PLUMPTON PRECINCT STRUCTURE PLAN (PSP) 1078

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

SPONSOR: METROPOLITAN PLANNING AUTHORITY.

CULTURAL HERITAGE ADVISOR: SHANNON SUTTON

AUTHORS: SHANNON SUTTON & LIZ FOLEY.

MAY 2014 (REDACTED VERSION JUNE 2016)

AHMS

ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS PTY LTD

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

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

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

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PLEASE NOTE - THIS REPORT CONTAINS PICTURES OF AND INFORMATION ABOUT PEOPLE WHO MAY HAVE PASSED AWAY.

EXECUTIVE SUMMARY

The Metropolitan Planning Authority (MPA) engaged Archaeological and Heritage Management Solutions Pty Ltd (AHMS) to prepare an Aboriginal Cultural Heritage Assessment for the Plumpton Precinct Structure Plan (PSP) 1078. The activity area consists of 55 properties situated between Taylors Road and the Melton Highway in Plumpton, Victoria. This report comprises a desktop and standard Aboriginal cultural heritage assessment.

A notice of intent (NOI) to prepare the assessment was lodged with Office of Aboriginal Affairs Victoria (OAAV) on the 3rd of May 2013. OAAV issued a project number 12618. There is currently no Registered Aboriginal Party relevant to the activity area and therefore OAAV are the statutory authority responsible for evaluating the heritage assessment.

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 for known Aboriginal places on the Victorian Aboriginal Heritage Register (VAHR) was undertaken on the 3rd of May 2013 to identify previously recorded sites within the geographic region (Werribee River Basin) relevant to the study area. At the time of the search, only two Aboriginal places, a broken grindstone (VAHR 7822-2255) and a broken quartzite flake (VAHR 7822-2256) were recorded within the activity area on property ID #28.

Drawing on the desktop research and our analysis of landforms and prior disturbance across the activity area, we made the following predictions:

- Stone artefact deposits are likely to be found at varying densities across most landforms within PSP 1078;
- Higher density artefact scatters and sub-surface deposits may be found on crest landforms;

- Higher density artefact scatters and sub-surface deposits may be found adjacent to original drainage channels, particularly permanent and reliable water sources;
- 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 may be found in close proximity to stone sources (either outcrops or river pebble sources);
- 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;
- Ceremonial places may be present in the landscape, but may not be archaeologically visible; and
- Stone arrangements may be found across the landscape.

Due to the large area covered by PSP 1078, 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 Metropolitan Planning 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 standard and 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 traits used to formulate the sensitivity model are listed in section 5.12.3 of this report. The sensitivity model is shown on

Figure 9.

An archaeological survey was undertaken by Shannon Sutton and Liz Foley from the 3rd to the 6th of July, the 9th of September 2013 and the 30th of January 2014. Representatives of the Wurundjeri Tribe Land & Compensation Cultural Heritage Council, the Bunurong Land Council Aboriginal Corporation and the Boon Wurrung Foundation were present during the survey (participants are listed in Table 2).

The principal aim of the survey was to identify exposed cultural material (i.e. surface sites) and gauge the extent of prior disturbance. The survey results and observations were used to identify any potential archaeological deposits (i.e. areas that are 'likely' to contain Aboriginal sites or objects). They were also used to assess the extent to which past land-uses may have affected natural soil profiles.

One Aboriginal place, Plumpton PSP (VAHR 7822-3639), a low density artefact distribution (LDAD) of 55 stone artefacts was located within the activity area during the survey. Artefact density was typically greater in areas adjacent to the low order drainage channels and swamps in the activity area.

Drawing on the results of the desktop and standard assessments, we make the following recommendations for planning and design decision making in the PSP 1078 activity area:

Surface Artefact Clusters in Areas of Moderate 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 minimise future development impact on these areas where it is feasible within other planning, design and environmental constraints and considerations. This approach will protect areas with higher potential for archaeological deposits. The approach will also save time and money in reducing the scope of mitigation and salvage of higher 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 Sensitivity : 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 study area and study area:

a. **Subdivision or development projects** (greater than 2 lots and/or two houses) **located within or partly within areas of cultural heritage sensitivity** will require completion of mandatory cultural heritage management plans (CHMPs) before Planning Permits can legally be approved for these projects. Currently there is no Registered Aboriginal Party for the PSP, therefore the current evaluating authority would be Office of Aboriginal Affairs Victoria (OAAV). CHMPs must be prepared by a qualified Cultural Heritage Advisor and must be approved by OAAV 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.

b. **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 higher sensitivity in conservation, open space, biolinks and/or riparian corridors will reduce the scope of Complex Assessment required and provide good outcomes in protecting significance Aboriginal heritage;

c. **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 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 OAAV.

d. **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 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 OAAV

Where a complex CHMP will be required for individual development projects 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 (Figure 26). 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 30.

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Abbreviations

OAAV	Office of Aboriginal Affairs Victoria
AHC	Australian Heritage Council
BP	Before Present
CHMP	Cultural Heritage Management Plan
EVC	Ecological Vegetation Communities
MPA	Metropolitan Planning 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
WTL&CCHC	Wurundjeri Tribe Land and Compensation Cultural Heritage Council
PSP	Precinct Structure Plan

Definitions

ACTIVITY AREA	The area or areas to be used or developed for the activity. For the purposes of this Heritage Assessment, this was the area subject to a standard level CHMP assessment.
GEOGRAPHIC AREA	Werribee River Basin

PART 1 – ASSESSMENT.

1 INTRODUCTION

1.1 Preamble

The Metropolitan Planning Authority (MPA) engaged Archaeological and Heritage Management Solutions (AHMS) Pty Ltd to prepare an Aboriginal cultural heritage assessment (including a desktop and standard assessment) for the Plumpton precinct structure plan (PSP) 1078. The PSP 1078 activity area is located between Taylors Road and the Melton Highway in Plumpton, within the City of Melton Local Government Area (Figure 1). The activity area comprises 55 properties with a total area of approximately 1,015 ha.

A notice of intent to prepare the CHMP was lodged with Office of Aboriginal Affairs Victoria (OAAV) on the 03/05/2013 (a copy of the notice is included in Appendix 1). OAAV issued a project number 12618. OAAV advised that as there was no Registered Aboriginal Party, OAAV are the evaluating authority.

This heritage assessment was prepared in accordance with the requirements of the *Aboriginal Heritage Act 2006* and associated regulations and guidelines issued by OAAV regarding preparation of CHMPs. The overriding purpose of the heritage assessment was to document and assess the Aboriginal heritage (archaeological and cultural) values of the study area to assist in PSP design and planning work. The heritage assessment is also designed to provide management recommendations for future subdivision and development and to provide a desktop and standard assessment that can be utilised by landowners and developers to develop complex CHMPs for specific development projects within the Plumpton PSP area.

Figure 1. Location and extent of the Plumpton PSP 1078 Activity Area (source: MPA)

1.2 Reason for the current study

The objective of the Aboriginal cultural heritage assessment was to identify and assess the nature, extent and significance of Aboriginal sites, objects and cultural heritage values within the subject land to inform PSP design and planning work. The heritage assessment also provides recommendations to manage and assess Aboriginal heritage during complex assessment CHMPs for future development projects within the Plumpton PSP activity area.

