types, VAHR 7921-1319 and 7921-1320 were assessed as having low scientific significance\textsuperscript{143}. As both places were collected through testing, no further management actions were recommended\textsuperscript{144}.

\textsuperscript{136} ibid: 31
\textsuperscript{137} ibid: 31-35
\textsuperscript{138} Barker & Hislop 2011: 1
\textsuperscript{139} ibid: 31
\textsuperscript{140} ibid: 58
\textsuperscript{141} ibid: 63
\textsuperscript{142} ibid: 68
\textsuperscript{143} ibid: 71-72
\textsuperscript{144} ibid: 74-76
5.7.26 Young 2011 (In Prep)

A CHMP is currently in preparation on behalf of Campbell Property Developments Pty Ltd for 2100 Thompsons Road and 1425 Pound Road; a 170ha property situated within the north-eastern section of PSP 53 (Figure 2; Property ref: 53-01). Young characterises the topography of the property as comprising a low-lying floodplain landform in the north and a comparatively higher sandy landform (rise) in the southern section. The sandy landform is further described as being terraced and comprising a sequence of elevated flat ground and gentle declines. An unnamed former watercourse bisects the property and it is noted that the southern section of this watercourse has been dammed\(^{145}\). The site prediction model generated in the Desktop Assessment indicates that Aboriginal cultural heritage (surface or subsurface) is likely to occur within the study area, especially in areas containing sandy well-drained soils and low rises.

An archaeological survey was conducted as part of the Standard Assessment component of the CHMP. Three Aboriginal places were identified as a result of the survey and comprised two stone artefact scatters and one isolated surface artefact. The sites have not yet been recorded with AAV and therefore do not have VAHR numbers, however, the sites have been called: Clyde North 1, Clyde North 2 and Clyde North 3 ((\textsuperscript{*}Please note: we have referred to Aboriginal places Clyde North 1-3 throughout this report as 7921-CN1-11, 7921-CN2-11 & 7921-CN3-11 (See Section 5.3 and Figure 5 for locations)). 7921-7921-CN1-11 & 7921-CN2-11 were located on the banks of the prior watercourse and 7921-CN3-11 was found on the low-lying floodplain landform. There were less than 10 artefacts in both VAHR 7921-CN-1-11 and 7921-CN-2-11 and all were manufactured from silcrete. VAHR 7921-CN-3 was an isolated surface quartz artefact.

The higher sandy landform, the area surrounding the former watercourse and discrete rises within the low-lying floodplain were highlighted as landforms with potential to contain Aboriginal cultural heritage. It was therefore recommended that

\(^{145}\) Young 2011: 7
further investigation in the form of sub-surface excavation be undertaken within the study area.

The Complex Assessment involved excavation of: five 1 x 1m test pits, two 0.5 x 0.5m test pits, two 0.5 x 0.5m shovel probe test pit radials and twelve 2 x 6m backhoe transects. The test pits/probes/transects were placed within landforms considered to have potential for Aboriginal cultural heritage (large sandy rise, terraces on sandy rise, prior steam channel and discrete rises on the floodplain landform). One test pit was excavated within the low-lying floodplain landform along with all of the backhoe transects. As a result of the excavations five Aboriginal places were identified. The sites have not yet been recorded with AAV and therefore do not have VAHR numbers, however, the sites have been called: Clyde North Artefact Deposit 1 to 5 ((*Please note: we have referred to Aboriginal places Clyde North Artefact Deposit 1-5 throughout this report as 7921-CNAD1-11, 7921-CNAD2-11, 7921-CNAD3-11, 7921-CNAD4-11, 7921-CNAD5-11 (See Section 5.3 and Figure 5 for locations)).

VAHR 7921-CNAD-1-11 comprised an assemblage of five silcrete artefacts recovered from a sandy rise from a depth of 40cm. VAHR 7921-CNAD2-11 is located on a sandy rise that forms part of a terrace for a former watercourse, and the assemblage comprises one quartz and four silcrete artefacts recovered from depths of 30-40cm. VAHR 7921-CNAD3-11 is an isolated silcrete flaked piece found at a depth of 13cm from a sandy rise. VAHR 7921-CNAD4-11 consists of eight silcrete and three quartz artefacts recovered from a sandy terrace at depths ranging between 23 and 45cm. VAHR 7921-CNAD5-11 comprises 12 silcrete artefacts (mostlydebitage with one backed blade), recovered from a stream bank between depths of 20 to 50cm.

The Complex Assessment demonstrated that the landforms identified as having archaeological sensitivity during the Desktop and Standard Assessments contain Aboriginal cultural heritage. Young recommends that further sub-surface testing is undertaken within these areas to establish the extent, nature and significance of each of the Aboriginal Places146.

146 Young 2011: 24
Young describes the sandy rise situated in the southern half of the activity area as being of low archaeological sensitivity as only one isolated artefact was recovered from the landform through test excavations. The terrace landform situated on the eastern side of the sandy rise is considered to have medium/moderate sensitivity as five stone artefacts were recovered from excavations. The prior stream channel and surrounds, as well as the discrete sandy rises situated within the floodplain are considered to have high archaeological sensitivity as the excavation of three test pits recovered 28 stone artefacts\textsuperscript{147}.

Heritage Insight also engaged van de Graff & Associates Pty Ltd to survey the soils and landforms of their study area to understand the underlying geomorphology. The lower southern area of the property was interpreted as once being a larger floodplain with the presence of former meandering channels. The migration of the meandering channels is believed to be the cause of the small discrete sandy147teraces situated to the east of the floodplain area.

\textsuperscript{147} Young 2011: Map 7
5.8 Aboriginal Ethno-history

5.8.1 Preamble

This section presents a history of Aboriginal occupation and use of the activity area based on documentary evidence and early ethnographic records. This information is important in providing a context to archaeological investigations, to assist in interpreting the results of the archaeological test excavations and to aid in assessing the cultural heritage values of the area.

5.8.2 The Bun wurrung Language Group

Prior to permanent European settlement in Victoria, the activity area was occupied by people of the Bun wurrung (also Bunurong, Boon wurrung and various other spellings). The Bun wurrung clan which appears to have had ties to the activity area were the Mayune balug (Clark 1990:364-365).

5.8.3 Food Resources

Although traditional food gathering practices and access to resources were restricted by European occupation of the region at the time, ethno-historical sources record Aboriginal exploitation of a range of plant and animal foods during the contact period. Food resources would have been comparatively plentiful across the region in the pre-contact period. Plant foods comprised an important part of the diet of the local Bun wurrung people, having the advantage over animal resources in that they provided a resource that was ‘more regular and reliable than that derived from hunting or fishing’.

Of the wide variety of plant foods commonly exploited by local Indigenous peoples, the tuber of the Yam Daisy, or Murnong, was commented upon by European observers as providing a staple food resource. Thomas records the Murnong being eaten both raw (from younger plants), and after being cooked in the ashes of a fire when more mature and fibrous. Tubers such as that of the Yam Daisy provided a

---

148 Presland 1983: 35
149 After Goulding 1988: 21
valuable source of carbohydrate for Indigenous populations of the region in spring and early summer, supported by other common plant foods such as the ferntree (bracken) pulp and 'some parts of a thistle'.

Aboriginal people of Port Phillip also readily exploited the fresh and salt-water animal resources of the region. Thomas noted the plentiful supply of eels in the district during the summer, describing 'sufficient numbers to support the Yarra Tribe for one month each year', which were easily caught with the aid of a spear. Fish were obtained through the use of nets and weirs, and an early (1803) account, prior to European settlement of the area, records the presence of a weir along the Maribrynong River in the vicinity of Keilor. Middens present both along the coastline and lining inland rivers and streams attest to the exploitation of shellfish as an additional food resource.

Local birdlife, reptiles and mammals also provided potential food resources for the *Bun wurrung*, with kangaroo and possum a popular staple. Gaughwin details an instance where at a gathering of *Bun wurrung*, and *Daung wurrung* tribes, part of the group travelled to the Dandenongs in order to hunt, procuring 'kangaroo, porcupine, 'native bear or sloth', wombats, oppossum and fish.'

5.9 Review of Thomas Journal to identify Aboriginal use and occupation in the local area

5.9.1 Movements and Camps

The purpose of the current section is to review selected sections of the William Thomas Journals held in the Mitchell collection at the State library of NSW that throw light on specific aspects of Aboriginal occupation and use in and near the activity area. The primary research focused on a journey Thomas took with the *Bun...
wurrung people in his role as Protector of Aborigines between January - May 1840. This particular journey passed through the local area, either through or very near the activity area.

Thomas’ journey commenced at Tuerong on 4 February 1840 and ended at Dandenong on 17 March of that year. The final stages of the journey took Thomas from Ruffy’s Station “Mayune” (located immediately east of Cranbourne) northeast towards Cardinia Creek past ‘Mr Bates’ Station (James Bathe) to O’Connor’s Station (Terence O’Connor) - a distance of approximately 9km (refer to Figure 6). O’Connor’s Station was located immediately southeast of Minta Farm and extended across to Cardinia Creek. O’Connor’s Station appeared to be a favoured stopping place since the party was well received and work was made available to members of the group. A reasonable road also extended from the Station to Dandenong and thence to Melbourne.

---

155 Thomas Journal 1840 ZML MSS 214 Item 2 (28) Journal January to May 1840
Figure 6 - Undated plan (William Thomas) showing the road from Ruffy’s Mayune Station to O’Connors Station and thence to Dandenong. O’Connors Station is indicated by red arrow.

156 William Thomas, Protector of Aborigines, Victoria. Papers 1832-1902 Mitchell Library ZML MSS214/22 (28) fol 547
5.9.2 O’Connor’s Station (Narmnup)

One of the principal documents regarding the survival of Aboriginal names-places in this region is Hilary Sullivan’s 1981 report. Figure 3 of Sullivan’s report indicated the presence of a named Aboriginal place within the general vicinity of the activity area. The site, identified as a camping place, was named in Sullivan (1981) as Nurmnup based on information on a map prepared in 1841 by the Assistant Protector of Aborigines, William Thomas (refer to Figure 7). On examining the Thomas papers the name Nurmnup was found to be Narmnup. It was also clear that this place was not designated as a camping place per se as were other places shown on Thomas’ maps. The information shown on the map was prepared by Thomas in January 1841 and was a compilation of the results of a journey he had undertaken the previous year with a party of Bun wurrung people.

Figure 7 - Thomas’ map showing Narmnup and O’Connor’s Station. Hilary Sullivan, An Archaeological Survey of the Mornington peninsula, Victoria. VAS Occassional Report Series No. 6 August 1981.

---

158 Sullivan (1981): 120 Figure 3
159 PROV VPRS 10 Inward Registered Correspondence to the Superintendent of Port Phillip District, relating to Aboriginal Affairs map accompanying letter of 29 January 1841
The map prepared by Thomas in January 1841 names 'Mr Bates' (Bathe) Station as *Kemgrim* while O'Connor's Station is designated as *Narmnup*. It is unclear if these were names of the localities in which the stations were located or were formally adopted names for the runs. In a later map (shown on *Figure 8*) Thomas names Cardinia Creek between Berwick and O'Connor's Station as O'Connor's or *Ner Nup* Creek.\(^{160}\) The precise rendering of Narmnup or Ner Nup varies in Thomas' records, as do so many other Aboriginal place names. The term Ner Nup is used on one other occasion in Thomas' journal for 1840. In describing the food situation at one of the encampments on the yallock near the Head of Western port he stated that: *Their supplies of Narnup is abundant but a few possums & on the whole scanty.*\(^{161}\) The use of the term in this context suggests that Narnup/Ner nup is an item of diet.

One of Thomas’ maps of the Melbourne district contains a place-name containing an element similar to Narnup/Ner Nup - this was *Nunnupberrin* or Wrights Creek located in the Burwood-Canterbury region.\(^{162}\) The name Narnup/Nernup may be a contraction of a longer place name that related this place to a particular food resource. Such European contractions of indigenous place names are not uncommon.

\(^{160}\) Thomas Journal 1840 ZML MSS 214 Item 22 (28) fol 533
\(^{161}\) Thomas Journal 1840 ZML MSS 214 Item 2 (28) Journal January to May 1840 entry for 2 march 1840
\(^{162}\) Thomas Journal 1840 ZML MSS 214 Item 22 (28) fol 535
Figure 8 - Undated plan (William Thomas) showing the Gippsland Road (Princes Highway) and Ner Nup Creek (centre), Dandenong Creek at top.163

5.9.3 Cardinia Creek

Cardinia Creek is situated 1.2km east of the activity area but does not appear in the written record as a toponym until the late 1840s. In 1848 the name was rendered as “Cordinia’ Creek” but the spelling Cardinia and Cordinia appear to have been interchangeable at this time.\footnote{The Argus 29 Sep 1848:4, Crown Leases} It has been suggested that the term Cardinia derives from the form “Karr-Din-Yarr” and has been interpreted as meaning “Looking at the Rising Sun” or simply “Rising Sun” although the authority for these interpretations is not explained.\footnote{Beaumont et al (1979): 10} It is also unclear if the term Cardinia referred to a particular section of the creek and was later applied to the whole creekline, or the term was associated with a particular part of the creek. Thomas indicates elsewhere in his papers that particular parts of a single body of water were given separate names.

Two early pastoral runs with Aboriginal names north of O’Connor’s Station were located on either side of Cardinia Creek. In the west was a property referred to as 

\textit{Garem Gam} and on the eastern side of Cardinia Creek was \textit{Gin Gin Bean}. \textit{Garem Gam} was centred on what would later become the Cranbourne PR located approximately 3km west of the activity area. The property extended as far west as present-day Hampton Park. The name \textit{Garem Gam} has been interpreted as a corruption of Carrum Carrum (Garrum Garrum) and is supposed to derive from the Carrum Carrum Swamp (Seaford Swamp).\footnote{Billlis & Kenyon (1974): 209. Thomas names this swamp or lagoon as Low-yee-ung} However, the \textit{Garem Gam} run was approximately 10km east of the Carrum Carrum Swamp so it is possible that Garem Gam is a separate term that has no direct relationship with Carrum Carrum. It is unlikely that the term relates directly to any physical feature within the activity area.
The name of the property east of Cardinia Creek has been rendered as Gin Gin Been, Gin Gin Bean, Ghin Ghin Been and Gin Gin Bein. This property extended eastwards to Toomuc Creek and was originally a run occupied by a Mr Turnbull - occupation may date to as early as 1837. Murphy (2009) states that “Ghin Ghin Bean” (Gin Gin Bin) was said to have meant “Deep Dark Waters” and refers in particular to a deep water hole, one of the best known features of Cardinia Creek”. 167 There were certainly two large waterholes located on the stretch of Cardinia Creek that is situated 1.2km east of the activity area (Figure 9).