This Aboriginal cultural heritage assessment has been prepared in accordance with the Aboriginal Heritage Act 2006 and the Aboriginal Heritage Regulations 2007.

Specific aims of the assessment were as follows:

- Identify any known Aboriginal sites, relics and places of cultural significance to the Aboriginal community within the subject land;
- Assess the potential for Aboriginal sites and/or relics buried below ground surfaces;
- Assess the Aboriginal heritage significance of Aboriginal sites, relics, places and areas of archaeological potential in partnership with the local Aboriginal community;
- Assess the potential impact of the activity on Aboriginal sites, relics, places and significance values;
- Make recommendations to help inform PSP design and planning; and
- Make appropriate recommendations for protection of cultural heritage and/or mitigation of development impact, including contingency procedures, in consultation with the local Aboriginal community.

1.3 Authorship

Shannon Sutton (B.Archaeological Practice Hons) is the Cultural Heritage Advisor and the principal author for this CHMP. Liz Foley (B.Archaeology Hons) assisted with desktop research and preparation of the report. Jim Wheeler (BA Hons MAACAI) reviewed the report.

1.4 Acknowledgements

The authors acknowledge the assistance and valuable input provided by Stephanie Harder, Anthony Battaglia, Fiona McDougall and Tim Peggie of the Metropolitan Planning Authority.

We would also like acknowledge the assistance and input provided by the Aboriginal community representatives: [redacted] (Boon Wurrung Foundation), [redacted] (Bunurong Land Council), [redacted] (Wurundjeri Tribe Land Compensation and Cultural Heritage Council).

2 ACTIVITY DESCRIPTION

The majority of the activity area (Figure 1) is currently zoned Urban Growth Zone (UGZ), with a minor drainage channel zoned Urban Floodway Zone (UFZ) and a high voltage transmission easement zoned Farming Zone (FZ). UGZ attempts to streamline planning controls within the Precinct Structure Plan (PSP) area -effectively removing the rezoning process.

The Sponsor, the Metropolitan Planning Authority (MPA), does not intend to develop each individual allotment, nor would they undertake subdivision works. The role of the MPA is to undertake master planning and design work to assist in facilitating streamlined and high quality development within the Plumpton growth area. Subdivision works and implementation of development projects within the Plumpton PSP 1078 activity area would be undertaken by individual landowners and/or developers.

This report comprises desktop and standard level heritage assessments designed to assist the MPA in PSP design and planning and to provide a desktop and standard CHMP assessment that can be utilised by landowners and developers to develop complex CHMPs for specific development projects within the Plumpton PSP 1078 area.

The activity area is predominantly zoned UGZ under the Melton Planning Scheme. The Melton Planning Scheme will be amended in order to introduce a new schedule to the UGZ to apply to land in the Plumpton Precinct Structure Plan (PSP). This schedule will set out the future land use and development controls for the precinct and requires land use and development to be generally in accordance with the incorporated PSP.

3 EXTENT OF ACTIVITY AREA

The Activity Area consists of 55 properties (shown on Figure 1) covering a total area of approximately 1,015ha.

The activity area is located in Plumpton, situated within the City of Melton municipality. The Plumpton PSP 1078 is bounded to the north by the Melton Highway, to the south by Taylors Road and to the east and west by private allotments.

The subject land is currently utilised for a variety of uses including residential and agricultural purposes (i.e. crop and livestock rearing).

4 DOCUMENTATION OF CONSULTATION

4.1 Development of Consultation

There were no Registered Aboriginal Parties (RAPs) at the time notice of intent to prepare this heritage assessment was provided to Office of Aboriginal Affairs Victoria (OAAV). On the advice of OAAV we undertook a process of consultation with the RAP applicants (the Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc.) and two relevant traditional owner claimant groups: The Bunurong Land Council Aboriginal Corporation and the Boonwurrung Foundation.

Our approach to the Aboriginal community consultation was to undertake all components of the study in partnership with the Wurundjeri, Bunurong and Boonwurrung. In practice, we invited representatives of the groups to participate in the standard assessment archaeological survey. The representatives of the Aboriginal community stakeholders were consulted about key cultural and landscape values during the survey work.

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 consultation carried out with the Aboriginal community stakeholders during the survey, the representatives identified three particular areas of the PSP that have a higher level of cultural value associated with surface artefact clusters encountered on drainage lines and on the fringe of a former wetland. Further detail relating to these areas is outlined in Section 7 of this report.

Table 1. Aboriginal Community Correspondence Log.

Date	Action	Method
03/05/2013	NOI submitted to OAAV.	Electronic
27/05/2013	Invited members of the Bunurong, Boon wurrung and Wurundjeri Aboriginal community groups to participate in the survey	Email
03-06/06/2013 & 9/09/2013 & 30/1/2014	Undertook survey and discussed cultural values to the local Aboriginal community. Representatives of Bunurong, Wurundjeri and Boonwurrung assisted with the survey and provided feedback on cultural values.	Survey

The representatives that participated with the survey are outlined as follows:

Table 2. Traditional Owner representative survey participants.

Date	Wurundjeri	Boonwurrung	Bunurong
03/06/2013	[redacted]	[redacted]	[redacted]
04/06/2013	[redacted]	[redacted]	[redacted]
05/06/2013	[redacted]	[redacted]	[redacted]
06/06/2013	[redacted]	[redacted]	[redacted]
09/09/2013	[redacted]	[redacted]	[redacted]
30/01/2014	[redacted]	[redacted]	[redacted]

RESULTS OF ABORIGINAL CULTURAL HERITAGE ASSESSMENT

5 DESKTOP ASSESSMENT

5.1 Preamble

This section comprises the 'desktop assessment' required by the *Aboriginal Heritage Regulations (2007)*. In accordance with the regulations this section of the report comprises the following:

- A search of the Victorian Aboriginal Heritage Register for information relating to the activity area, including the date(s) the Victorian Aboriginal Heritage Register was accessed;
- An identification and determination of the geographic region of which the activity area forms a part that is relevant to the Aboriginal cultural heritage that may be present in the activity area;
- A concise map or maps showing the geographic region and the location of the activity area in that geographic region;
- A review of the registered Aboriginal places in the geographic region;
- A review of reports and published works about Aboriginal cultural heritage in the geographic region, relevant to the activity area;
- A review of historical and ethno-historical accounts of Aboriginal occupation of the geographic region, relevant to the activity area;
- A review of the landforms or geomorphology of the activity area;
- A review of the history of the use of the activity area, including discussion of prior disturbance to ground surfaces and soil deposits (i.e. introduced modern imported fill) if available; and
- A conclusion surmising from the desktop assessment where it is possible Aboriginal cultural heritage may be located in the activity area.

The information obtained during desktop assessment assists in determining the archaeological potential of the activity area in a number of ways. For example, cconsidering the types of natural resources that may have been available within the study area, or in the region, provides an indication of why people may have been present in the area, and of the potential physical traces of such a presence (e.g. the types of stone used for artefact making, whether trees having bark suitable for the manufacture of certain items existed/exist in the area, or whether there exists a known resource - plant animal or otherwise - that may have drawn people to the area).

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, in the study 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 current study area.

In short, knowledge of the environmental, cultural and historical contexts of the study 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 heritage assessment is the Werribee River Basin (Figure 2). The Werribee River Basin is situated within the greater geological feature of the Western District Plains or Volcanic Plains. The Volcanic Plains are comprised of basaltic lava flows, tuffs and scoriae ranging in age from the Middle Pliocene to geologically recent and are known as the Newer Volcanic Group[1].