Figure 9 – Undated plan showing O’Connor’s Station (bottom right corner), and the two main water holes on Cardinia Creek forming the eastern boundary of Minta Farm (centre top) marked by red arrows. 168

Thomas' map of 1841 however shows Turnbull's Station approximately 5.5km southeast of the activity area on a creekline rendered by him as Tunginbeen. This creek would appear to be the southern end of Cardinia Creek where it broadened

167 Murphy & Kennedy (2009): 14
168 PROV Unit 5404 Roll 25 DANDENONG CRANBOURNE.
into a marsh before entering the Koo-wee-rup.\textsuperscript{169} It remains uncertain if \textit{Gin Gin Bean} and \textit{Tunginbeen} refer to two different places, or are different versions of the same place name.

### 5.9.4 Settlement Patterns

Permanent European settlement in the region altered many aspects of \textit{Bun wurrung} traditional lifestyle within a remarkably short period of time. Thomas' journey of 1840 was in part a continuance of a traditional seasonal movement through the eastern portion of \textit{Bun wurrung} territory modified by new points of interest that were to be either avoided or visited.\textsuperscript{170} The appearance of pastoral stations had greatly altered where \textit{Bun wurrung} people could hunt and camp either through exclusion or attraction. Areas survived within the region that remained largely intact as traditional food gathering areas. This was particularly the case with streams that entered and flowed out of the Koo-wee-rup where vegetation clearance had not been undertaken and where roads had not been formed. Melbourne had also become a particular attraction and it is noteworthy that on finding that a dray was leaving Ruffy's Mayune Station for 'town' a number of Thomas' party chose to leave the group and take advantage of this conveyance. On the following day at O'Connor's Station a further five members of the party took another dray to Melbourne leaving the remainder of the party to travel by foot to Dandenong.\textsuperscript{171}

\textsuperscript{169} Thomas names this portion of the Koo-wee-rup as Panderbuit

\textsuperscript{170} Sullivan (1981)

\textsuperscript{171} Thomas Journal 1840 ZML MSS 214 Item 2 (28) Journal January to May 1840: entry 14 March 1840
Other aspects of life documented by Thomas on his journey included the relationship between the *Bun wurrung* and their neighbours, and particularly the depopulation of the eastern part of the *Bun wurrung* range where it adjoined Gippsland. The journey itself was from water source to water source. On two occasions poor water was encountered and another two instances of absence of water that had been anticipated were recorded. The time spent at any one encampment varied considerably over the 42 nights spent on the journey. Where there was an absence of good water the stay was usually overnight. In one location the party remained for fifteen days and eight at another. Where a lengthy stay was made at any one location small groups would sometimes go hunting for several days before returning to the main encampment.

### 5.9.5 Material Culture

The Aboriginal people of the region manufactured and employed a wide range of material culture, sourced from animal, plant and earth resources available locally, in addition to resources and implements acquired through trade with neighbouring clans.

Plant resources were used in a wide variety of ways, with wood employed in the manufacture of tools such as boomerangs, spears and digging sticks, bark and reeds.
in the manufacture of string for bags and nets, and species of rushes in the manufacture of baskets. The bark of larger trees such as the Red Gum was used to make canoes and shields.

Stone resources, were employed in the manufacture of stone tools, and are the most likely form of Aboriginal material culture to survive in the archaeological record today. Presland notes that the *Woi wurrung* used a range of what he calls "maintenance tools", usually of stone, which included hatchets, knives and scrapers. These tools were often employed in the production of other elements of material culture, including clothing and ornaments made from animal skin and bone.

### 5.9.6 Early Settlement & Frontier Relations

Introduced diseases had a devastating impact on Aboriginal populations. An epidemic of smallpox struck between 1829 and 1830. This may have wiped out over half of the Aboriginal population in the region. Introduced childhood diseases killed all ages, and venereal diseases dramatically lowered the birth rate. This coupled with displacement from traditional places and resources, affected critical kinship and religious activities crucial to the operation of indigenous social systems. Pseudo-Syphilis and respiratory difficulties were recorded amongst the population in a report to Chief Protector Robinson in 1840. Thomas commented in 1845 that most of the *Bun wurrung* people who died had never even seen a European.

Dispossession of traditional land occurred as the settlers and their livestock arrived in the Port Philip area. Malnutrition and starvation were common amongst the local Aborigines by 1837. Food resources were rapidly depleted by the settlers’ stock

---

173 Presland 1983: 35-7
174 Presland 1983: 37
175 Presland 1983: 37
176 Broome 2002:11
177 Gaughwin 1981:53
178 Gaughwin 1981
179 ibid:48
and industry. European expansion caused structural changes within Aboriginal societies, affecting traditional lifestyles, living arrangements and social practices as Aboriginal people were forced from their traditional lands and deprived of access to resources.

5.10 Environmental Context (landforms and geomorphology)

Archaeological assessments include information about the environmental context of activity areas because of the important role environmental characteristics played in influencing the types of archaeological sites in any given area. Physical environments influence both the type and availability of natural resources and the types of cultural activities that were carried out in the past. Correspondingly, this also influences the types of archaeological sites that may be found.

A determination of the former environmental context is essential to develop accurate models of cultural activity, site distribution patterns and the archaeological potential of any given area. The environmental setting of the activity area is discussed below.

5.10.1 Landscape

The activity area is located within the Victorian Uplands and Sunklands system, formed through past volcanic activity as well as through changes in the sea level. Geological evidence suggests that the Port Philip and Western Port areas were ‘probably not inundated before 10,000 years before present (BP)’\textsuperscript{180}. Further evidence suggests that Port Philip did not begin to fill until 9,000 years BP and Western Port not until 8,000 years BP\textsuperscript{181}. The nearby French and Philip Islands are unlikely to have been formed until 5,000 - 6,000 years BP when the highest sea levels approached current levels\textsuperscript{182}. During the mid-Holocene high stand, the sea level increased by approximately 1.70 metres above the current sea level.

\textsuperscript{180} Coutts et al. 1976:68 as cited by Sullivan 1981:3

\textsuperscript{181} Sullivan 1981:3

\textsuperscript{182} Coutts et al. 1976:68 as cited in Sullivan 1981:3
Sea level fluctuations have created Pleistocene sands (in the form of dunes) which have blocked drainage. Impediments to local drainage have resulted in the formation of large swamp deposits, in particular the Carrum and Koo Wee Rup Swamps. In general as a result, current drainage patterns across the region are broad and informal (with the exception of Cardinia Creek).

In general, the landforms of the South East region consist of three main types, relating directly to the geomorphology. These are hard Palaeozoic sediments, weathered Pliocene sandstones, and younger (Quaternary) sediments formed by either alluvial or aeolian action.

5.10.2 Drainage and Water Resources

Drainage across the activity area comprises poorly defined and shallowly-incised drainage lines that flow from the north-west to the south-east. There is one named waterway (Clyde Creek) situated within the middle portion of the activity area and one unnamed former creek situated within the north-eastern section.

These general drainage patterns are also complicated by the presence of low stabilised dunes of the Cranbourne Sand soil landscape distributed as discrete ‘sandy rises’ and low ridges across the local landscape. There are numerous swales and depressions within these stabilised dunes that are prone to waterlogging.

Due to artificial drainage, channeling, and dam construction, the original hydrology of the landscape has been significantly altered. Dams in particular have been excavated within most properties within the activity area which have captured water flows and preventing the natural flow of water downstream. Similarly, ditches and channels have been cut into low lying open depressions to drain these areas and open them up for grazing. The effect of these modifications has been to effectively drain-out former wetlands.

Koo Wee Rup swamp was the dominant landscape feature in the region prior to the artificial channeling works conducted during the 19th century. The success of post-
contact settlement in the district was reliant on attempts to clear and reclaim the swamp, in effect, altering the natural environment until original water resources have become near unrecognisable.

Koo Wee Rup swamp has been discussed in depth as part of the report prepared by Andrew Long and Associates:

According to early account the region was originally a thick tangle of ti-tree, mud, water, red gum, blackwood wattles and prickly acacias. The Koo Wee Rup Swamp dominated the region’s natural landscape, extending over 100,000 acres. For European squatters and settlers, the Koo Wee Rup Swamp was seen as a barrier. The townships of Officer South, Clyde and Cranbourne were on the fringes of the swamp. Land in and around the township of Cranbourne was considered excellent for agricultural purposes.

The rivers and creeks in the region all fed into the Koo Wee Rup Swamp and served as natural boundaries for townships and properties, while the Koo Wee Rup Swamp itself acted as a natural barrier. The swamp originally had two natural outlets into Westernport Bay. Cardinia Creek, Dandenong Creek, Deep Creek, Toomuc Creek and Bunyip River all led to the Koo Wee Rup Swamp from the north. The Bunyip River and Ararat Creek and their tributaries were the major water sources feeding into the swamp from the north, the King Parrot, Musk and Heifer Creeks the most significant from the east.

5.10.3 Landforms within the activity area

The key landform features of the activity area are the two creeks that bisect parts of it, Clyde Creek and the unnamed former stream channel in the north-east corner of PSP 53. Clyde Creek is located at the base of a broad, shallow valley with a narrow open depression forming the current creek-line.

The unnamed former watercourse has been very heavily modified by dam construction and is associated with a complex series of discrete sandy rises and levees extending across a broad, flat floodplain.

---

185 Williams (1984: 8)
186 Williams (1984: 8)
187 Williams (1984: 9)
188 Shire of Pakenham (1981: 3)
A prominent stable Aeolian dune crest extends across the northern part of the activity area from the north-western corner. The landform almost certainly forms part of the Cranbourne Sands soil landscape.

The remainder of the activity area comprises flat to gently undulating topography, with several small, isolated crests (probably small discrete stable Aeolian dunes associated with the Cranbourne Sand soil landscape).
Figure 11 – Landforms Present within the Activity Area
5.10.4 Published Geological Information

Geological and soil landscape mapping provides a useful insight into the expected conditions within the activity area, but due to the scale of the mapping (1:100,000) it is not a reliable predictor of conditions on the ground at any selected point. Ground truthing is usually required to confirm geological and soil types.

Published mapping on the GeoVic website shows that the majority of the activity area is located on a Murrundindi Supergroup (Sm) parent material, comprising sedimentary mudstone and sandstones (Figure 12). Small portions of the northern part of the activity area contain the Baxter Sandstone (Nxx) formation, comprising fluvial sandstone, conglomerates, siltstone and ironstone. Unnamed alluvium (Qa1) made up of gravel, sands and silt; is located on the alluvial plain landforms located on the north-eastern portion of the activity area. Unnamed dune deposits (Qd2) comprising Aeolian sand, clay and calcareous sand (likely the Cranbourne Sand) are also mapped on a crest landform extending from the north-western boundary of the activity area.

5.10.5 Geomorphology & Soils

Sargeant mapped the soil units and landscapes around Western Port in the 1970s, including the activity area (See Figure 13). The activity area is dominated by the Toomuc Association (Tº) and the Narre Association (N Kü) soil units, with smaller patches of the Bittern Association (B) and Cranbourne Association (C Kü) units.

Soils classed as the Toomuc Association are derived from Quaternary sands and sandy clays. Surface soils are characterized by grey or dark grey loamy sands to 0.25m depth overlying a bleached layer of similar texture. Heavy clays, mottled light yellow-grey, grey and yellow brown, occur from 0.6m depth and clays or sandy clays continue to 1.8m. Iron concretions generally occur in the zone just above the clay189.

Soils classed as the Narre Association are derived from Quaternary fluvial and swamp deposits. The soils are characterised by dark brownish grey clay loam to

189 Sargeant 1975: pp. 6-8
0.25m depth, overlying a layer of brownish grey mottled with light grey and rusty brown light clays or clay loams. This layer overlies mottled grey and yellow-brown clays which occur at 0.4 to 1.8m depth\textsuperscript{190}.

Bittern Association soils derive from Tertiary clays or sandy clays. The soil profile comprises a dark brownish grey fine sandy clay loam, which overlies a bleached zone that contains iron oxide concretions, under which heavy clays are found to a depth of 1.8m\textsuperscript{191}.

Cranbourne Association soils are comprised predominantly of Quaternary sands and are found as dunes and sand sheets. The upper part of the soil profile consists of either dark grey sand or sandy loam, overlying lighter sands/sandy loam at 0.3m. Coffee rock (cemented sand) or iron concretions are encountered at 1m, and mottled yellow-brown and light grey clays occur at depths of up to 1.8m\textsuperscript{192}.

\textsuperscript{190} ibid
\textsuperscript{191} ibid
\textsuperscript{192} ibid
Figure 12 – Geological Map of Activity Area and Immediate Surrounds. Source: GeoVic
Figure 13 - Sargent Soil Mapping Westernport Bay Catchment (Source: Sargent 1975)
5.10.6 1750 Ecological Vegetation Classes

Published information on vegetation and biodiversity is included on the Victorian Resources Online website (DSE). It provides a good indication of the prevailing vegetation patterns prior to European settlement and clearance of the land. For the purposes of showing the general patterns of vegetation across the activity area, we have re-produced a copy of the DSE 1750 Vegetation Communities (EVC) Map relevant to the activity area (Figure 14).

The EVC map indicates that the activity area likely contained Plains Grassland/Grassy Woodlands with areas of Swamp Scrubland around Clyde Creek and a patch of Heathy Woodland to the north.

Comparison of the 1750 (modelled) and 2005 (current) (Figure 14) ecological vegetation communities (EVC) extent indicates that the majority of the vegetation across the activity area has been removed; however pockets of grassland/grassy woodland and swamp scrubland may exist, particularly in the south-west of the activity area and on the fringes of watercourses. Small patches of heathy woodland may also be found in the northern part of the activity area.

Analysis of historical and current aerial photographs indicates the entire activity area has been cleared for agricultural uses (see Figures 15 - 17).
Figure 14 – 1750 & 2005 EVCs map of the Activity Area and Immediate Surrounds. Source: DSE.
5.11 Landuse Disturbance History in the Activity Area

The primary land-use of the activity area is pastoral and agricultural, with virtually all of the area subject to ploughing and/or pastoral activity in the past. Historical aerial photography from the early 1970s (see Figure 15), confirms this. These activities would have also been undertaken in some parts of the activity area during the 1960’s\(^{193}\), although it is near certain that this activity dates back considerably further. There has been extensive market gardening, particularly in the central part of PSP 54, with its associated deep ploughing, drainage and irrigation systems and massive scale dam construction.