The Werribee River Basin covers an area of approximately 2,700km^2 and includes all rivers and creeks west of the Maribyrnong River up until Little River. The landscape of the Basin varies from steep sided hills and gorges to basalt plains. Agricultural land accounts for approximately 67% of the catchment, while natural vegetation covers 25% and approximately 5% is urbanized[2].

Although the geographic region comprises the Werribee River Basin, the desktop assessment will focus on land within a 10km 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.

[1] *Hills 1964: 261-262*

[2] *Melbourne Water Website*

Figure 2. The geographic Region – the Werribee River Basin (outlined in black) showing the general location of the activity area (indicated by a red star).

5.3 Preamble

A search of ACHRIS (Aboriginal Cultural Heritage Register Information System) was undertaken to identify previously recorded Aboriginal site types and distribution patterns within the Werribee River Basin & within a 10km radius of the activity area (Figure 3).

The search identified a total of 588 registered Aboriginal places have been registered within a 10km radius of the activity area (Figure 3, Table 4). The vast majority of registered Aboriginal places consist of artefact scatters, comprising 91% of all site types. The majority of these were situated in close proximity to the drainage corridors (particularly the Werribee River) and adjacent to swamps or wetlands. The current site distribution pattern is clearly weighted towards areas of higher surface visibility within areas that have previously undergone archaeological assessment.

There are two registered Aboriginal places within the activity area [redacted] (VAHR 7822-2255) comprises a broken grindstone located in a ploughed paddock. [redacted] (VAHR 7822-2256) consists of a broken quartzite flake located on an exposed area of ground surface [redacted]. The sites have been subject to similar levels of disturbance from agricultural and pastoral activities (i.e. land clearance, ploughing and stock trampling).

Table 3. Registered Aboriginal places within the activity area.

VAHR #	[redacted]	[redacted]	[redacted]	Site contents
7822-2255	[redacted]	[redacted]	[redacted]	broken grindstone
7822-2256	[redacted]	[redacted]	[redacted]	broken quartzite flake

Table 4. Frequency of sites within a 10 km radius of the activity area.

Site Type.	Frequency (No).	Frequency (%).
Artefact scatter	537	91.3
Earth features	13	2.2
Low density artefact distribution	14	2.4
Object collection	17	2.9
Quarry	4	0.7
Scarred trees	3	0.5
Total	588	100

5.4 Parcels within the PSP 1078 which currently require completion of mandatory CHMPs.

This section of the report identifies which properties within the PSP are currently located within an area of cultural heritage sensitivity and will require completion of a mandatory CHMP for future high impact development activities and subdivision planning permit applications. It is very important to note that this information may be subject to change because the cultural heritage sensitivity overlay changes as new Aboriginal places are identified and new named waterways are added. **Therefore it is critically important that landowners and development proponents seek advice from a Cultural Heritage Advisor and/or Office of Aboriginal Affairs Victoria to ensure the information outlined in Table 5 overleaf is still applicable prior to development**. Currently, parcels that will require a mandatory CHMP for future subdivision development contain, or are located within 50m of, a registered Aboriginal place. The CHMP will need to be completed and approved before Council are legally permitted to approve a planning permit for the development.

Table 5. Parcels Currently Requiring Mandatory CHMPs for High Impact activities.

ID #	Allotment Number	Address
5	Lot: 3 Lp: 126604	1200-1234 Plumpton Road, Plumpton
6	Lot: 4 Lp: 216928a	2-4 Tarletons Road, Plumpton
12	Lot: 2 Tp: 819023k	206-388 Beattys Road, Plumpton
13	Lot: 3 Lp: 116565	1037-1067 Plumpton Road, Plumpton
14	Lot: 2 Lp: 116565	1005-1035 Plumpton Road, Plumpton
16	Lot: 4 Lp: 116565	1125-1151 Melton Highway, Plumpton
17	Lot: 5 Lp: 116565	1097-1123 Melton Highway, Plumpton
18	Lot: 6 Lp: 116565	1069-1095 Melton Highway, Plumpton
19	Lot: 7 Lp: 116565	1043-1067 Melton Highway, Plumpton
27	Ca: 9 Sec: B	167-233 Beattys Road, Plumpton
28	8~B\Pp3061	235 Beattys Road, Plumpton
39	Lot: 1 Plt: Lp: 131980	519-583 Beattys Road, Plumpton
42	Lot: 2 Lp: 131980	1392-1438 Plumpton Road, Plumpton
48	Ca: Sec: B	1056-1150 Taylors Road, Plumpton
49	A Ps709426	1012 Taylors Road, Plumpton
53	Lot: 1 Lp: 216292v	58-76 Saric Court, Plumpton

REDACTED FIGURE

Figure 3. Registered Aboriginal places within 10km of the study area. Source: Aboriginal Cultural Heritage Register and Information System.

5.5 Review of Regional Archaeological Context (including reports and published works)

For the purposes of determining settlement and site distribution patterns, archaeologists examine regional and local trends in the distribution of known sites in relation to environment and topography. This provides evidence about economic and social systems in the past and also assists archaeologists in predicting likely site types, site locations and the nature of the archaeological resource in any given area. Key regional studies are reviewed and discussed below.

5.5.1 Gaughwin 1983

In 1983, Denise Gaughwin undertook a regional study of Aboriginal coastal economies within the Western Port Catchment as part of a Master's thesis submitted to Latrobe University[3]. Gaughwin's study involved the identification of three broad landform units (coastal margins, coastal plains and uplands), and an investigation of their past use by Aboriginal people. Through an analysis of ethno-historical sources, an assessment of the availability of resources within each landform unit, and sample archaeological survey, Gaughwin developed a descriptive model which highlighted the variations in use between the different coastal environments[4].

The 'coastal plains' landform unit described by Gaughwin is the most similar to the current study area. The coastal plains landform unit was defined as *'all that area between the uplands and the coastal margins'*[5]. Site types recorded on this landform unit (n=15) consisted of artefact scatters and isolated finds[6]. Sites within the coastal plains landform were considered to display *'a preference for camps with immediate availability to wetlands and swamps'*[7]. Gaughwin considered that the coastal plains landform likely contained evidence of a significantly larger

[3] *Gaughwin 1983.*

[4] *Gaughwin 1983: 33-34; 140-155.*

[5] *Gaughwin 1983: 37.*

[6] *Gaughwin 1983: 110*

[7] *Gaughwin 1983: 113.*

number of archaeological sites - but that low effective survey coverage of the area meant that such evidence was not recovered during the course of her investigation[8].

5.5.2 Presland 1983

In 1983 Presland undertook an archaeological survey of the Melbourne Metropolitan region focusing on the Yarra and Maribyrnong catchments. Presland's study was aimed at identifying areas of potential archaeological sensitivity through a combination of background research and field survey.[9]

Presland's study area was divided into five broad landscape units for the purposes of survey and comparative analysis. The landscape Unit 1 is the most similar to the current study area. Landscape unit 1 is described as 'a flat plain which includes the alluvial fans, terraces and valleys of the Yarra and Maribyrnong Rivers'[10]. A total of 10 new archaeological sites were recorded in Unit 1 as a result of Presland's field assessment. Of the sites recorded in this unit, six were scarred trees, and the remainder either artefact scatters or isolated artefacts. The results of this assessment indicated that significant levels of landscape modification were noted to have occurred across the region (particularly in Landscape Unit 1) as a result of a combination of residential and industrial development and associated infrastructure, diminishing the areas archaeological potential.

5.5.3 Rhoads 1986

A regional archaeological assessment of the Bellarine Peninsula, was undertaken in two stages in the 1980s by Stockton (1983) and Rhoads (1986)[11]. The archaeological surveys of the Bellarine Peninsula were undertaken in two stages. The most common site types identified during the surveys were shell middens and artefact scatters.

[8] *Gaughwin 1983: 155.*

[9] *Presland 1983: 2.*

[10] *Presland 1983: 5.*

[11] *Rhoads 1986; Stockton 1983.*

Rhoads argued that the dominant activities represented at most sites were those that focused on food and resource gathering[12]. Rhoads also argued that *'Aboriginal campsites anywhere on the Peninsula would have likely been situated within a short distance of most plants and animals comprising the inhabitants' subsistence base'*[13]. Rhoads argued that settlement was probably focused away from the coast in winter and that there was little evidence to illustrate any precise locality as specifically significant[14].

5.5.4 du Cros 1989

du Cros conducted a study of the western region, which included the current study area. The survey sampled random and non-random areas. Dominant landforms identified by du Cros include the 'Volcanic Plains' and 'Major Rivers/Creeks'. The Volcanic Plain is the dominant landform type in the current activity area.

A total of twenty sites (scarred trees & artefact scatters) were recorded on the Volcanic Plains, with a site density of 1/30 ha. Sites were found to occur on extinct eruption points, as these are the highest points on the landscape and are associated with swamps and small springs. None of the sites identified were considered to be *in-situ*.

A total of forty-one sites were located within the Major River/Creeks landform, with a site density of 1/9 ha recorded during the survey. Sites predominantly comprised stone artefact scatters but also included grinding grooves, freshwater shell middens and scarred trees. du Cros determined that sites would typically occur within 50-200m of a waterway.

Drawing on the results of the survey, du Cros made the following predictions regarding site types and locations:

- Burials, artefact scatters, isolated artefacts and scarred trees will occur within 100m of major watercourses;

[12] *Rhoads 1986:1, 68*

[13] *Rhoads 1986:28*

[14] *Rhoads 1986:45*

- Artefact scatters will occur on the highest points of the volcanic plains, such as eruption points;
- Artefact scatters, isolated artefacts and scarred trees will occur close to permanent swamps, springs and lakes on the volcanic plain;
- Shell middens and other sub-surface deposits will occur in terraces and alluvial deposits along major rivers; and
- Post-contact sites will occur in association with old homesteads in the region.

5.5.5 du Cros 1990

du Cros conducted a survey for a proposed urban growth area between Kororoit Creek and the Maribyrnong River near Sydenham located east of the current study area. du Cros aimed to sample the major landscape units, the 'Volcanic Plains' and 'Major Rivers/Creeks' identified in previous investigations[15].

Of the nineteen sites located during the survey, only three sites were identified on the Volcanic Plains landform (an artefact scatter 7822-404 and two isolated artefacts 7822-0492, 7822-0403). No hills or eruption points were located on the Volcanic Plains landform within the study area, which was used by du Cros to argue that her initial prediction that '*Artefact scatters will occur on the highest points of the volcanic plains, such as eruption points*'[16] was correct. The remaining 16 sites were recorded on the Major Rivers/Creek landscape unit, where the most common site type identified was stone artefact scatters.

The results of the survey are in accordance with the predictive model developed in previous studies by du Cros for the Western Region[17]. The absence of scarred trees in proximity to waterways was considered to reflect post-contact vegetation clearance practices.

[15] *du Cros 1989*

[16] *du Cros 1989*

[17] *du Cros 1989*

Among the findings of the study du Cros made the following additional predictions:

- Sources or outcrops of silcrete and metamorphic stone are likely to have been quarried by Aboriginal people if exposed more than 150 years ago.
- Sites with extensive sub-surface archaeological deposits containing burials, hearths faunal material and artefacts will most likely be found in areas with the best preservation.

5.5.6 Weaver and Ellender 1994

In the late 1980s the Victorian Archaeology Survey (VAS) commissioned Ellender and Weaver to undertake an archaeological survey of a section of the Port Phillip Bay foreshore between Canadian Bay and Geelong[18]. The purpose of the survey was to fill gaps in earlier investigations of the Bay undertaken by Sullivan (1981), Presland (1983), Rhoads (1986) and du Cros (1989).

Shell middens were the most common site type found on the eastern foreshore and artefact scatters were found in the western hinterland zone in close proximity to water sources. Scarred trees were found in association with water bodies, estuaries and creeks[19]. Ellender and Weaver argued that the results of their survey indicated that seasonal exploitation of shellfish appeared to be the primary foraging strategy (and archaeological signature) identified on the eastern foreshores, with base camps located further inland near multiple resource zones such as hinterland swamp systems.

5.5.7 Long et al 2010.

GHD and Andrew Long & Associates (ALA) were commissioned by Metropolitan Planning Authority to conduct a large-scale regional desktop assessment of four study areas consisting of the North (Craigieburn-Beveridge), North-West (Sunbury),

[18] *Ellender & Weaver 1994.*

[19] *Ellender & Weaver 1994: 66*

West (Melton-Werribee) and South-East (Pakenham-Cranbourne)[20]. The project aimed to identify high level areas of archaeological sensitivity to assist the MPA in future planning and to inform and guide the desktop assessment components of CHMPs prepared for individual precincts within the growth areas.

The West Study Area (Melton-Werribee) is the most relevant to the current activity area.

A primary object of the GHD / ALA assessment was to define zones of Aboriginal cultural heritage sensitivity based on a regional predictive model. The predictive model was developed through a review of the following sources of information:

- a review of registered cultural heritage places on the Victorian Aboriginal Heritage Register,
- terrain patterning based predominantly on distance to water, geology and elevation,
- high level land use history and disturbance mapping,
- a review of ethnohistorical sources to identify Aboriginal sites and places, and to assist in understanding Aboriginal settlement patterns,
- a review of previous archaeological reports to assist in identifying prevailing archaeological patterning in the area, and
- some initial consultation with key traditional owner representatives to identify cultural values and places within growth areas.

A review of these sources of data identified terrain profile units (comprising a combination of landform and environmental traits) with varying levels of potential to contain Aboriginal cultural places.

[20] *Long, A., Allen, J., Howell-Meurs, J., Buckley, K., Rosengren, N., Albrecht, M., Sheedy, K. & Thomas, S. Metropolitan Planning Authority Strategic Approach to Aboriginal Heritage Management for Melbourne's Metropolitan Planning Authority'. Unpublished report prepared for the Metropolitan Planning Authority.*

These were defined as (overleaf):

Zone 1 – High likelihood of Cultural Places.

Zone 1 comprised major waterways, such as the Werribee River and Skeleton Creek, major wetlands, eruption points and elevated areas (such as crests, ridges).

This zone contained the highest density of registered Aboriginal cultural sites, including sites of high scientific and cultural significance. Current site types within this zone include dense stone artefact scatters and scarred trees. There is some potential for sites types such as quarries, burials and ceremonial places to occur.