The current pattern of hydrology across the area has been substantially altered from original drainage regimes due to artificial drainage, channeling, and dam construction. Dams in particular have inhibited the natural flow of water along parts of Clyde Creek and the unnamed former watercourse in the north-east section of PSP53.

Throughout the PSP activity areas numerous other land disturbance activities have occurred. These disturbances have been confirmed by analysis of historical aerial photography (Figures 15 to 17) and are listed below:

- Clearing of native vegetation across the entire activity area;
- Repeated ploughing in areas of crop production;
- Extensive quarrying in property 53-07;
- Construction of fences and cattle yards;
- Construction of houses and farm buildings;
- Construction of driveways and tracks providing access throughout the properties;

\(^{193}\) Young, 2011: 15
• Excavation of Dams within the activity area;

• Minor channeling for drainage control; and

• Installation of market gardening.
Figure 15 – 1971 Historic Aerial of Activity Area and Immediate Surrounds (M 365 910 190)
Figure 16 - Cut and Fill Disturbance Present in PSP 53
Figure 17 – Cut and Fill Disturbance Present in PSP 54
5.12 Predictive Model

Drawing on the desktop research and previous archaeological survey work, we make the following predictions:

- Stone artefact deposits are likely to be found at varying densities across most landforms within the PSPs;
- Higher density artefact scatters and sub-surface deposits may be found on crest landforms and the ‘Cranbourne sands’;
- Higher density artefact scatters and sub-surface deposits are likely to be found adjacent to creeks or wetlands. Artefact density and frequency is likely to increase with higher stream order (for creeks) and permanence (for wetlands);
- The density and complexity of artefact scatters and sub-surface deposits is likely to decrease with distance from water sources and wetlands;
- Higher density of artefact scatters and sub-surface deposits in close proximity to stone sources (either outcrops or river pebble sources);
- A particularly high density and complexity of archaeological deposits at major confluences and resource intersection zones;
- Stable aeolian and alluvial landforms are likely to have deeper profiles and better preservation conditions. These landforms may contain greater archaeological integrity;
- Scarred trees may be present within areas containing mature remnant native trees of sufficient age and as isolated mature trees in agricultural settings;
- Isolated finds may be found anywhere across the landscape.

Due to the large area covered by the PSPs, we used MapInfo GIS (Geographical Information System) to develop and map the predictions made regarding archaeological potential. The purpose of the predictive model was to:
• Provide the Growth Areas Authority, individual landowners within the PSP and the Aboriginal community with information about areas of Aboriginal archaeological sensitivity to feed into constraints and opportunities analysis;
• Help inform early PSP planning and design work;
• Provide part of the Desktop Assessment component of CHMPs, and
• To assist in developing a methodology for Complex Assessments.

In developing the model, we drew on a number of environmental and disturbance variables that were used to identify areas of varying ‘archaeological sensitivity’. For the purposes of the model, the term ‘archaeological sensitivity’ is defined as a combination of likely density, integrity and research value of archaeological deposits within any given area.

5.12.1 Factors Included in the Model

The following is a list of variables that contribute to archaeological potential within the Clyde Creek and Thompsons Road PSP areas. The variables are ranked in order of importance.

Proximity to water sources

Proximity to water is one of the key determinants of archaeological potential. In general, sites are larger, more complex and more frequently found in close proximity to water sources. Levels of sensitivity are predicted to increase with higher order drainage lines and more permanent wetlands. Drainage and hydrology patterns have been significantly altered since European settlement in order to retain water in storage dams for agricultural purposes and drain waterlogged areas to open them up for grazing and cultivation. GIS-modelling combined with analysis of topographic maps and historic aerial photos have been used to determine the likely extent of former wetlands and areas prone to flooding.

The level of sensitivity is predicted to increase with higher order drainage lines and more permanent wetlands.
Alluvial Soils

These areas are considered highly sensitive because their proximity to higher-order water sources increases the potential for higher density artefact scatters and sub-surface deposits (see above). More intact archaeological deposits are likely to survive within these alluvial soils due to their deeper profiles and better preservation. In particular, ethnographic and archaeological studies have indicated that Aboriginal burials are more likely to occur on these landforms.

Crest landforms

Previous investigations in the area have shown that crest landforms are often associated with a higher density and frequency of archaeological deposits – particularly when they are also located in close proximity to water sources. Crest landforms were delineated using aerial photography, topographic mapping and mapping carried out during the survey. The extent of the crest landforms was mapped using Map Info GIS software.

‘Cranbourne Sand’

The Cranbourne Sands landform is predicted to have an elevated level of archaeological sensitivity because this soil landscape is likely to contain deeper cultural sequences and good preservation conditions in areas that have not been disturbed by market gardening. The Cranbourne Sands landform also has a slightly higher potential to contain Aboriginal burials, although the potential for burials within the activity area is still generally low.

Areas of cut and fill disturbance

These areas are considered unlikely to contain Aboriginal archaeological deposits because topsoil units (ie. artefact bearing soil units) have been removed. These areas include roads, dams and the construction of building platforms for houses and sheds. They are considered to have been disturbed.
Areas of market gardening and horticulture

These areas are considered to have a very low level of archaeological sensitivity because topsoil units have been heavily disturbed by deep ploughing, establishment of garden beds, re-grading and establishment of sub-ground watering systems. These areas may contain Aboriginal cultural deposits but they are likely to have a very low level of integrity and a very low level of scientific significance.

Swamps and wetlands

Are considered to have a lower level of archaeological potential because they were unfavourable areas for sustained occupation and use (because they were inundated) and are less likely to contain evidence of Aboriginal occupation and use. There is some potential for these areas to contain low densities of cultural material associated with foraging into the wetlands and exploitation of resources.

5.12.2 Factors Not Included in the Predictive Model.

The following variables were not included in the model, because the desktop assessment research and analysis of the local landscape indicated they are unlikely to be factors that affect local archaeological patterning within the subject land.

Previously recorded Aboriginal archaeological sites

Under the Aboriginal Heritage Act 2006 & Regulations 2007, it is offence to disturb or destroy Aboriginal sites or objects except where a Permit to Harm has been approved by AAV and/or an approved CHMP allows for the disturbance.

These places/sites have not been included as an influence on archaeological sensitivity in the model. This is because most of the sites are surface artefact scatters identified on erosional landforms, in areas of ground exposed by soil disturbance and within areas specifically investigated during previous archaeological studies. Therefore, the current local distribution of known sites is unlikely to accurately reflect the real distribution and nature of sub-surface archaeological deposits.
Areas of ploughing

Are considered to have a lower level of archaeological sensitivity because the top 20 - 30cm of topsoil has been disturbed by ploughing. These areas may contain Aboriginal cultural deposits but they are likely to have a lower level of integrity and a lower level of scientific significance. It is noted, however, that in deeper soils there is potential for more intact archaeological deposits to survive beneath the plough zone.

Areas of ploughing have not been included in the model because the PSP activity area has been cleared of original vegetation and virtually the entirety of the subject lands have been subject to some level of ploughing in the past. Therefore, because the ploughing has occurred right across the activity areas, it does not have an influence on the model.

Proximity to stone sources

Aboriginal stone sources and geological mapping may provide an indication about where raw materials were gathered for making stone tools. Stone sources may occur across the local landscape in the form of boulders and weathered pieces outcropping on valley slopes and on volcanic plains, and gravels and pebbles washed downstream and deposited in alluvial terraces and on gravel bars.

Dominant raw material types in the region include silcrete, quartz, quartzite and chert, with other materials such as basalt, also present.

No specific stone sources or potential stone sources were identified during the desktop research.
Slope Gradient

The local landscape within the activity areas is flat to gently undulating. Based on our desktop research there appears to be no steep terrain within these parts of the PSPs. Therefore, slope gradient is unlikely to be a factor influencing archaeological potential.

5.12.3 Predictive Sensitivity Mapping

MapInfo GIS software was used to model and map the predictions surrounding archaeological potential. This allowed us to produce maps that show areas of varying archaeological sensitivity graded from high to disturbed. The modeling and mapping is based on a probabilistic approach, where a combination of traits was used to determine the combined level of potential. The model traits are as follows:

- Areas within 200m of high-mid order stream = Very High Sensitivity;
- Areas within 200m of lower-order stream or outer edge of swamp = Moderate Sensitivity;
- Areas within 200m of former waterway/seasonally inundated stream = Very High Sensitivity;
- Alluvial soils = Moderate Sensitivity;
- ‘Cranbourne Sands’ geological landform = High Sensitivity;
- Crest landforms = High Sensitivity;
- Crest and within 200m of former water (including all stream types and swamp) = Increased Sensitivity by One Level;
- Cut and Fill Disturbance = Disturbed;
- Horticultural/ Market Gardening Disturbance = Very Low Sensitivity;
- Within Wetland = Very Low Sensitivity; and
• All other areas = Low Sensitivity.

Figure 18 shows the results of the GIS predictive model. The figure shows areas of high potential (dark pink) grading to very low potential and disturbed areas (grey).

It is important to note that the predictive sensitivity mapping is based on the results of desktop research, and has considered the results of studies currently in preparation for properties within the PSPs (where access to documentation has been provided). The accuracy of the modeling and mapping presented in this report should be quite robust, given the amount of archaeological investigation carried out over the last few years within the south-eastern growth areas that underpin the predictions made. Therefore, the sensitivity mapping could be used to inform high level PSP design work, particularly in regards to proposed configuration of open space networks, activity centres and key infrastructure such as main roads that need to be established early in the PSP planning and design process.

The predictive modeling and predictive sensitivity mapping has been refined through the Standard Assessment survey work, particularly identification of sensitive landforms and areas of prior disturbance.

The predictive modeling and predictive sensitivity mapping should be tested during future Complex Assessments, preferably using systematic landform based test excavation specifically designed to test conclusions made in the predictive modeling and shown on the sensitivity mapping. The model and sensitivity mapping should then be refined (if necessary) and used as the basis for making design decisions at an individual CHMP / development project level in consultation with Aboriginal Affairs Victoria and Aboriginal traditional owner representative groups.

It is also important to note that the predictive model and sensitivity mapping does not include predictions about cultural values to the Aboriginal community. Identification of cultural values and places cannot be predicted by a scientific model, they can only be identified during consultation with traditional owner knowledge holders – in this case, the Bunurong, Boonwurrung and Wurundjeri communities.
Figure 18 – Predictive Archaeological Sensitivity Model (*based on Desktop Assessment prior to Archaeological Survey)
6 STANDARD ASSESSMENT

6.1 Archaeological Survey Details

The following sections describe the results of a survey carried out by AHMS between the 16th - 23rd of April 2012.

The principal aim of the survey was to identify exposed cultural material (i.e. surface sites) and to assess disturbance levels. The survey aimed to identify areas of archaeological potential, landforms, vegetation patterns, geomorphic units, and areas of disturbance.

The investigation was also used to assess the extent to which past land-uses may have affected natural soil profiles. This information was used to assess the depth and potential integrity (intactness) of natural soil profiles across the activity area and the likely impact of future construction.

The results of the survey were used to help inform PSP planning and design, assist in development of a complex excavation methodology and to inform development of management recommendations for the activity area.

6.2 Survey Methodology

The archaeological survey was designed to balance a comprehensive and representative sample of landforms across the activity area and landowner requirements. The survey team included Adrian Burrow, Shannon Sutton, Liz Foley and Thomas Lubbock of AHMS. Representatives of each Registered Aboriginal Party Applicant or Traditional Owner Group were present throughout the survey (the participants are listed in the Table 6 below):
Table 6: Survey Participants

<table>
<thead>
<tr>
<th>Date</th>
<th>Wurundjeri TLCCHC</th>
<th>Bunurong Land Council</th>
<th>Boonwurrung Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/04/12</td>
<td>Garry Galway</td>
<td>Izzy Pepper</td>
<td>Jaeden Williams</td>
</tr>
<tr>
<td>17/04/12</td>
<td>Garry Galway</td>
<td>Izzy Pepper</td>
<td>Jaeden Williams</td>
</tr>
<tr>
<td>18/04/12</td>
<td>Trevor Downe</td>
<td>Izzy Pepper</td>
<td>Jaeden Williams</td>
</tr>
<tr>
<td>19/04/12</td>
<td>Kerry Xiberras</td>
<td>Izzy Pepper</td>
<td>No Representative available</td>
</tr>
<tr>
<td>20/04/12</td>
<td>Garry Galway</td>
<td>Dan Turnbull</td>
<td>Jaeden Williams</td>
</tr>
<tr>
<td>23/04/12</td>
<td>Garry Galway</td>
<td>No Representative available</td>
<td>Josh Luttrell</td>
</tr>
</tbody>
</table>

The Standard Assessment involved a five stage approach:

Stage 1 - AHMS sought contact with all landowners who had agreed to be a part of the study to arrange a date for the archaeological survey to be conducted. AHMS also sought advice from each landowner on access issues and discussed requirements which some landowners had stipulated. Forty-two landowners who had agreed to be part of the study were contactable. This stage of work was used to define the scope of the standard assessment, including which parcels of land would be included in the investigation and therefore form a revised ‘activity area’. A map showing the participating landholdings is shown on Figure 2 & 3 and the property details are shown on Tables 7 & 8.

Stage 2 - An analysis of topographic maps and aerial photographs of applicable properties was undertaken prior to the survey to identify landforms across the activity area and to identify areas of ground surface exposure in the form of tracks, unsealed roads, dams, cuttings and areas of ground exposure. These areas were targeted during the survey because they provided an opportunity to identify surface artefact scatters and to investigate exposed soil profiles.

Stage 3 - The first step we took when entering each property was to drive around the property (where the landowner had given permission) to familiarise ourselves with the landscape and identify any mature/old growth native trees and areas of ground surface visibility. This assisted in scoping out our approach to survey in each property.
Stage 4 - Following the initial scoping work surveying was conducted on foot. The team typically walked in transects with a spacing of 5 metres between each team member.

The survey used the information obtained from analysis of aerial photographs and topographic maps (Stage 2), as well as the initial scoping work (Stage 3), to survey areas of ground surface visibility (to identify surface artefact scatters) and mature/old growth trees (to identify scarred trees). Areas of erosion and ground exposure were examined for archaeological evidence such as stone artefacts, charcoal and shell. Ground surfaces and cuttings were also examined to determine the degree of soil disturbance, erosion and potential for archaeological deposits below current ground. Mature trees were examined for evidence of scarring, axe marks and/or old footholds.