The following management recommendations were made for Zone 1:

- Complex assessment, including controlled excavation, should be undertaken for all activities within this zone.
- Use of controlled methods for subsurface testing with only limited use of "coarser" evaluation techniques i.e. shovels probes and mechanical excavation.
- Protection of cultural heritage places – by establishing management reserves in areas of known or predicted cultural heritage sensitivity.
- Minimisation of impacts from development by placing constraints, controls and limitations on works in this zone.
- Salvage of cultural heritage places, wherever development may occur within this zone that will impact on cultural heritage places.

Zone 2 – Moderate likelihood of Cultural Places.

Zone 2 landforms consisted of minor creeks, wetland margins, stony rises and minor elevations.

Zone 2 contained secondary densities of registered Aboriginal cultural places which were generally not characterised by places of high scientific significance.

Registered cultural heritage places within Zone 2 are dominated by stone artefact scatters and scarred trees, although there is some potential for other site types (i.e. quarries burials and ceremonial places).

The following management recommendations were made for this zone:

- Complex assessment, including controlled excavation, should be undertaken for all activities within this zone.
- Use of coarse evaluation techniques and mechanical excavation may be undertaken except in localised places of higher sensitivity.
- There are unlikely to be requirements to protect specific cultural heritage places, though exceptions may exist (i.e. scarred trees).
- There will be minimal requirements to minimise development impacts, although minimization should be encouraged where possible.
- Salvage will be limited to localised areas with higher levels of significance.

Zone 3 – Low likelihood of Cultural Places.

Landforms within Zone 3 comprised uniform slopes at distance from major water sources.

Zone 3 areas generally did not contain any Aboriginal cultural places, with the exception of diffuse scatters and scarred trees. This zone is considered unlikely to contain sites of high scientific significance - however the report notes that this does not consider possible cultural significance values to the Aboriginal community, which would need to be considered in more detail at the CHMP stage.

The following recommendations were made for this zone:

- Completion of CHMPs for all activities within this zone. It is expected that completion of a CHMP to standard assessment stage will be adequate; however the outcomes of the standard assessment will determine if subsurface testing (Complex assessment) is required.

- No specific requirements for the protection of cultural heritage exist for this zone, however exceptions may exist, i.e. scarred trees and unregistered sites.

- There will be minimal requirements to mitigate and/or minimise development impacts.

- Salvage will be limited to localised areas of unusually high levels of significance.

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 in advance of proposed development. The assessment work varied significantly in methodology and content in comparison to CHMPs, therefore a general indication of the types of studies which have been conducted is provided overleaf (Table 6).

The majority of studies conducted prior to the introduction of the Aboriginal Heritage Act (2006) consisted of desktop archaeological assessment or archaeological surveys, with a particular focus on the Werribee River and its surrounding landscape. Only limited archaeological subsurface investigations were carried out prior to the commencement of the Act in 2006[21].

[21] *E.g. Debney's (1998) test excavation which aimed at identifying the subsurface extent of a known surface site (7822-090)*

Table 6. Local Studies (within a 10km radius of the activity area (the study area).

Report	Assessment Type	Distance from Activity Area	Aboriginal Heritage Identified
Vines (1990)	Survey	Immediately east of the activity area.	A total of seven Aboriginal places (artefact scatters) were identified during the survey. All but one was registered within 100m of Kororoit Creek. The artefact scatters were low and high density and were manufactured from silcrete, quartzite, quartz.
du Cros (1990)	Survey	Regional study that includes activity area.	A total of 19 Aboriginal places were identified during the survey. du Cros concluded that artefact scatters within the Volcanic plain will be located on the highest parts such as eruption points. Additionally, du Cros predicted that sources of silcrete that have been exposed for greater than 150 years will like have been quarried by Aboriginal people.
Rhodes (1990)	Survey	2.5km east of activity area.	Rhodes identified 101 Aboriginal places within the City of Keilor, the vast majority of which (n=87) are artefact scatters. Scarred trees and stone quarries were represented in small numbers. Rhodes concluded that there had been intensive Aboriginal use of the Maribyrnong River valley during the Holocene.
du Cros (1990)	Survey	Immediately east of activity area.	A total of three stone artefact scatters were identified during the survey, consisting of two large, low density artefact scatters and an isolated artefact.
Webb (1991)	Survey	Regional study that includes activity area.	A total of two Aboriginal places (artefact scatters) were identified during the survey, albeit some distance from the current study area.

Report	Assessment Type	Distance from Activity Area	Aboriginal Heritage Identified
Du Cros and Watt (1993)	Survey	650m west of activity area.	An isolated artefact (quartz) was identified during the survey and was identified adjacent to a permanent watercourse. The authors concluded that the artefact is likely to have been deposited within the past 3,000 years.
Vines (1993)	Survey	650m west of activity area.	A total of three Aboriginal places were identified during they survey, all of which consisted of low density artefact scatters. The artefacts (n=4) were manufactured from quartz and silcrete. All artefacts were identified on the basalt plain and were not in association with any watersource. The artefacts are typical of those identified within the landform (volcanic plain).
du Cros and Murphy (1995)	Survey	Immediately east of activity area.	A total of six Aboriginal places were identified during the survey, all of which consisted of stone artefact scatters. The artefact scatters are all of low-moderate density and were identified on level-gently sloping land adjacent to water courses. The artefacts were manufactured from silcrete, quartzite and quartz.
Murphy (1995)	Survey	Regional study that includes activity area.	A total of eight Aboriginal places were identified during the survey, consisting of a scarred tree and seven stone artefact scatters. The artefact scatters were identified primarily in association with creeks and rivers and (to a lesser extent) the volcanic plain. The artefacts (n=36) were manufactured from silcrete, quartz and basalt. A possible glass artefact was also identified.

Report	Assessment Type	Distance from Activity Area	Aboriginal Heritage Identified
Murphy (1996)	Survey	Regional study that includes activity area.	A total of 27 Aboriginal places were identified, the majority of which consisted of stone artefact scatters. A total of two scarred trees were also identified during the survey. Aboriginal places were primarily identified within the mountain ranges environmental zone, 60% of which were identified within 300m of watercourses. Aboriginal places were primarily identified on the lower and upper slopes of gently inclined hills. The artefacts were primarily manufactured from silcrete, followed by quartz and greenstone.
Newby & Muir (1996)	Survey	Immediately east of activity area.	A total of two isolated stone artefacts were identified during the survey. The artefacts consisted of a silcrete and a quartz flake.
Murphy (1998)	Survey	Immediately southeast of the activity area.	A stone artefact scatter was identified during the survey and consisted of nine flakes manufactured from silcrete and quartz. Murphy concluded that the most archaeologically sensitive landforms within the region consist of: Kororoit Creek and the associated floodplain (within 200m of the Creek), and all past and present swamp margins.
Rhodes and Nicholson (1998)	Survey	Immediately southeast of the activity area.	An isolated stone artefact was identified during the survey, which was a quartz flake located on the west bank of a stream channel.

Report	Assessment Type	Distance from Activity Area	Aboriginal Heritage Identified
Cochrane (1999)	Survey	2km northwest of the activity area.	A total of two stone artefact scatters were identified during the survey, both of which are of low-density and are located immediately adjacent to and 100m west of Stony Hill Creek. The author concluded that tributaries of Kororoit Creek are highly likely to be associated with stone artefact scatters.
Cekalovic (1999)	Survey	2.5km west of the activity area.	A stone artefact scatter was identified during the survey. The artefact scatter consisted of primarily waste flakes and angular fragments manufactured from quartz, silcrete, and quartzite.
Cekalovic (2000)	Survey	2.5km west of the activity area.	A total of seven Aboriginal places and a potential scarred tree were identified during the survey. The Aboriginal places consist of two large, artefact scatters and five low-density artefact scatters. The artefacts were manufactured from silcrete, quartzite, quartz, chert, basalt, and bottle glass. The author concluded that stone artefact scatters are distributed throughout the region, although are more highly concentrated in close proximity to Kororoit Creek.
Pavlides & Atkinson (2000)	Test Excavation	Immediately east of the activity area.	A total of 935 stone artefacts were identified during survey and test excavation, corresponding to 11 Aboriginal places. The artefacts were manufactured from chert, quartz, silcrete, quartzite, quartz, and a 'black volcanic material' [most probably trachyte]. Geometric microliths and backed blades were identified within the assemblage, indicating that at least a percentage of the stone artefacts were manufactured during the Australian Small Tool Tradition (ASTT). The authors argued that a large proportion of the artefacts were manufactured from materials exotic to the Kororoit Creek region. The authors identified chert as the most common raw material within the assemblage and argued that raw material sources of silcrete are unavailable along Kororoit Creek.

Report	Assessment Type	Distance from Activity Area	Aboriginal Heritage Identified
Terraculture (2000)	Survey	Immediately east of the activity area.	A total of 13 Aboriginal places were identified during the survey, all consisting of stone artefact scatters of between one and two stone artefacts. The artefacts were manufactured from quartz, quartzite and silcrete. A geometric microlith was identified during the survey, indicating that at least a portion of the artefacts were manufactured during the ASTT.
Bell (2002)	Survey	Immediately east of the activity area.	A total of 317 stone artefacts were identified during the survey, all of which were located within the north bank of Kororoit Creek. The artefacts were primarily manufactured from silcrete, followed by quartz, quartzite, chert, sandstone, and crystal quartz. The authors concluded that the south bank of Kororoit Creek was more heavily utilised by Aboriginal people in the past (see Pavlides and Atkinson 2000).
Bell (2003)	Salvage	Immediately east of the activity area.	A stone artefact scatter was subject to archaeological mechanical salvage. A total of 275 stone artefacts were recovered from 'above the alluvial flat'. Salvage was also conducted within the alluvial terrace (to a depth of 500mm) however no stone artefacts were identified.
Bell (2003)	Test Excavation	Immediately east of the activity area.	A total of 18 stone artefacts were recovered from a sub-surface context during the test excavation. The artefacts were manufactured from silcrete, quartz and quartzite.
Hyett (2006)	Survey	Immediately east of the activity area.	No Aboriginal places were identified during the survey. The author concluded that due to the lack of watersources, the study area was not highly sensitive for Aboriginal archaeological material.
Tucker (2006)	Test Excavation	2.5km south of the activity area.	A single silcrete flake was identified during the test excavation. The author concluded the study area was not highly sensitive for archaeological material due to the landform (flat/plain) and absence of watersources.

Report	Assessment Type	Distance from Activity Area	Aboriginal Heritage Identified
Edmonds (2007)	Survey	2.5km south of the activity area.	No Aboriginal places were identified during the survey, which the author attributed to the landform (flat and featureless volcanic plain) and disturbance history.
Edmonds and Brooke (2007)	Survey	2.5km south of the activity area.	No Aboriginal places were identified during the survey, which was largely attributed to the poor ground surface visibility. The authors concluded that the elevated land adjacent to Stony Hill Creek was of greater Aboriginal archaeological sensitivity than the surrounding low lying volcanic plain.

5.7 Review of Cultural Heritage Management Plans in the Local Area

5.7.1 Tucker & Athanasiadis (CHMP 10752)

TerraCulture Pty Ltd was commissioned by City West Water to prepare a Cultural Heritage Management Plan for a sewerage reticulation pipeline in Stoney Hill Creek in Caroline Springs, located 450m east of the current activity area[22]. One previously unrecorded Aboriginal place was located during the standard assessment (VAHR 7822-2289) comprising silcrete artefacts including two complete cores, one medial flake, one complete flake and an angular fragment. Two 1m x 1m and thirteen 50cm x 50cm test trenches were excavated during the complex assessment, the assessment. Excavation revealed relatively shallow volcanic soil profiles typically 20cm in depth. Two artefacts, a quartzite scraper and a quartzite broken backed blade, were recovered within topsoil deposits in one of the 50cm x 50cm trench (0-4cm)[23]. The artefacts were assessed as having no integrity and low scientific significance[24].

5.7.2 Murphy & Morris (CHMP11609)

Archaeology at Tardis was engaged by APA Gasnet to prepare a CHMP for the installation of a gas pipeline extending from Middle Road, Truganina to Taylors Road, Plumpton[25]. A small section of the pipeline is located north of Taylors Road, within the activity area [redacted]). This is described by Archaeology at Tardis as Landscape Unit 1, heavily vegetated paddocks with <1% ground surface visibility[26]. One previously unrecorded Aboriginal place was located during the standard assessment; VAHR 7822-2917 contained two quartzite artefacts located on a basalt outcrop on the south bank of Kororoit Creek[27]. The standard

[22] *Tucker, C. & Athanasiadis, H., 'Sewerage Reticulation Pipeline, Stoney Hill Creek, Caroline Springs: A Cultural Heritage Management Plan', unpublished report prepared for City West Water 2009: I.*

[23] *ibis., p. 25*

[24] *ibid., p. 16*

[25] *Murphy, A. & Morris, A, 'APA Gasnet Sunbury gas pipeline looping project Middle Road Truganina to Taylors Road, Plumpton.' unpublished report prepared for APA Gasnet Australia Pty Ltd, 2011:iii.*

[26] *ibid., p. 38.*

[27] *ibid., p. 50.*

assessment found that Aboriginal cultural heritage is likely to be present near current and former waterways and on elevated landforms within the activity area; however no additional Aboriginal cultural heritage was located during the complex assessment[28].

5.7.3 Howell-Meurs et al (CHMP 10287)

City West Water commissioned Andrew Long & Associates to prepare a CHMP for the installation of a 2.4km water main along Westwood Drive, between Rockbank Middle Road and Taylors Road, located approximately 2km east of the current activity area[29]. There were three previously registered Aboriginal places comprising two artefact scatters (VAHR 7822-0310, VAHR 7822-0247) and a multicomponent Aboriginal place consisting of an artefact scatter and an earth feature (VAHR 7822-1130). One previously unrecorded Aboriginal, an artefact scatter (VAHR 7822-2168), was located during the standard assessment. Artefacts recovered during the complex assessment comprised isolated pieces of silcrete, quartz and quartzite relating to the three previously registered places (VAHR 7822-1130, VAHR 7822-0247 & VAHR 7822-0310). All of the artefacts were recovered from a relatively shallow depth and had been disturbed as a result of ploughing, road construction and other activities[30].