Stage 5 - Surface artefact scatters found during the surveys were recorded in detail using a pro-forma developed for field recording. The location and extent of each surface site was recorded with a Leica CS15 Differential GPS which provides sub 1 meter accuracy. Field notes were made and photographs taken to document landscape configuration, soil profiles, soil disturbance, ground visibility and vegetation types. During the survey we also sought to relocate previously registered Aboriginal places using a DGPS and the co-ordinates supplied for each place.
6.3 Survey Coverage

A total of 45 properties were surveyed within the activity area (Table 1; Figures 2 & 3). Details of the accessible properties and influences on survey coverage for each property are outlined in Tables 7 & 8.

Survey coverage aimed to balance sampling of areas of ground surface exposure on these properties with detailed coverage of areas of high to very high sensitivity indicated in the predictive model developed during the Desktop Assessment. The survey also aimed to sample each of the landform types, providing coverage of crest, slope and floodplain landforms. While the entire PSP area was subject to systematic pedestrian survey, the survey was particularly comprehensive in areas demonstrating good ground surface visibility and those areas highlighted as having the highest predicted sensitivity along the margins of Clyde Creek, the unnamed creek in property 53-01, as well as the area geologically mapped as comprising Cranbourne Sand landform in the western part of PSP53.

Note that several landowners own more than one property
Table 7: Survey Coverage Data - PSP 53 (see Figure 2 for property IDs)

<table>
<thead>
<tr>
<th>PSP ID</th>
<th>Address</th>
<th>Ground Surface Visibility</th>
<th>Accessibility</th>
<th>Artefacts present</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-01</td>
<td>1475 Pound Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, but good visibility along exposed creek banks, dams, vehicle tracks and patches of exposure</td>
<td>100%</td>
<td>Clyde Creek 1, Clyde Creek IA 1,2,3 &amp; 4</td>
</tr>
<tr>
<td>53-02</td>
<td>660 Berwick-Cranbourne Rd VIC</td>
<td>&lt; 1% Dense grass cover. Small section fronting Hardys Rd completely surfaced with concrete and buildings.</td>
<td>95%</td>
<td>None</td>
</tr>
<tr>
<td>53-03</td>
<td>1575 Pound Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, only exposure under trees and on tracks</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>53-04</td>
<td>7 Hardys Rd, Clyde North VIC</td>
<td>0% Property contains only buildings, concrete surfaces and landscaped grass.</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>53-05</td>
<td>1525 Pound Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, with good exposure along creek banks and tracks</td>
<td>95% Residential section excluded</td>
<td>None</td>
</tr>
<tr>
<td>53-06</td>
<td>1850/1880 Thompsons Rd, Clyde North VIC</td>
<td>&lt; 5% typically dense grass cover, but exposure on ploughed fields, under trees, on tracks and areas of stock trampling</td>
<td>95% Section south of desalination pipeline not accessed for OH&amp;S reasons.</td>
<td>None</td>
</tr>
<tr>
<td>53-07</td>
<td>205 Hardys Rd, Clyde North VIC</td>
<td>Active Quarry. Not surveyed.</td>
<td>Property not accessed for OH&amp;S reasons.</td>
<td>None</td>
</tr>
<tr>
<td>53-08</td>
<td>225 Hardys Rd, Clyde North VIC</td>
<td>&lt; 1% dense grass cover, only exposure on large patch adjacent to barn, under trees and in small stock paddocks</td>
<td>95%</td>
<td>None</td>
</tr>
<tr>
<td>53-09</td>
<td>1790 Thompsons Rd, Clyde North VIC</td>
<td>&lt; 1% dense grass cover, only exposure on tracks</td>
<td>90% Section south of desalination pipeline and within substation not accessed for OH&amp;S reasons.</td>
<td>None</td>
</tr>
<tr>
<td>53-10</td>
<td>1450 Pound Rd, Clyde North VIC</td>
<td>&lt; 1% dense grass cover, only exposure around dams, under trees and on tracks</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>53-11</td>
<td>5 Hardys Rd, Clyde North VIC</td>
<td>0% Property contains only buildings, concrete surfaces and landscaped grass.</td>
<td>100%</td>
<td>None</td>
</tr>
</tbody>
</table>
### Table 8: Survey Coverage - PSP54 (see Figure 3 for property IDs)

<table>
<thead>
<tr>
<th>PSP ID</th>
<th>Address</th>
<th>Ground Surface Visibility</th>
<th>Accessibility</th>
<th>Artefacts Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>54-01</td>
<td>90 Twyford Rd, Clyde North VIC</td>
<td>&lt;1% Extensive market gardening and large buildings</td>
<td>50% Limited due to accessibility issues</td>
<td>None</td>
</tr>
<tr>
<td>54-02</td>
<td>275 Pattersons Rd, Clyde North VIC</td>
<td>&lt;50% Extensive market gardening and massive dam construction across entire property. Good exposure along tracks and between plough furrows, but any site integrity completely destroyed</td>
<td>90% Avoided working vehicles</td>
<td>None</td>
</tr>
<tr>
<td>54-03</td>
<td>5 Tuckers Rd, Clyde North VIC</td>
<td>&lt;1% Dense grass cover, only exposure under trees</td>
<td>90%</td>
<td>None</td>
</tr>
<tr>
<td>54-04</td>
<td>30 Twyford Rd, Clyde North VIC</td>
<td>&lt;50% Extensive market gardening and massive dam construction across entire property. Good exposure along tracks and between plough furrows, but extremely heavy disturbance</td>
<td>90% Avoided working vehicles</td>
<td>None</td>
</tr>
<tr>
<td>54-05</td>
<td>350 Clyde-Fiveeways Rd, Clyde North VIC</td>
<td>&lt;2% Dense grass cover, only exposure under trees, around dam, in small patches and on tracks</td>
<td>95% excludes Alpaca paddock</td>
<td>None</td>
</tr>
<tr>
<td>54-06</td>
<td>25 Bells Rd, Clyde North VIC</td>
<td>&lt;1% &lt; 1% Dense grass cover, but fair visibility along vehicle tracks, along large drain and in patches of exposure</td>
<td>90%</td>
<td>None</td>
</tr>
<tr>
<td>54-07</td>
<td>Lot 2, Hardys Rd, Clyde North VIC</td>
<td>50% Extensive market gardening and large dam construction across entire property. Good exposure along parts of Clyde Creek, tracks and between plough furrows, but extremely heavy disturbance</td>
<td>90% Avoided muddy areas</td>
<td>None</td>
</tr>
<tr>
<td>54-08</td>
<td>200 Tuckers Rd, Clyde North VIC</td>
<td>&lt;50% Extensive market gardening and massive dam construction across entire property. Good exposure along tracks and between plough furrows, but extremely heavy disturbance.</td>
<td>90% Avoided muddy areas</td>
<td>None</td>
</tr>
<tr>
<td>54-09</td>
<td>420 Berwick-Cranbourne Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, but good visibility around dams, vehicle tracks and patches of exposure</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-10</td>
<td>444 Berwick-Cranbourne Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, only exposure under trees and on tracks</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-11</td>
<td>275 Tuckers Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, only exposure under trees and on tracks. No exposure along creek banks</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-12</td>
<td>60 Hardys Rd, Clyde North VIC</td>
<td>&lt;5%, dense grass in paddocks but some exposure along tracks, and around dams</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-13</td>
<td>325 Tuckers Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, only exposure under trees, on tracks and</td>
<td>90%</td>
<td>None</td>
</tr>
<tr>
<td>PSP ID</td>
<td>Address</td>
<td>Ground Surface Visibility</td>
<td>Accessibility</td>
<td>Artefacts Present</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>54-14</td>
<td>1625 Ballarto Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, but good visibility around dams, vehicle tracks, trees and patches of exposure</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-15</td>
<td>195 Tuckers Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, but limited visibility around dams, vehicle tracks and trees. No visibility along Clyde Creek due to grasses and dense rushes</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-16</td>
<td>290 Pattersons Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, but limited visibility around dams, vehicle track and trees. No visibility around house, barns or landscaped yard.</td>
<td>90% Access to Clyde Creek at south of property limited by presence of cows and calves</td>
<td>None</td>
</tr>
<tr>
<td>54-17</td>
<td>130 Tuckers Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover across most of property. Good ground exposure along most of Clyde Creek, typically with steep eroded banks, although in the northern section the creek profile was broad and shallow. Also, frequent patches of exposure throughout the property, under trees and along dams.</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-18</td>
<td>30 Twyford Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover, but good visibility around dams, vehicle tracks and trees. Good visibility along most of Clyde Creek, especially the NW and SE sections, typically with steep eroding creek bank profiles.</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-19</td>
<td>350 Clyde-Fiveways Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover across property, with only exposure under trees.</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-20</td>
<td>25 Bells Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover across manicured lawn. Property heavily landscaped, with house, driveway and exotic trees.</td>
<td>80% Avoided house and back section</td>
<td>None</td>
</tr>
<tr>
<td>54-21</td>
<td>300 Tuckers Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover across all paddocks, except areas of cattle trampling around gates and water feeders</td>
<td>90% Avoided bull paddocks and yard with dogs</td>
<td>None</td>
</tr>
<tr>
<td>54-22</td>
<td>45 Tuckers Rd, Clyde North VIC</td>
<td>&lt; 1% Dense grass cover across property, with exposure around small dam, along tracks and under treeline</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-23</td>
<td>100 Pattersons Rd, Clyde North VIC</td>
<td>&lt;50% Extensive market gardening and massive dam construction across entire property. Good exposure along tracks and between plough furrows, but extremely heavy disturbance</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-24</td>
<td>400 Clyde-Fiveways</td>
<td>&lt; 1% Dense grass cover, only exposure under trees; the rest of the property heavily exposed under trees.</td>
<td>90% Avoided small dam and trees</td>
<td>None</td>
</tr>
<tr>
<td>PSP ID</td>
<td>Address</td>
<td>Ground Surface Visibility</td>
<td>Accessibility</td>
<td>Artefacts Present</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>--------------------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>54-25</td>
<td>250 Hardys Rd, Clyde North VIC</td>
<td>&lt;1% Dense grass cover, only exposure under trees, on tracks and around dams. Isolated patches across property</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-26</td>
<td>1531 Ballarto Rd, Clyde North VIC</td>
<td>&lt;1% on developed/landscaped west part of property, 50% on ploughed east field</td>
<td>70% No access to private property on west side.</td>
<td>None</td>
</tr>
<tr>
<td>54-27</td>
<td>440 Berwick-Cranbourne Rd, Clyde North VIC</td>
<td>&lt;1% Dense grass cover. Exposure limited to isolated patches within fields, under trees and in areas of modern disturbance</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-28</td>
<td>436 Berwick-Cranbourne Rd, Clyde North VIC</td>
<td>&lt;1% Entire property developed and landscaped. Isolated exposure patches under trees on south side</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-29</td>
<td>Lot 1-275 Pattersons Rd, Clyde North VIC</td>
<td>&lt;1% Most of property residually developed and landscaped. Isolated exposure patches on north lawn and under trees</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-30</td>
<td>430 Berwick-Cranbourne Rd, Clyde North VIC</td>
<td>&lt;1% Most of property landscaped, with several sheds and concrete drive. Isolated exposure patches in areas of modern disturbance</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-31</td>
<td>75 Tuckers Rd, Clyde North VIC</td>
<td>&lt;1% Dense grass cover, but good visibility around dams, vehicle tracks, trees and isolated patches of exposure</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-32</td>
<td>35 Tuckers Rd, Clyde North VIC</td>
<td>1% Residential block. Dense grass cover across manicured lawn. Remainder of property heavily landscaped, with house, driveway and large pond/dam</td>
<td>80%</td>
<td>None</td>
</tr>
<tr>
<td>54-33</td>
<td>25 Pattersons Rd, Clyde North VIC</td>
<td>&lt;10% Property comprises a patchwork of different fields. Dense grass cover and 0% exposure in central fields. Good (50%) exposure in ploughed field to south and in large horticultural plot on north-west corner. Exposure also good around large dams and along tracks and treelines.</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>54-34</td>
<td>30 Hardys Td, Clyde North VIC</td>
<td>&lt;1%, very dense grass cover, some exposure along drainage lines, on farm tracks and under trees</td>
<td>100%</td>
<td>None</td>
</tr>
</tbody>
</table>
6.3.1 General Observations

The key landform features of the activity area are the two creeks that bisect parts of it Clyde Creek and the unnamed former stream channel in the north-east corner of PSP 53. Clyde Creek is located at the base of a broad, shallow valley with a narrow open depression forming the current creek-line. Along most of its length the creek typically had a barely discernible current channel. At other points, particularly within property PSP 54-17 it had steep, eroding banks. No outcropping rock or alluvial terraces were observed along Clyde Creek (within the activity area).

Figure 19 - Clyde Creek

The unnamed former watercourse has been very heavily modified by dam construction and is associated with a complex series of discrete sandy rises and
levees extending across a broad, flat floodplain. Aboriginal cultural heritage was identified during the survey (see 6.4) on the eroding banks of the former watercourse.

Figure 20 - Example of Dams Constructed along Unnamed Watercourse in North-East Section of the Activity Area

A prominent stable Aeolian dune crest extends across the northern part of the activity area from the north-western corner. The landform almost certainly forms part of the Cranbourne Sands soil landscape. The remainder of the activity area comprises flat to gently undulating topography, with several small, isolated crests (probably small discrete stable Aeolian dunes associated with the Cranbourne Sand soil landscape).
Most of the properties were under pasture, both closely cropped and fallow, and would have most likely been ploughed at some point in the past. Ground surface visibility was correspondingly very low across nearly all properties (<1% pm²). Areas of high ground surface visibility (80-100% pm²) were typically restricted to isolated patches under trees, along tracks and in areas of stock trampling and other disturbances.

A significant part of the activity area is used for market gardening, with associated deep ploughing, extensive underground irrigation systems and dam construction. Although ground surface visibility was typically good in these areas, the extensive disturbance that results from market gardening strongly militates against finding any intact cultural deposits in these areas.
Native vegetation was limited to small pockets in several properties where several non-mature eucalyptus gums were observed. Due to their recent age, cultural scars were not observed on these trees. No areas of remnant native grassland or swamp scrubland were observed within the activity area.

The survey was used as an opportunity to improve our model of the extent and nature of past ground disturbance which had previously been assessed from historical and recent aerial images.

Disturbance within the activity area was extensive and caused by a wide range of factors. The following specific disturbances to the activity area were observed during the survey:
• Furrowing and ploughing for cultivation;
• Furrowing and ploughing for market gardening;
• Construction of dams;
• Construction of houses and out-buildings;
• Construction of formal gardens;
• Construction of sheds for farm activities;
• Construction of major and minor roads throughout the activity area;
• Construction of driveways and path networks;
• Construction of farm tracks; and
• Installation of boundary fences.