5.7.4 Lawler et al (CHMP 10342)

VicRoads commissioned Biosis Pty Ltd to prepare a CHMP for access restoration works on the Western highway, between Rockbank and Melton, located 2.6km southwest of the current activity area[31]. One previously unrecorded Aboriginal place was located during the standard assessment comprising 2 grey silcrete flakes and 1 white quartz flake on a vehicular access track [redacted][32]. Areas of sensitivity identified during the standard assessment include former

[28] *ibid., p. 51.*

[29] *Howell-Meurs, J., Albrecht, M. & Matthews, D., 'Westwood Drive Water Main, Burnside Aboriginal Cultural Heritage Management Plan.', unpublished report prepared for City West Water, 2008:11*

[30] *ibid., p. 42.*

[31] *Lawler, M., Vines, G. & McKinnis, D. 'Western Highway – Rockbank to Melton Access Restoration Project Cultural Heritage Management Plan.' unpublished report prepared for Vicroads, 2008:v.*

[32] *ibid., p. 24.*

swampland to the southeast of Kororoit Creek[33]. No additional Aboriginal cultural heritage was located during the complex assessment[34].

5.7.5 Orr & Hyett (CHMP 11611)

TerraCulture Pty Ltd was commissioned by Simonds Developments to prepare a CHMP for a residential development at 868 Melton Highway, Hillside[35], immediately north of the current activity area. The desktop assessment showed that there was one previously recorded Aboriginal place within the activity area (VAHR 7822-0430) consisting of an isolated artefact [redacted]. The standard assessment located an additional 10 silcrete artefacts associated with VAHR 7822-0430. Three areas of archaeological potential for subsurface deposits of Aboriginal cultural heritage were also located, consisting of low rises and land within the vicinity of VAHR 7822-0403[36]. A further seven previously unrecorded Aboriginal places were located during the complex assessment (VAHR 7822-02880, VAHR 7822-02881, VAHR 7822-2919, VAHR 7822-2920, VAHR 7822-2921, VAHR 7822-2922 & VAHR 7822-2933). All of the Aboriginal places comprised low density artefact scatters located in a shallow or surface context[37]. The dominant raw material encountered was silcrete, with quartz and chert present to a much lesser extent. All of the Aboriginal places were considered to have low archaeological significance[38].

5.7.6 Green (CHMP 12235)

Andrew Long & Associates were commissioned by Plumpton Gardens Pty Ltd to complete a CHMP for a residential subdivision [redacted][39], immediately south of the activity area ([redacted]). The desktop

[33] *ibid., p. 25.*

[34] *ibid., p. 27.*

[35] *Orr, A. & Hyett, J. 'Residential Development, 868 Melton Highway Hillside Cultural Heritage Management Plan.' unpublished report prepared for Simonds Developments, 2011:27*

[36] *ibid., p. 27.*

[37] *ibid., p. 38.*

[38] *ibid., p. 40.*

[39] *Green, M. '1027 Taylors Road, Plumpton Residential Subdivision Cultural Heritage Management Plan.' unpublished report prepared for Plumpton Gardens Pty Ltd, 2012:i-ii.*

assessment considered there to be a low likelihood that Aboriginal cultural heritage is present within the activity area due to the presence of an unnamed swamp. The standard assessment also found that large portions of the property had been modified by construction[40]. No Aboriginal archaeological evidence was located during the standard assessment or subsurface testing. Subsurface testing undertaken during the complex assessment found shallow deposits, with basalt clays typically encountered at a depth of 12cm[41].

5.7.7 Murphy & Morris (CHMP 12312)

Melrose Land Sales Pty Ltd commissioned Archaeology at Tardis Pty Ltd to prepare a CHMP for an industrial subdivision for a 135ha block of land along the Western Highway at Ravenhall[42], 3.7km south of the current activity area. The desktop assessment found that there are four previously registered Aboriginal places within the activity area comprising stone artefact scatters (VAHR 7822-1827 to VAHR 7822-1830). During the standard assessment, ground surface visibility ranged from none to extremely poor (<1%). Two additional surface stone artefacts were located during the survey; these were subsequently registered as Low Density Artefact Distributions (VAHR 7822-3549). All of the Aboriginal places within the activity area were determined to have an extremely low level of scientific significance.[43] Areas of archaeological potential identified during the standard assessment comprise the flat plains adjacent to the low lying swamps and minor drainage lines[44]. No additional Aboriginal cultural heritage was located during the subsurface testing conducted as part of the complex assessment, it was considered unlikely that further Aboriginal cultural heritage would be present within the activity area[45].

[40] *ibid., p.47.*

[41] *ibid., p. 62.*

[42] *Murphy, A. & Morris. 'Industrial Subdivision: Western Highway Ravenhall.' unpublished report prepared for Melrose Land Sales Pty Ltd, 2013:iii.*

[43] *ibid., p. 67.*

[44] *ibid., p. 38.*

[45] *ibid., p. 48.*

5.7.8 Barker & Barker (CHMP 11228)

Optus Networks engaged Heritage Insight Pty Ltd to prepare a CHMP for the installation of a Fibre Optic Cable between Hillside and Melton[46]. The CHMP was conducted immediately north of the current activity along the Melton highway. The desktop assessment found no Aboriginal places within the activity area. One previously unrecorded Aboriginal place, a highly disturbed surface scatter, was located during the standard assessment (VAHR 7822-2503). The standard assessment also found that the entire activity area had been subject to significant ground disturbance[47]; however a complex assessment was undertaken on the land surrounding Kororoit Creek. No additional Aboriginal cultural heritage was located during subsurface testing; however the complex assessment did confirm that the activity area has been subject to significant ground disturbance[48].

[46] *Barker, M. & Barker, M. 'Proposed Hillside-Melton Fibre Optic Cable Desktop, Standard and Complex Assessments.' unpublished report prepared for Optus Networks. 2010: iv.*

[47] *ibid., pp. 36-37.*

[48] *ibid., p. 50.*

5.8 Ethno-historical Background

This section presents a history of Aboriginal occupation and possible uses of the activity area based on documentary evidence and early ethnographic records. This information is important in providing a context to the 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.

5.8.1 The *Woi wurrung* Language Group

According to Clark, at the time of contact the activity area lay within the boundaries of the *Woi wurrung* language group. The boundaries of the *Woi wurrung* clans are believed to have included the Yarra and Maribyrnong River basins, extending west as far as the Werribee River and north to the Dividing Range, from Mt Baw Baw to Mt William.[49] Howitt, an early European observer, described the boundaries as:

"From the junction of the Saltwater [Maribyrnong] and Yarra Rivers, along the course of the former to Mount Macedon, thence to Mount Baw-Baw, along the Dividing Range, round the sources of the Plenty and Yarra to the Dandenong Mountains, thence to Gardiner's Creek and the Yarra to the starting point".[50]

The *Woi wurrung* language group was made up of four primary clans, the *Gunung-willam balug*, *Kurung-jangbalug*, *Marin balug* and *Wurundjeri balug*. The *Gunung-willam balug* contained a sub-group (most likely a patriline) known as *Talling willam*, and the *Wurundjeri balug* held two such sup-groups, the *Wurundjeri willam*, and *Bulug Willam*. *Wurundjeri willam* was further divided into three smaller groups or 'tracts', each of which were identified as occupying specific areas of land.[51] According to Clarke, the activity area was most likely occupied by the *Talling willam* or more likely the *Marin balug* at the time of European contact.