These impacts have been previously discussed in the Desktop Assessment and are shown on Figures 15 to 17. It is considered unlikely that archaeological material will be located within areas of cut and fill disturbance (shaded black on Figure 18) because these areas comprise substantially modified and/or highly disturbed ground resulting from cut and fill for construction of dams, buildings and a desalination pipe. This is likely to have resulted in the complete removal of archaeological deposits from these parts of the activity area.

6.4 Aboriginal Cultural Heritage in the Activity Area

Five (5) Aboriginal Cultural Heritage Places (Aboriginal Places) were recorded during the archaeological survey of the activity area, all along a short section of the unnamed former watercourse in property PSP53-01. The locations of these Aboriginal Places are shown on Figure 23. Details of the Aboriginal places found during the survey are also described below.
An attempt was made to relocate the eleven (11) previously registered places within the activity area (see Table 4). Two (2) of these - Clyde North 1 and Clyde North 2 (VAHR 7921-CN1-11 & 7921-CN2-11) were relocated along the former stream within property PSP53-01, while the location of subsurface deposit Clyde North Artefact Deposit 5 (VAHR 7921-CNAD5-11) could be discerned from a backfilled trench excavated during the previous archaeological test excavation work. Good ground surface visibility along the stream bank facilitated the relocation of these places, as well as the identification of the five (5) previously unrecorded places found nearby (VAHR 7921-1410, 7921-1411, 7921-1412, 7921-1413, 7921-1415).

The remainder of the previously recorded places could not be re-located due to poor ground surface visibility in these areas (VAHR 7921-0416, 7921-0499, 7921-1129, 7921-1130, 7921-CN3-11, 7921-CNAD1-11, 7921-CNAD2-11, 7921-CNAD3-11, 7921-CNAD4-11).
Figure 23: Aboriginal Places recorded during the current survey (yellow) and during previous survey (blue) (Young 2011)
## 7921-1415: Pound Road 1

<table>
<thead>
<tr>
<th>Site name:</th>
<th>Pound Road 1 7921-1415</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site number:</td>
<td>7921-1415</td>
</tr>
<tr>
<td>Primary Grid ref:</td>
<td>357484E 5781818N</td>
</tr>
<tr>
<td>Location:</td>
<td>1475 Pound Rd, Clyde North Clyde North (2/PS433177)</td>
</tr>
<tr>
<td>Landform:</td>
<td>Bank of dam located in close proximity to unnamed former watercourse</td>
</tr>
<tr>
<td>Artefacts:</td>
<td>2 (1 silcrete proximal flake &amp; 1 Quartzite complete flake)</td>
</tr>
<tr>
<td>Average Artefact density per m²:</td>
<td>2</td>
</tr>
<tr>
<td>Place extent:</td>
<td>Primary grid co-ordinate (see above)</td>
</tr>
<tr>
<td>Place condition:</td>
<td>Eroding, stock damage and stock trampling</td>
</tr>
<tr>
<td>Place type:</td>
<td>Isolated occurrence</td>
</tr>
<tr>
<td>Scientific significance:</td>
<td>Low scientific significance</td>
</tr>
</tbody>
</table>

Figure 24 – 7921-1415: location and stone artefacts
VAHR 7921-1415: Nature

VAHR 7921-1415 comprises an isolated occurrence of two stone artefacts located on the surface of a dam bank situated within close proximity to an unnamed former watercourse. Artefact types present include one silcrete proximal flake and one quartzite complete flake. The Aboriginal place was assessed as being in poor condition due to extensive erosion of the dam bank and evidence of stock damage and trampling. The artefacts are not likely to be in situ.

VAHR 7921-1415: Extent

The extent of the Aboriginal Place comprises the grid co-ordinate that was recorded as the artefacts’ location. The artefacts were located close together on the bank of a farm dam situated within close proximity to an unnamed former watercourse. Ground surface visibility was moderate (30%). Past and present surface surveys have identified seven other isolated artefact occurrences and low density scatters within the vicinity of the unnamed former watercourse.

VAHR 7921-1415: Scientific Significance

VAHR 7921-1415 comprises an isolated surface artefact occurrence on a highly disturbed dam bank. The site type is very common throughout the geographic region. Due to its small size, poor structure and limited research potential VAHR 7921-1415 has been assessed as having low scientific significance.
7921-1410: Pound Road IA 1

<table>
<thead>
<tr>
<th>Site name:</th>
<th>Pound Road IA1 7921-1410</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site number:</td>
<td></td>
</tr>
<tr>
<td>Primary Grid ref:</td>
<td>357508E 5781809N</td>
</tr>
<tr>
<td>Location:</td>
<td>1475 Pound Rd, Clyde North Clyde North (2/PS433177)</td>
</tr>
<tr>
<td>Landform:</td>
<td>Bank of unnamed former watercourse</td>
</tr>
<tr>
<td>Artefacts:</td>
<td>1 silcrete complete flake</td>
</tr>
<tr>
<td>Average Artefact density per m²:</td>
<td>1</td>
</tr>
<tr>
<td>Place extent:</td>
<td>Primary grid co-ordinate (see above)</td>
</tr>
<tr>
<td>Place condition:</td>
<td>Gully erosion, and stock trampling</td>
</tr>
<tr>
<td>Place type:</td>
<td>Isolated artefact</td>
</tr>
<tr>
<td>Scientific significance:</td>
<td>Low scientific significance</td>
</tr>
</tbody>
</table>

Figure 25 - 7921-1410: location and stone artefacts

VAHR 7921-1410: Nature

The Aboriginal Place comprises an isolated artefact located on the surface at a farm property at 1475 Pound Rd, Clyde North. The artefact is located next to an unnamed former watercourse and has been exposed by erosion. The local landscape comprises gently sloping plains with some sandy rises. The Aboriginal
place was assessed as being in poor condition due to extensive erosion and evidence of stock trampling. The artefact is not likely to be in situ.

**VAHR 7921-1410: Extent**

The extent of the Aboriginal Place comprises the grid co-ordinate that was recorded as the artefact’s location. The artefact was located in a gully by the side of an unnamed former watercourse (that has been dammed and re-shaped) with high (70%) ground surface visibility. Past and present surface surveys have identified seven other isolated artefact occurrences and low density scatters in the vicinity of the unnamed former watercourse. As no further artefacts were identified on the exposure on which Pound Road IA 1 is located, this place is considered an isolated artefact, characteristic of low density discard across the area.

**VAHR 7921-1410: Scientific Significance**

VAHR 7921-1410 comprises an isolated artefact on a highly disturbed gully embankment. The site type is very common throughout the geographic region. Due to its small size, poor structure and limited research potential VAHR 7921-1410 has been assessed as having low scientific significance.
### 7921-1411: Pound Road IA 2

<table>
<thead>
<tr>
<th>Site name:</th>
<th>Pound Road IA2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site number:</td>
<td>7921-1411</td>
</tr>
<tr>
<td>Primary Grid ref:</td>
<td>357459E, 5781853N</td>
</tr>
<tr>
<td>Location:</td>
<td>1475 Pound Rd, Clyde North (2/PS433177)</td>
</tr>
<tr>
<td>Landform:</td>
<td>Bank of unnamed former watercourse</td>
</tr>
<tr>
<td>Artefacts:</td>
<td>1 quartz complete flake</td>
</tr>
<tr>
<td>Average Artefact density per m²:</td>
<td>1</td>
</tr>
<tr>
<td>Place extent:</td>
<td>Primary grid co-ordinate (see above)</td>
</tr>
<tr>
<td>Place condition:</td>
<td>Gully erosion, and stock trampling</td>
</tr>
<tr>
<td>Place type:</td>
<td>Isolated artefact</td>
</tr>
<tr>
<td>Scientific significance:</td>
<td>Low scientific significance</td>
</tr>
</tbody>
</table>

![Image of stone artefact](image)

**VAHR 7921-1411: Nature**

The Aboriginal Place comprises an isolated artefact located on the surface at a farm property at 1475 Pound Rd, Clyde North. The artefact is located next to an unnamed former watercourse and has been exposed by gully erosion. The local landscape comprises gently sloping plains with some sandy rises. The Aboriginal
place was assessed as being in poor condition due to extensive erosion of the gully and evidence of stock trampling. The artefact is not likely to be *in situ*.

**VAHR 7921-1411: Extent**

The extent of the Aboriginal Place comprises the grid co-ordinate that was recorded as the artefact’s location. The artefact was located on the bank of an unnamed former watercourse on an exposure with high (90%) ground surface visibility. Past and present surface surveys have identified seven other isolated artefact occurrences and low density scatters in the vicinity of the unnamed watercourse. As no further artefacts were identified on the exposure on which Pound Road IA 2 is located, this place is considered an isolated occurrence, characteristic of low density discard across the area.

**VAHR 7921-1411: Scientific Significance**

VAHR 7921-1411 comprises an isolated artefact on a highly disturbed gully embankment. The site type is very common throughout the geographic region. Due to its small size, poor structure and limited research potential VAHR 7921-1411 has been assessed as having low scientific significance.
7921-1412: Pound Road IA 3

| Site name: | Pound Road IA 3 |
| Site number: | 7921-1412 |
| Primary Grid ref: | 357441E 5781877N |
| Location: | 1475 Pound Rd, Clyde North Clyde North (2/PS433177) |
| Landform: | Bank of dam situated near an unnamed former watercourse |
| Artefacts: | 1 silcrete complete flake |
| Average Artefact density per m²: | 1 |
| Place extent: | Primary grid co-ordinate (see above) |
| Place condition: | Gully erosion, and stock trampling |
| Place type: | Isolated artefact |
| Scientific significance: | Low scientific significance |

Figure 27 - 7921-1412: stone artefact

**VAHR 7921-1412: Nature**

The Aboriginal Place comprises an isolated artefact located on the surface at a farm property at 1475 Pound Rd, Clyde North. The artefact is located on the bank of a dam. The local landscape comprises gently sloping plains with some sandy rises. The Aboriginal place was assessed as being in poor condition due to gully
erosion and evidence of stock trampling. The artefact is not likely to be in situ and the potential for sub-surface deposits is considered low.

**VAHR 7921-1412: Extent**

The extent of the Aboriginal Place comprises the grid co-ordinate that was recorded as the artefact’s location. The artefact was located on the bank of a farm dam by an unnamed former watercourse which demonstrated high (90%) ground surface visibility. Past and present surface surveys have identified seven other isolated artefact occurrences and low density scatters in the vicinity of the unnamed former watercourse. As no further artefacts were identified on the exposure on which Pound Road IA 3 is located, this place is considered an isolated occurrence, characteristic of low density discard across the area.

**VAHR 7921-1412: Scientific Significance**

VAHR 7921-1412 comprises an isolated artefact on a highly disturbed dam bank. The site type is very common throughout the geographic region. Due to its small size, poor structure and limited research potential VAHR 7921-1412 has been assessed as having low scientific significance.

### 6.5  7921-1413: Pound Road IA 4

<table>
<thead>
<tr>
<th>Site name:</th>
<th>Pound Road IA 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site number:</td>
<td>7921-1413</td>
</tr>
<tr>
<td>Primary Grid ref:</td>
<td>357417E 5781889N</td>
</tr>
<tr>
<td>Location:</td>
<td>1475 Pound Rd, Clyde North Clyde North (2/PS433177)</td>
</tr>
<tr>
<td>Landform:</td>
<td>Bank of dam situated near an unnamed former watercourse</td>
</tr>
<tr>
<td>Artefacts:</td>
<td>1 silcrete distal flake</td>
</tr>
<tr>
<td>Average Artefact density per m²:</td>
<td>1</td>
</tr>
<tr>
<td>Place extent:</td>
<td>Primary grid co-ordinate (see above)</td>
</tr>
<tr>
<td>Place condition:</td>
<td>Gully erosion, and stock trampling</td>
</tr>
<tr>
<td>Place type:</td>
<td>Isolated artefact</td>
</tr>
<tr>
<td>Scientific significance:</td>
<td>Low scientific significance</td>
</tr>
</tbody>
</table>
VAHR 7921-1413: Nature

The Aboriginal Place comprises an isolated artefact located on the surface at a farm property at 1475 Pound Rd, Clyde North. The artefact is located on the bank of a dam. The local landscape comprises gently sloping plains with some sandy rises. The Aboriginal place was assessed as being in poor condition due to gully erosion and evidence of stock trampling. The artefact is not likely to be in situ and the potential for sub-surface deposits is considered low.

VAHR 7921-1413: Extent

The extent of the Aboriginal Place comprises the grid co-ordinate that was recorded as the artefact’s location. The artefact was located on the bank of a farm dam by an unnamed former watercourse which demonstrated high (90%) ground surface visibility. Past and present surface surveys have identified seven other isolated artefact occurrences and low density scatters in the vicinity of the unnamed former watercourse. As no further artefacts were identified on the
exposure on which Pound Road IA 4 is located, this place is considered an isolated occurrence, characteristic of low density discard across the area.

**VAHR 7921-1413: Scientific Significance**

VAHR 7921-1413 comprises an isolated artefact on a highly disturbed dam bank. The site type is very common throughout the geographic region. Due to its small size, poor structure and limited research potential VAHR 7921-1413 has been assessed as having low scientific significance.

### 6.6 Survey Conclusions

The results of the archaeological survey indicate that there is potential for low density artefact scatters to be distributed across the landscape. There is potential for low to medium density artefact scatters to be present within close proximity to the former watercourse situated in the north-east corner of PSP 53. There is also some potential for higher density and frequency of surface sites in close proximity to current watercourses, such as Clyde Creek.

The survey has demonstrated that the unnamed former water course has some archaeological sensitivity because the land adjacent to this water courses contains a moderate density of Aboriginal places relative to other landforms within the activity area. However, it is important to note that ground surface visibility was good along the un-named water course, whereas the majority of the activity area had very poor ground surface visibility. The poor ground visibility across the majority of the activity area indicates the survey was generally ineffective in identifying the nature, extent and significance of cultural heritage across the activity area.

In general, the results of the survey support the predictive model and predictive sensitivity mapping developed during the Desktop Assessment.

A limited number of conclusions regarding likely archaeological patterning were made drawing on the results of survey:
• Ground surface visibility in the PSPs was generally extremely low and was therefore ineffective at determining the nature and density of potential surface Aboriginal cultural material within areas of dense grassland or other ground cover;

• Sub-surface deposits may be buried below the modern ground surface with no surface evidence. Surface artefacts may also be re-worked by erosion or ground disturbances and therefore may not necessarily indicate the presence of sub-surface deposits;

• Intact archaeological deposits will only be present in areas that have not been significantly disturbed by European activities. Archaeological deposits within areas that are under cultivation / market gardening are likely to be heavily disturbed;

• Artefacts are present across the majority of the landforms in the activity area, although at varying densities;

• There was a clear pattern of frequency of surface sites in close proximity to watercourses and former watercourses. This supports the predictive model developed during the Desktop Assessment;

• Alluvial soils associated with and areas in close proximity to the Clyde Creek and Unnamed Watercourses are likely to have a higher level of sensitivity because there is clearly a higher frequency and density of cultural material in these areas;

• The survey also indicated that flat elevated land surfaces in relatively close proximity to permanent water sources also have a high level of archaeological potential;

• Although density and frequency of surface sites decreases outside the creek corridors, this is partly a function of lower ground surface visibility on the plain landform;

• Although native vegetation was examined (particularly along the creek corridors), none contained evidence of scarring;
• Areas of prior cut and fill disturbance are unlikely to contain Aboriginal cultural heritage, and therefore should be excluded from the scope of Complex Assessment. All other areas have some potential to contain Aboriginal cultural heritage;

• Areas of very high, high and moderate sensitivity should be included in a programme of landform based test excavation as part of Complex Assessments for Cultural Heritage Management Plans. These Complex Assessments would be carried out by individual landowners on a property by property basis; and

• Areas of disturbed, very low and low sensitivity should be excluded from future Complex Assessment because the nature, extent and significance of Aboriginal cultural heritage in these areas is well understood as a result of numerous recent investigations in the region and the results of AHMS investigations for the current project. The model in this region is robust and indicates these areas will contain low density, low frequency surface and sub-surface deposits reflective of occasional use and casual discard. The Desktop and Standard Assessment undertaken for this CHMP also demonstrates the integrity of archaeological deposits in these areas is almost certainly low as a result of ploughing, land clearing and, market gardening.

6.7 Cultural Values

During the survey, the Aboriginal community representatives were consulted about key cultural and landscape values.

The aim of this consultation was to gain an indication of the cultural values which may be relevant to the landscape and to assist in developing a scope for more detailed cultural values assessment during complex assessments.

Cultural values are likely to be associated with but not limited to the following:

• Waterways and wetlands;
- Areas of natural habitat (particularly areas of remnant vegetation);
- Habitat of specific plant or animal species that are / were important resources or had spiritual or totemic significance;
- Known archaeological / cultural sites;
- Old Trees;
- Burial Places (including areas that have a higher potential to contain burials, such as soft alluvial soils on terrace landforms);
- Ceremonial sites;
- Tracks and routes;
- Stone sources;
- Hills and high points within the volcanic landscape;
- Rock outcrops, particularly outcropping rock along creek corridors;
- Places of post contact and contemporary importance / history.

During the survey, the Aboriginal community representatives were asked to comment on any cultural values, particularly in regards to the importance of remnant native vegetation, traditional food plants and landscape values. The activity area has been cleared of all native remnant vegetation and does not contain any high-order waterways such as Cardinia Creek. No comments were received from the Aboriginal community representatives during the survey.

6.8 Revised Model & Sensitivity Mapping

The results of the survey were also used to review the predictive model developed during the Desktop Assessment phase of the project. Prior to undertaking the standard assessment, 3D Lidar technology was provided to AHMS by the Sponsor which facilitated in highlighting crest landforms across the PSPs. These areas were
then visited during the survey and subject to ‘ground truthing’. The 3D Lidar (accompanied by the survey) has provided more accurate results in defining crest landforms and in particular ‘Cranbourne sands’ landforms than the geological mapping reviewed in the desktop assessment. The major changes to the predictive model are: removal of the ‘Cranbourne sands’ geological deposit in the north-west corner and addition of crest/Cranbourne sands landforms identified by Lidar and survey across the activity area (Figure 29).
Figure 29 - Predictive Archaeological Sensitivity Model
6.9 Complex Assessments

The proposed activity (residential subdivision) would be a ‘high-impact’ development and would be considered a ‘sub-division’ under Regulation 48 of the Aboriginal Heritage Regulations 2007.

Prior to the commencement of individual development projects within the PSPs, projects that are located within or partly within an area of cultural heritage sensitivity as defined by the Aboriginal Heritage Regulations 2007 (see Figure 30) will be required to prepare a cultural heritage management plan. The only exception to this would be if all of the development area has been subject to significant ground disturbance in the past.

Significant ground disturbance is defined as disturbance of the topsoil or surface rock layer of the ground or a waterway by machinery in the course of grading, excavating, digging, dredging or deep ripping but does not include ploughing or other deep ripping in the Aboriginal Heritage Regulations 2007. In most cases, it is very difficult to demonstrate significant ground disturbance across the entirety of a typical residential sub-division project. Therefore any developments within or partly within the areas of sensitivity shown on Figure 30 are highly likely to require completion of a complex CHMP before a Planning Permit can be approved for those projects.

Where a CHMP will be required we recommend the use of a landform based approach to complex assessment (test excavation). The landform based approach aims to systematically test each landform within an activity area to establish the extent of cultural material present. This approach is recommended because it is a very efficient and effective means of assessing the nature, extent and significance of Aboriginal cultural heritage across large landscapes. It also provides for a consistent approach across the PSPs and significant sampling efficiencies by using a common approach that can be utilized by all the landowners and proponents within the activity area.
The extent of testing and sample effort should be based on the level of sensitivity shown on the predictive sensitivity mapping shown on Figure 29. Areas which are disturbed or have very low sensitivity should not require further test excavation because they are considered ‘unlikely’ to contain Aboriginal cultural heritage (the Aboriginal Heritage Regulations 2007 only require complex assessment in areas that are ‘likely’ to contain Aboriginal cultural heritage. However, areas ranging from low to very high sensitivity should be included in a systematic programme of landscape-based archaeological test excavation that aims to establish the extent nature and significance of the Aboriginal cultural material within areas of proposed development impact (NB: Areas set aside as open space, conservation or other uses that do not entail development disturbance will not be included in complex assessment and can therefore be excluded from complex assessment scope of work). All levels of sensitivity (low to very high) will need to be included in the scope of complex assessments in order to efficiently test the predictive model.

In addition to test excavation, individual complex assessments should also include consultation with the Bunurong Land Council Aboriginal Corporation, Boonwurrung Foundation and the Wurrundjeri Tribe Land & Compensation Cultural Heritage Council to identify cultural values. These groups must also be invited to participate in any further survey or test excavation fieldwork.

Proposed sampling densities for complex assessments are outlined below. These densities are based upon previous landform based testing, conducted at Botanic Ridge PSP and Minta Farm PSP for the Growth Areas Authority in which the level of testing outlined below was successfully used to establish the extent, nature and significance of the Aboriginal Cultural Heritage across each landscape and identify statistically robust landform and environmental trait patterning. We recommend a minimum sampling density as per Table 9 below.
### Table 9: Proposed Sampling Densities

<table>
<thead>
<tr>
<th>Sensitivity Level</th>
<th>Testing Required (per 100 hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>15 square metres</td>
</tr>
<tr>
<td>High</td>
<td>20 square metres</td>
</tr>
<tr>
<td>Very High</td>
<td>25 square metres</td>
</tr>
</tbody>
</table>
Figure 30: Areas of archaeological sensitivity within the activity area.
7 MANAGEMENT RECOMMENDATIONS

7.1 PSP Planning and Design

The results of the Desktop and Standard Assessment were used to develop a predictive model of the archaeological sensitivity of the activity area. The Desktop Assessment identified previously recorded Aboriginal places registered on the VAHR within the activity area and the Standard Assessment identified previously unrecorded Aboriginal places within the activity area.

The predictive model and archaeological sensitivity map shown on Figures 29 & 30 are designed to inform GAA PSP design and planning work. The sensitivity map is also designed to provide landowners and development proponents with a guide to archaeological sensitivity within various parts of the activity area to assist in gauging risk and making informed decisions about development design.

In general terms, the risk of impact on significant archaeological and Aboriginal cultural heritage values is likely to increase in accordance with sensitivity level. Therefore, areas that are in the very high sensitivity zone are likely to have the highest level of archaeological significance and as a result these areas are also likely to have the highest level of risk for development proponents. Likewise, areas of very low sensitivity or which are disturbed have a very low risk level.

We would recommend the following PSP design responses with reference to the sensitivity zones shown on Figure 29:

**Very High & High Sensitivity:** retain as much as possible in open space, riparian, bio-link, set-backs and asset protection zones. The aim of PSP design should be to minimize future development impact on these areas (particularly the Very High sensitivity zone). This approach will protect areas with high potential for significant archaeological deposits and cultural values. The approach will also save time and money in reducing the scope of mitigation and salvage of sensitivity areas;
**Moderate Sensitivity**: where there is an opportunity, development impact should be minimized where practicable. For instance, where there are opportunities to establish open space, these could be placed on areas of moderate sensitivity to protect Aboriginal heritage and reduce the scope of expensive and time consuming archaeological mitigation measures and salvage.

**Low Sensitivity**: no design and planning recommendations. These areas are essentially archaeologically ‘neutral’.

**Very Low Sensitivity and Disturbed**: these areas could be the focus of development, particularly high impact features of a subdivision like a town centre, medium or high density residential, industrial or commercial.

## 8 Management Requirements

The following recommendations set out the key legal requirements that will apply to PSP planning and development within the activity area:

a. **Subdivision or development projects** (greater than 2 lots and/or two dwellings) located within or partly within areas of cultural heritage sensitivity (shown on Figure 30) will require completion of mandatory cultural heritage management plans (CHMPs) before Planning Permits can legally be approved for these projects. Prior to subdivision or development projects taking place a search of the Aboriginal cultural heritage sensitivity overlay on GeoVic or the Aboriginal Affairs Victoria website should be undertaken to ensure that areas of Aboriginal cultural heritage sensitivity are up to date.

b. Currently there is no Registered Aboriginal Party for both PSPs therefore, the current evaluating authority would be Aboriginal Affairs Victoria (AAV). CHMPs must be prepared by a qualified Cultural Heritage Advisor and must be approved by AAV before they are in force.
If individual development proponents believe their land has been subject to significant ground disturbance (either mechanical excavation disturbance and/or deep ripping) they could consider engaging a Cultural Heritage Advisor to undertake an assessment and make a determination.

c. **Areas where no development or ground disturbance is proposed** - no Complex Assessment will be required in areas where development and disturbance is not proposed. Inclusion of areas of high to very high sensitivity in conservation, open space, biolinks and/or riparian corridors will reduce the scope of Complex Assessment required and provide good outcomes in protecting significant Aboriginal heritage;

d. **Known Aboriginal Places** - known Aboriginal places registered on the Victorian Aboriginal heritage register (VAHR) and places found during the Standard Assessment described in this report (see Figures 5 & 23) are protected by the *Aboriginal Heritage Act 2006*. It is an offence to disturb or destroy these places without first obtaining either a Permit to Harm or an approved CHMP from AAV.

e. **Blanket Protection** - Irrespective of whether or not a CHMP is required for a particular development or activity, the *Aboriginal Heritage Act 2006* provides blanket protection for all Aboriginal cultural heritage. If any Aboriginal objects (artefacts), sites, places or skeletal remains are identified at any time before or during development works, they cannot be harmed until either a Permit to Harm or a CHMP that specifically permits harm to that place has been approved by AAV.
9 REFERENCES


Day, C. 2010. PSP No. 16 - Cranbourne North (Stage 2) - Cnr Thompsons & Clyde Road: Cultural Heritage Management Plan 11051. Sponsor: Growth Areas Authority.


Gaughwin, D. 1981. ‘Sites of Archaeological Significance in Western Port Catchment, vol. 1’ Report prepared by the Division of Prehistory La Trobe University, Victoria for the Environmental Studies Division, Ministry for Conservation, Victoria.


Light, A. 2009. 50 Berwick-Cranbourne Road, Cranbourne East (Residential Subdivision): Aboriginal Cultural Heritage Management Plan (10569). Sponsor: Peet Cranbourne Central Syndicate Ltd.


Murphy, A. and T. Rymer. 2011b. Residential Subdivision 121 Grices Road, Clyde North. Cultural Heritage Management Plan No (11636). Sponsored by Moremac Property Group Pty Ltd.


PROV Unit 5404 Roll 25 DANDENONG CRANBOURNE.

PROV VPRS 10 Inward Registered Correspondence to the Superintendent of Port Phillip District, relating to Aboriginal Affairs map accompanying letter of 29 January 1841.


The Argus 29 Sep 1848:4, Crown Leases.

Thomas, W. Journal November (1858)


Thomas Journal 1840 ZML MSS 214 Item 22 (28) fol 533.


APPENDIX 1 - NOTICE OF INTENT
Notice of Intent to prepare a Cultural Heritage Management Plan for the purposes of the Aboriginal Heritage Act 2006

This form can be used by the Sponsor of a Cultural Heritage Management Plan to complete the notification provisions pursuant to s.54 of the Aboriginal Heritage Act 2006 (the "Act").

For clarification on any of the following please contact Victorian Aboriginal Heritage Register (VAHR) enquiries on 1800-762-003.

SECTION 1 – Sponsor information (mandatory)

Sponsor (natural person or body corporate seeking to undertake the activity):  Growth Areas Authority

<table>
<thead>
<tr>
<th>ABN/ACN:</th>
<th>77 803 352 468</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact name:</td>
<td>Belinda Smith</td>
</tr>
<tr>
<td>Postal Address:</td>
<td>Level 29, 35 Collins Street, Melbourne, Victoria, 3000</td>
</tr>
<tr>
<td>Telephone Number:</td>
<td>(03) 9651 9664</td>
</tr>
<tr>
<td>Mobile:</td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:belinda.smith@gaa.vic.gov.au">belinda.smith@gaa.vic.gov.au</a></td>
</tr>
</tbody>
</table>

Sponsor’s agent (if relevant)

<table>
<thead>
<tr>
<th>Company:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact name:</td>
<td></td>
</tr>
<tr>
<td>Postal Address:</td>
<td></td>
</tr>
<tr>
<td>Telephone Number:</td>
<td></td>
</tr>
<tr>
<td>Mobile:</td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 2 – Description of proposed activity and location

Project Name: Clyde Creek and Thompsons Road Precinct Structure Plan Areas

List the relevant municipal district/s (ie, Local Council or Shire): City of Casey

Clearly identify the proposed activity for which the cultural heritage management plan is to be prepared (ie, mining, road construction, housing subdivision):

Residential Subdivision

Clearly identify the location (such as listing cadastral information, attaching a copy of a title search, or indicating the street address):

Clyde Creek and Thompsons Road PSPs are situated within Clyde/Clyde North and bounded by Thompsons Road to the north, Smiths Lane/Pound Road to the east, Ballarto Road to the south and Berwick-Cranbourne Road to the west (see attached map).

Attach a map (to scale, with a north arrow and indicating the municipal district - if any) that clearly identifies the activity area and its boundaries in respect of which the cultural heritage management plan is to be prepared.

- Please ensure the map refers to existing roads and features, rather than proposed roads and features, and includes their names.
- Please ensure the map has the activity area outlined on it (this area should include all works relating to the proposed activity including location of temporary buildings, space for machinery, etc).
- The map should have a legend; at least three readily identifiable geographical locations (such as road intersections, parcel boundaries, or road/river crossings) and should state the map’s projection.
- Spatial data (i.e. a GIS file) containing the Activity Area will assist in the processing of your notification. Please refer to “Lodging Spatial Data in the VAHR” on the AAV website for further information.
SECTION 3 – Cultural Heritage Advisor

If you would like a Cultural Heritage Advisor (a person who has the qualifications or experience [or both] required under s.189 of the Act) notified of the status of this Cultural Heritage Management Plan, please provide the following details for that person:

Stacey Kennedy
AHMS

Name
Company (if any)
Email address

SECTION 4 – Expected start and finish date for the cultural heritage management plan

Start date 08 / 02 / 2012
Finish date 08 / 02 / 2014

SECTION 5 – Why are you preparing this Cultural Heritage Management Plan?

☐ A Cultural Heritage Management Plan is required by the Aboriginal Heritage Regulations 2007

What is the High Impact Activity as it is listed in the regulations? Regulation 46 subdivision of land

Is any part of the activity in an area of cultural heritage sensitivity, as listed in the regulations? Yes ☐ No (please circle)

☐ Other reasons (Voluntary)
☐ An Environmental Effects Statement is required
☐ A Cultural Heritage Management Plan is required by the Minister for Aboriginal Affairs

SECTION 6 – List the relevant registered Aboriginal parties (if any)

This section is to be completed only where there is a registered Aboriginal party in relation to the management plan

SECTION 7 – Signature of Sponsor

I certify that to the best of my knowledge and belief that the information supplied is correct and complete.

Signed: [Signature]
Date: 08 / 02 / 2012

[Sponsor]

SECTION 8 – Notification checklist

☐ Ensure appropriate attachment/s are completed and attached to this notification (see section 2 of this form).

Please ensure this notice and all attached items are sent to the:

Deputy Director
Aboriginal Affairs Victoria
Department of Planning and Community Development
GPO Box 2392
MELBOURNE VIC 3001

OR Email: vahr@dpcc.vic.gov.au

Notes:

• Ensure that any relevant registered Aboriginal party/s is also notified. A copy of this notice may be used for this purpose.
  (A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to evaluate the management plan.)

• In addition to notifying the Deputy Director and any relevant registered Aboriginal party/s, a Sponsor must also notify any owner and/or occupier of any land within the area to which the management plan relates. A copy of this notice may be used for this purpose.
Appendix 2 - Planning Scheme 37.07 (Urban Growth Zone)
URBAN GROWTH ZONE

Shown on the planning scheme map as UGZ with a number.

Purpose

To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
To manage the transition of non-urban land into urban land in accordance with a precinct structure plan.
To provide for a range of uses and the development of land in accordance with a precinct structure plan.
To contain urban use and development to areas identified for urban development in a precinct structure plan.
To provide for the continued non-urban use of the land until urban development in accordance with a precinct structure plan occurs.
To ensure that, before a precinct structure plan is applied, the use and development of land does not prejudice the future urban use and development of the land.

Application of provisions

Part A – No precinct structure plan applies

The provisions of clauses 37.07-1 to 37.07-8 apply if no precinct structure plan applies to the land.

Part B – Precinct structure plan applies

The provisions of clauses 37.07-9 to 37.07-16 apply if a precinct structure plan applies to the land.

Precinct structure plan provisions

A precinct structure plan applies to land when the precinct structure plan is incorporated in this scheme.

PART A - PROVISIONS FOR LAND WHERE NO PRECINCT STRUCTURE PLAN APPLIES

Table of uses

Section 1 – Permit not required

<table>
<thead>
<tr>
<th>Use</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture (other than Animal keeping, Apiculture, Intensive animal husbandry, Rice growing and Timber production)</td>
<td>No more than 6 persons may be accommodated away from their normal place of residence. At least 1 car parking space must be provided for each 2 persons able to be accommodated away from their normal place of residence.</td>
</tr>
<tr>
<td>Bed and breakfast</td>
<td></td>
</tr>
<tr>
<td>Dependent person’s unit</td>
<td>Must be the only dependent person’s unit on the lot. Must meet the requirements of Clause 37.07-2.</td>
</tr>
<tr>
<td>Use</td>
<td>Condition</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dwelling (other than Bed and breakfast)</td>
<td>Must be the only dwelling on the lot.</td>
</tr>
<tr>
<td></td>
<td>The lot must be at least 40 hectares.</td>
</tr>
<tr>
<td></td>
<td>Must meet the requirements of Clause 37.07-2.</td>
</tr>
<tr>
<td>Home occupation</td>
<td></td>
</tr>
<tr>
<td>Informal outdoor recreation</td>
<td></td>
</tr>
<tr>
<td>Minor utility installation</td>
<td></td>
</tr>
<tr>
<td>Railway</td>
<td></td>
</tr>
<tr>
<td>Tramway</td>
<td></td>
</tr>
<tr>
<td>Any use listed in Clause 62.01</td>
<td>Must meet the requirements of Clause 62.01</td>
</tr>
</tbody>
</table>

**Section 2 – Permit required**

<table>
<thead>
<tr>
<th>Use</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal boarding</td>
<td></td>
</tr>
<tr>
<td>Animal keeping (other than Animal boarding)</td>
<td>Must be no more than 5 animals.</td>
</tr>
<tr>
<td>Car park</td>
<td>Must be used in conjunction with another use in Section 1 or 2.</td>
</tr>
<tr>
<td>Cemetery</td>
<td></td>
</tr>
<tr>
<td>Community market</td>
<td></td>
</tr>
<tr>
<td>Crematorium</td>
<td></td>
</tr>
<tr>
<td>Dependent person’s unit – if the Section 1 condition is not met</td>
<td>Must meet the requirements of Clause 37.07-2.</td>
</tr>
<tr>
<td>Display home</td>
<td></td>
</tr>
<tr>
<td>Dwelling (other than Bed and breakfast)</td>
<td>Must be no more than two dwellings on the lot.</td>
</tr>
<tr>
<td></td>
<td>Must meet the requirements of Clause 37.07-2.</td>
</tr>
<tr>
<td>Education centre</td>
<td></td>
</tr>
<tr>
<td>Emergency services facility</td>
<td></td>
</tr>
<tr>
<td>Freeway service centre</td>
<td>Must meet the requirements of Clause 52.30.</td>
</tr>
<tr>
<td>Freezing and cool storage</td>
<td></td>
</tr>
<tr>
<td>Group accommodation</td>
<td>Must be used in conjunction with Agriculture, Outdoor recreation facility, Rural industry, or Winery. Must be no more than 6 dwellings.</td>
</tr>
<tr>
<td>Hospital</td>
<td></td>
</tr>
<tr>
<td>Host farm</td>
<td></td>
</tr>
<tr>
<td>Interpretation centre</td>
<td></td>
</tr>
<tr>
<td>Leisure and recreation (other than Informal outdoor recreation and Motor racing track)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing sales</td>
<td></td>
</tr>
<tr>
<td>Medical centre</td>
<td></td>
</tr>
<tr>
<td>Nursing home</td>
<td></td>
</tr>
<tr>
<td>Place of assembly (other than Carnival, Circus, and Place of worship)</td>
<td>Must not be used for more than 10 days in a calender year.</td>
</tr>
<tr>
<td>Place of worship</td>
<td></td>
</tr>
<tr>
<td>Primary produce sales</td>
<td></td>
</tr>
<tr>
<td>Real estate agency</td>
<td></td>
</tr>
<tr>
<td>Use</td>
<td>Condition</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Residential hotel</td>
<td>Must be used in conjunction with Agriculture, Outdoor recreation facility, Rural industry, or Winery.</td>
</tr>
<tr>
<td>Restaurant</td>
<td></td>
</tr>
<tr>
<td>Rice growing</td>
<td></td>
</tr>
<tr>
<td>Rural industry</td>
<td></td>
</tr>
<tr>
<td>Rural store</td>
<td></td>
</tr>
<tr>
<td>Store (other than Freezing and cool storage and Rural store)</td>
<td>Must be in a building, not a dwelling, and used to store equipment, goods, or motor vehicles used in conjunction with the occupation of a resident of a dwelling on the lot.</td>
</tr>
<tr>
<td>Utility installation (other than Minor utility installation and Telecommunications facility)</td>
<td></td>
</tr>
<tr>
<td>Veterinary centre</td>
<td></td>
</tr>
<tr>
<td>Winery</td>
<td></td>
</tr>
<tr>
<td>Any use listed in Clause 62.01</td>
<td></td>
</tr>
</tbody>
</table>

Section 3 - Prohibited

<table>
<thead>
<tr>
<th>Use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation (other than Dependent person’s unit, Dwelling, Group accommodation, Host farm, Nursing home, and Residential hotel)</td>
<td></td>
</tr>
<tr>
<td>Industry (other than Rural industry)</td>
<td></td>
</tr>
<tr>
<td>Intensive animal husbandry</td>
<td></td>
</tr>
<tr>
<td>Motor racing track</td>
<td></td>
</tr>
<tr>
<td>Office (other than Medical centre and Real estate agency)</td>
<td></td>
</tr>
<tr>
<td>Retail premises (other than Community market, Manufacturing sales, Primary produce sales and Restaurant)</td>
<td></td>
</tr>
<tr>
<td>Saleyard</td>
<td></td>
</tr>
<tr>
<td>Warehouse (other than Store)</td>
<td></td>
</tr>
<tr>
<td>Wind energy facility</td>
<td></td>
</tr>
<tr>
<td>Any other use not in Section 1 or 2</td>
<td></td>
</tr>
</tbody>
</table>

37.07-2

**Use of land for a dwelling**

A lot used for a dwelling must meet the following requirements:

- Access to the dwelling must be provided via an all-weather road with dimensions adequate to accommodate emergency vehicles.
- The dwelling must be connected to a reticulated sewerage system or if not available, the waste water must be treated and retained on-site in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970.
- The dwelling must be connected to a reticulated potable water supply or have an alternative potable water supply with adequate storage for domestic use as well as for fire fighting purposes.
- The dwelling must be connected to a reticulated electricity supply or have an alternative energy source.

These requirements also apply to a dependent person’s unit.

37.07-3

**Subdivision of land**

A permit is required to subdivide land.

Each lot must be at least 40 hectares.
A permit may be granted to create smaller lots if any of the following apply:

- The subdivision is to create a lot for an existing dwelling. The subdivision must be a two lot subdivision. An agreement under section 173 of the Act must be entered into with the owner of each lot created which ensures that the land may not be further subdivided so as to create a smaller lot for an existing dwelling. The agreement must be registered on title.

- The subdivision is the re-subdivision of existing lots and the number of lots is not increased. An agreement under section 173 of the Act must be entered into with the owner of each lot created which ensures that the land may not be further subdivided so as to increase the number of lots. The agreement must be registered on title.

- The subdivision is by a public authority or utility service provider to create a lot for a utility installation.

### Buildings and works

A permit is required to construct or carry out any of the following:

- A building or works associated with a use in Section 2 of Clause 37.07-1. This does not apply to:
  - An alteration or extension to an existing dwelling provided the floor area of the alteration or extension is no more than 50 square metres.
  - An alteration or extension to an existing building used for agriculture provided the floor area of the alteration or extension is no more than 100 square metres. The building must not be used to keep, board, breed or train animals.

- Earthworks which change the rate of flow or the discharge point of water across a property boundary.

- Earthworks which increase the discharge of saline water.

- A building which is within any of the following setbacks:
  - 100 metres from a Road Zone Category 1 or land in a Public Acquisition Overlay to be acquired for a road, Category 1.
  - 40 metres from a Road Zone Category 2 or land in a Public Acquisition Overlay to be acquired for a road, Category 2.
  - 20 metres from any other road.
  - 5 metres from any other boundary.
  - 100 metres from a dwelling not in the same ownership.
  - 100 metres from a waterway, wetlands or designated flood plain.

### Referral of applications

An application of the kind listed below must be referred in accordance with section 55 of the Act to the referral authority specified in Clause 66.03.

- An application to use or develop land for any of the following:
  - Display home
  - Education centre
  - Hospital
  - Medical centre
  - Nursing home
  - Place of worship
  - Real estate agency.

- An application to subdivide land to create a lot smaller than 40 hectares in area.
Environmental audit

Before a nursing home, pre-school centre or primary school commences on potentially contaminated land, or before the construction or carrying out of buildings and works in association with a nursing home, pre-school centre or primary school commences on potentially contaminated land, either:

- A certificate of environmental audit must be issued for the land in accordance with Part IXd of the Environment Protection Act 1970, or
- An environmental auditor appointed under the Environment Protection Act 1970 must make a statement in accordance with Part IXd of that Act that the environmental conditions of the land are suitable for the sensitive use.

In this clause, “potentially contaminated land” means land used or known to have been used for industry, mining, or the storage of chemicals, gas, wastes or liquid fuel (if not ancillary to another use of the land).

Decision guidelines

Before deciding on an application to use or subdivide land, construct a building or construct or carry out works, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- The effect on the future urban development and use of the land, and adjacent or nearby land, having regard to:
  - Any relevant Growth Area Framework Plan.
  - Any precinct structure plan being prepared for the area.
  - Any comments or directions of the referral authority.
- Whether the proposal will prejudice the logical, efficient and orderly future urban development of the land, including the development of roads, public transport and other infrastructure.
- The capability of the land to accommodate the proposed use or development, including the disposal of effluent.
- How the use or development relates to sustainable land management.
- Whether the site is suitable for the use or development.
- The impact of the siting, design, height, bulk, colours and materials to be used on the natural environment, major roads, vistas and water features, future urban use of the land, and the measures to be undertaken to minimise any adverse impacts.
- The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance.
- The location and design of existing and proposed infrastructure including roads, public transport, walking and cycling networks, gas, water, drainage, telecommunications and sewerage facilities.
- Whether the use and development will require new or upgraded infrastructure, including traffic management measures.

Advertising signs

Advertising sign requirements are at Clause 52.05. The zone is in Category 3. Despite the provisions of Clause 52.05-9, a permit may be granted, for a period of not more than 5 years, to display an advertising sign that promotes the sale of land or dwellings.

PART B - PROVISIONS FOR LAND WHERE A PRECINCT STRUCTURE PLAN APPLIES

URBAN GROWTH ZONE
Use of land

Any requirement in the Table of uses and any requirement specified in the schedule to this zone must be met.

A permit granted must be generally in accordance with the precinct structure plan applying to the land.

Table of uses

Section 1 – Permit not required

<table>
<thead>
<tr>
<th>Use</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any use in Section 1 of a zone applied by the schedule to this zone</td>
<td>Must comply with any condition opposite the use in Section 1 of the applied zone</td>
</tr>
<tr>
<td></td>
<td>Must comply with any condition or requirement specified in the schedule to this zone or in the precinct structure plan</td>
</tr>
<tr>
<td>Any use specified in the schedule to this zone as a use for which a permit is not required</td>
<td>Must comply with any condition or requirement specified in the schedule to this zone or in the precinct structure plan</td>
</tr>
</tbody>
</table>

Section 2 – Permit required

<table>
<thead>
<tr>
<th>Use</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any use in Section 2 of a zone applied by the schedule to this zone</td>
<td>Must comply with any condition opposite the use in Section 2 of the applied zone</td>
</tr>
<tr>
<td></td>
<td>Must comply with any condition or requirement specified in the schedule to this zone or in the precinct structure plan</td>
</tr>
<tr>
<td>Any use specified in the schedule to this zone as a use for which a permit is required</td>
<td>Must comply with any condition or requirement specified in the schedule to this zone or in the precinct structure plan</td>
</tr>
<tr>
<td>Any other use not in Section 1 or 3</td>
<td></td>
</tr>
</tbody>
</table>

Section 3 - Prohibited

<table>
<thead>
<tr>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any use in Section 3 of a zone applied by the schedule to this zone</td>
</tr>
<tr>
<td>Any use specified in the schedule to this zone</td>
</tr>
</tbody>
</table>

Subdivision of land

A permit is required to subdivide land. Any requirement in the schedule to this zone or the precinct structure plan must be met.

A permit granted must:
- Be generally in accordance with the precinct structure plan applying to the land.
- Include any conditions or requirements specified in the schedule to this zone or the precinct structure plan.

Buildings and works

If the schedule to this zone specifies:
- That the provisions of a zone apply to the development of land, the provisions of the zone apply to land in the circumstances specified in the schedule.
- Provisions relating to the development of land, those provisions apply to land in the circumstances specified in the schedule.
If the schedule to this zone specifies that a permit is required to construct a building or construct or carry out works, a permit granted must:

- Be generally in accordance with the precinct structure plan applying to the land.
- Include any conditions or requirements specified in the schedule to this zone or the precinct structure plan.

37.07-12  
Application requirements

An application to use or subdivide land, construct a building or construct or carry out works, must be accompanied by any information specified in the schedule to this zone.

37.07-13  
Exemption from notice and review

An application under clause any provision of this scheme which is generally in accordance with the precinct structure plan applying to the land is exempt from the notice requirements of section 52(1)(a), (b) and (d), the decision requirements of section 64(1), (2) and (3) and the review rights of section 82(1) of the Act, unless the schedule to this zone specifies otherwise.

37.07-14  
Decision guidelines

Before deciding on an application to use or subdivide land, construct a building or construct or carry out works, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- Any relevant Growth Area Framework Plan.
- The precinct structure plan applying to the land, including the vision and objectives of the precinct structure plan.
- Any guidelines in the schedule to this zone.

37.07-15  
Inconsistencies between specific and applied zone provisions

If there is an inconsistency between the specific provisions specified in the schedule to this zone and the provisions of a zone applied by the schedule to this zone, the specific provisions prevail to the extent of any inconsistency.

37.07-16  
Advertising signs

Advertising sign requirements are at Clause 52.05. This zone is in the category specified in the schedule to this zone or, if no category is specified, Category 3.

Notes: Refer to the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement, for strategies and policies which may affect the use and development of land.

Check whether an overlay also applies to the land.

Other requirements may also apply. These can be found at Particular Provisions.
### Appendix 3 - Glossary of Technical Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeolian</td>
<td>Wind generated geological processes. In an archaeological context it usually refers to wind blown deposits and sands.</td>
</tr>
<tr>
<td>Backed Artefact / Backing</td>
<td>A retouched tool (maybe a complete, distal, medial or proximal flake) that displays evidence of backing along one lateral margin. This backing may be initiated from the ventral surfaces or alternately may be an example of bidirectional backing initiated from both surfaces (Holdaway and Stern 2004:259). There are four main types of commonly recognised backed artefacts, which include ‘Bondi Points; geometric microliths (or ‘Backed Blades’), Juan Knives and Eloueras’.</td>
</tr>
<tr>
<td>Bipolar</td>
<td>A method of removing flakes from a core, by striking a core against an anvil (Holdaway and Stern 2004:11). This is often evidenced by crushing at the platform and/or at the termination of the flake; Bipolar flaking is also evidenced as crushing at the base (end opposite the platform) of a core.</td>
</tr>
<tr>
<td>Blade</td>
<td>A flake that is twice as long as its width.</td>
</tr>
<tr>
<td>Bulbar</td>
<td>Refers to a bulb of percussion produced during a conchoidal fracture</td>
</tr>
<tr>
<td>Chert</td>
<td>‘a dense, extremely hard, microcrystalline or cryptocrystalline, siliceous sedimentary rock, consisting mainly of interlocking quartz crystals, sub-microscopic and sometimes containing opal (amorphous silica). It is typically white, black or grey, and has an even to flat fracture. Chert occurs mainly as nodular or concretionary aggregations in limestone and dolomite, and less frequently as layered deposits (banded chert). It may be an organic deposit (radiolarian chert), an inorganic precipitate (the primary deposit of colloidal silica), or a siliceous replacement of pre-existing rocks’ (Lapidus 1990:102).</td>
</tr>
</tbody>
</table>
**Conchoidal**
Where a force strikes the surface of a core forming a circular or ‘ring’ crack that bends back towards the surface of the core, forming a partial bulb of percussion. The fracture frequently moves towards the exterior surface of the core, detaching a flake (Holdaway and Stern 2004:34).

**Core**
Andrefsky (1998:80-81) states a core can be understood as ‘an objective piece that has had flakes removed from its surface’; Holdaway and Stern (2004:37; 5-8) provide further clarification ‘artefacts that retain the negative flake scars of previous flake removals’.

**Cortex**
The outer layer of patination of rock is known as cortex. It is found on weathered stone (Holdaway & Stern 2004: 26-27). Cortex types (mostly rough, water worn or pebble) can indicate the source that stone material was obtained from.

**Debitage**
Small spalls and flakes produced during percussion, bipolar and pressure flaking.

**Fine Grained Basalt**
Basalt is a volcanic rock. See Volcanic below.

**Flake**
Depending on the completeness of the flake, a flake may have a number of common characteristics which may include: a platform, bulb of percussion, errailure (or bulbar) scar, point of force impact (PFI or umbo), dorsal ridge and ventral surface, fissures (or indentations), ripple marks (which radiate away from the point of force impact/umbo) and a termination. Not all of these features are typically found on every flake, however they are attributes likely to be present from conchoidal fracture.

**Negative Flake Scar**
The negative indentation or scar left behind on a flake, core or tool when a flake is removed. The presence and abundance of negative flake scars can reveal information about the process of flaking. For example negative flake scars on a) cores can provide information on how intensely the core has been used, b) on the dorsal surface of a flake can indicate how intensely
the core was flaked before this flakes was removed and/or that the core platform was cleaned off to start flaking again (platform rejuvenation), c) along the edge of a flake can indicate retouch/backing (Holdaway and Stern 2004:184).

Point  
A term applied to certain formal types such as Bondi Points.

Platform  
A striking platform or a platform is the surface from which a flake is struck from a Core (Holdaway and Stern 2004:5); flakes retain part of the platform on their proximal end.

Quartz  
‘crystalline silica, SiO2. It crystallizes in the trigonal system, commonly forming hexagonal prisms. For cryptocrystalline varieties of silica see Chalcedony. Colourless and transparent quartz, is found in good crystals, is known as rock crystal. Varieties that are colours due to the presence of impurities may be used as gemstones, amethyst, purple to blue-violet, rose quartz, pink; citrine, orange- brown; smoky quartz, pale yellow to deep brown’ (Lapidus 1990:429).

Quartzite  
‘a metamorphic rock consisting primarily of quartz grains, formed by the recrystallization of sandstone by thermal or regional metamorphism; a metaquartzite and a sandstone composed of quartz grains cemented by silica; an orthoquartzite’ (Lapidus 1990:430).

Retouch  
Modification of a flake or core prior to use. Retouch is the ‘removal of a series of small, contiguous flakes’ from the edges of the artefact (Holdaway and Stern 2004:33). There are several different types of retouch which are identified as backing; stepped; scalar; invasive; notched and serrated retouch.

Reduction  
By definition stone material is made smaller when it is struck to produce stone flakes and tools. This process is known as stone reduction.

‘Modern stone artefact analyses use the reductive nature of
Stone artefact manufacture as the basis for reconstructing the processes by which artefacts were made. By analysing the size and form of artefacts, archaeologists can obtain information about how stone was acquired from its source, the form in which the stone was transported to campsites, how it was worked, and the way stone artefacts were use until discarded’ (Holdaway and Stern 2004:3).

**Scarred Tree**
A tree that has been marked as a result of bark being removed by Aboriginal people for cultural reasons or for use in making shields, containers, canoes etc. Some trees may also have marks caused by making toe holds for climbing up trees.

**Scraper**
‘A minimal definition of a scraper is that it is a flake with one or more margins of continuous retouch’. It also indicates the stage of reduction the flake has reached (see Holdaway and Stern 2004:227).

**Silcrete**
‘a hard surface deposit composed of sand and gravel cemented by opal, chert and quartz, formed by chemical weathering and water evaporation in semi-arid climate. Extensive deposits of silcrete are found in S. Africa and Australia. Silcrete is a siliceous duricrust’ (Lapidus 1990:472).

**Termination**
There are a number of different flake terminations (or ends of a flake) which are possible through flaking stone material. The main types of flake terminations include step, hinge, feather and plunging. Flake terminations can provide information about how the flake was removed.

**Tool**
A tool is an artefact which shows evidence of modification (i.e. by retouch) or without modification (i.e. show signs of usewear) (Holdaway and Stern 2004:33; 39).

**Tuff**
‘pyroclastic rock composed mainly of volcanic ash (fragments <2mm in diameter). Tuffs may be classified as crystal tuff if they contain a large proportion of crystal fragments, vitric tuff
composed mainly of glass and pumice fragments and lithic tuff, containing mainly rock fragments. A consolidated mixture of lapilli and ash is a lapilli tuff’ (Lapidus 1990:519-520).

**Usewear**

‘Evidence of distinctive patterns of wear [which is] sometimes found on the edges of artefacts that were believed to have been used for specific purposes’ (Holdaway and Stern 2004:41). Several types of usewear can be observed. Holdaway and Stern (2004:41; 167) identify ‘chattering’ and ‘edge damage’ as one form of usewear.

**Volcanic**

‘All extrusive rocks and associated high-level intrusive ones. The group is entirely magmatic and dominantly basic. Igneous lithic material generally dark in colour and may be glassy (like obsidian) or very fine-grained or glassy igneous rock produced by volcanic action at or near the Earth’s surface, either extruded as lava (e.g. basalt) or expelled explosively’ (Lapidus 1990:535).
APPENDIX 4 - SITE GAZETTEER
<table>
<thead>
<tr>
<th>Name</th>
<th>VAHR Number</th>
<th>GDA 94 Zone 55</th>
<th>Aboriginal Place Type</th>
<th>Cadastral Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland Park AS1</td>
<td>7921-1129</td>
<td>355077E 5782145N</td>
<td>Stone Artefact Scatter</td>
<td>Lot 1445 PS602806 Casey City</td>
</tr>
<tr>
<td>Cleveland Park AS2</td>
<td>7921-1130</td>
<td>355515E 5782086N</td>
<td>Stone Artefact Scatter</td>
<td>Lot 4 PS438890 Casey City</td>
</tr>
<tr>
<td>Clyde North 1</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North 2</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North 3</td>
<td>NA</td>
<td>NA</td>
<td>Isolated artefact</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North Artefact</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Deposit 1</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North Artefact</td>
<td>NA</td>
<td>NA</td>
<td>Isolated artefact</td>
<td>NA</td>
</tr>
<tr>
<td>Deposit 2</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North Artefact</td>
<td>NA</td>
<td>NA</td>
<td>Isolated artefact</td>
<td>NA</td>
</tr>
<tr>
<td>Deposit 3</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North Artefact</td>
<td>NA</td>
<td>NA</td>
<td>Isolated artefact</td>
<td>NA</td>
</tr>
<tr>
<td>Deposit 4</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde North Artefact</td>
<td>NA</td>
<td>NA</td>
<td>Isolated artefact</td>
<td>NA</td>
</tr>
<tr>
<td>Deposit 5</td>
<td>NA</td>
<td>NA</td>
<td>Stone Artefact Scatter</td>
<td>NA</td>
</tr>
<tr>
<td>Clyde Road 1</td>
<td>7921-0499</td>
<td>349912E 5784384N</td>
<td>Isolated Artefact</td>
<td>Lot 1445 PS602806 Casey City</td>
</tr>
<tr>
<td>Patterson Road 1</td>
<td>7921-0416</td>
<td>353372E 5779664N</td>
<td>Isolated Artefact</td>
<td>Lot 1 TP133042 Casey City</td>
</tr>
<tr>
<td>Pound Rd IA 4</td>
<td>7921-1413</td>
<td>357417E 5781889N</td>
<td>Isolated Artefact</td>
<td>Lot 2 PS433177 Casey City</td>
</tr>
</tbody>
</table>
**Name** | **VAHR Number** | **GDA 94 Zone 55** | **Aboriginal Place Type** | **Cadastral Details**
---|---|---|---|---
Pound Rd IA 3 | 7921-1412 | 357441E 5781877N | Artefact Scatter | Lot 2 PS433177 Casey City
Pound Rd IA 2 | 7921-1411 | 357459E 5781853N | Artefact Scatter | Lot 2 PS433177 Casey City
Pound Rd IA 1 | 7921-1410 | 357508E 5781809 | Artefact Scatter | Lot 2 PS433177 Casey City
Pound Rd 1 | 7921-1415 | 357484E 5781818 | Artefact Scatter | Lot 2 PS433177 Casey City