[49] *Clark, I. 1990. Aboriginal Languages and Clans: An Historical Atlas of Western Central Victoria. Monash Publications in Geography No. 7.*

[50] *Goulding, M. & Menis, M. 'Moreland Post-Contact Aboriginal Heritage Study', Unpublished report prepared for Moreland City Council by Goulding Heritage Consulting Pty Ltd, 2006, pp. 27*

[51] *Clark loc. cit.*

The *Woi wurrung* clans formed part of "the larger East Kulin speakers whose identity was premised on a shared language and connection to country.[52] These groups also shared practices relating to initiation, burial, kinship, marriage and religion[53], but they also maintained significant social differences.[54]The languages of the *Bunwurrung* and *Daung wurrung* speaking people were the most linguistically similar to the *Woi wurrung*, with whom they held a significant (approximately 75 percent) shared vocabulary.

5.8.2 Lifestyle of the Traditional Owners

A review of ethnohistorical records relating to Aboriginal use and occupation of the region aims to identify ways in which Aboriginal people interacted with, and potentially left archaeological traces on, their environment. Although these early observations have the potential to provide useful information about Aboriginal society at contact, the information they do provide is of necessity incomplete, and subject to varying degrees of bias.

Ethnohistorical references to the *Woi wurrung* are fragmentary at best, and no source comparable to the notes made by Assistant Protector William Thomas about the adjacent *Bun wurrung* exists for *Woi wurrung* clans.[55] The following ethnohistory is thus largely based on accounts of wider clan gatherings, or more generalized information about the Aboriginal people of Port Phillip.

5.8.3 Food Resources

Although traditional food gathering practices and access to resources were necessarily restricted by European occupation of the region at the time, ethnohistorical sources record Aboriginal exploitation of a range of plant and animal foods during the contact period. Food resources in the region 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 *Woi wurrung* peoples,

[52] *Howitt, A.W. 'The Native Tribes of South-east Australia, Aboriginal Studies Press', Canberra, 1996, pp. 336-338*

[53] *Howitt loc. cit.*

[54] *Broome , R. Aboriginal People of Victoria, ATSIC, Canberra, 2002, pp. 3*

[55] *Presland, G. 'An archaeological survey of the Melbourne Metropolitan area', unpublished report to the Victorian Archaeological Survey, 1983, pp.20*

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'.[56]

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.[57] Tubers such as that of the Yam Daisy provided a 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'.[58]

The Indigenous peoples of Port Phillip also readily exploited the fresh and salt-water animal resources of the region. Thomas[59] 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.[60] 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 *Woi wurrung*, with kangaroo and possum a popular staple.[61] Gaughwin details an instance where at gathering of *Bun wurrung*, *Woi 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.[62]

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[56] *Presland op. cit. pp. 35*

[57] *Goulding, M. 'Aboriginal Occupation of the Melbourne Area, District 2', unpublished report to the Land Conservation Council, Land Conservation Council, Melbourne 1988, pp.21*

[58] *Presland op. cit. pp. 35*

[59] *Presland op. cit. pp. 32*

[60] *Presland op. cit. pp. 33*

[61] *Presland op. cit. pp. 34*

[62] *Goulding op. cit.pp.19. See also Presland op. cit. pp. 34*

5.8.4 Movements and Camps

The Woi wurrung would have moved around the region in a variety of ways and likely on a seasonal basis. Scant ethnohistorical information exists about such movements, however, with the exception of 'comings and goings from Melbourne'.[63] Most information about the movements of *Woi wurrung* comes from reports of gatherings between themselves and other clans such as the *Bun wurrung*. The following account provides a generalized picture of movements and camps across the wider Port Phillip district.

Woi wurrung clans moved around the landscape and interacted with the larger language group and more broadly within the groups that are commonly referred to as the Kulin. Intermarriage was an important part of the social structure and the rules governing marriage led to a highly complex and overarching network of kin relationships between groups. The groups of the Kulin identified with one of two moieties, waa (crow) or bunjil (eaglehawk). Moiety affiliation was inherited, and marriage partners were obtained from the opposite moiety, as Thomas noted:

"…marriages are not contracted in their own tribe, for instance, a Yarra black must get a wife not out of his own tribe, but either of the other tribes".[64]

According to Thomas, part of the affiliation with other groups was through corroborees held at new and full moon, and intertribal meetings, which were held every few months.[65] Clans would have gathered during specific times of the year for resource gathering to enact social rituals, such as coming-of-age. These meetings were important congregations that fulfilled a myriad of social functions, including arranging marriages, discussing politics and resolving disputes. These meetings also served as a forum for the exchanging of goods between the different groups.[66]

[63] *Presland op. cit. pp. 31*

[64] *Thomas, W. Brief account of the Aborigines of Australia Felix (1854), in Bride, T. F. ed. (1969) Letters from Victorian Pioneers, Melbourne, 1969, pp.54*

[65] *Thomas op. cit. pp. 97*

[66] *Broome op. cit. pp. 4*

The following comments by Thomas illustrate facets of the traditional life of the Port Phillip Aboriginal people, and provide insight into some of the purposes of the regular inter-tribal gatherings:

"…what I can learn, long ere the settlement was formed the spot where Melbourne now stands…was the regular rendezvous for the tribes known as the Waworongs, Boonurongs, Barrabools, Niluguons, Goulbourns twice a year of as often as circumstances and emergencies required to settle their grievances, revenge, deaths etc."[67].

"…all are employed; the children in getting gum, knocking down birds etc; the women in digging roots, killing bandicoots, getting grubs etc; the men in hunting kangaroos, etc, scaling trees for opossums etc. They mostly are at the encampment about an hour before sundown - the women first, who get fire and water, etc. by the time their spouses arrive… in warm weather, while on tramp, they seldom make a miam - they use merely a few boughs to keep off the wind, in wet weather a few sheets of bark make a comfortable house. In one half hour I have seen a neat village begun and finished".[68]

Camps were generally established for a few days at a time. Hovell noted that campsites were by-and-large located on areas of higher ground, and often in close proximity to water:

"Passed a number of native huts, they are always to be found on the banks of rivers and creeks".[69]

Huts, or miams, were described by Thomas as variously 'substantially built'[70] in the area of Arthurs Seat and 'frail but answers well their purpose'.[71] Thomas also commented that a 'village of good waterproof huts could be constructed in less

[67] *Thomas loc. cit.*

[68] *Thomas loc. cit.*

[69] *Hovell 1827: 46*

[70] *Thomas op. cit. pp. 1*

[71] *Thomas op. cit. pp. 88*

than an hour.[72] The composition of native huts and encampments were described by Thomas as follows:

"…a few slats of bark cut in a few minutes…these slats of bark are about 6' long oblique raised to the angle of about 20 degrees windward, every alternate sheet is reversed so no rain can enter the sides are filled up with short pieces of bark and brush and a sheet of bark at the top…A good Miam will hold 2 adults and 3 children- they are not permanent [they] *are knocked down or burnt on breaking up the encampment".*[73]

"…[they are] *in a large encampment…divided into hamlets- some influential black taking charge of six or eight Miams, and so on say five hamlets. These hamlets are 50 yards or more from each other, while miams in a single hamlet are not more than 3 or 4 yards apart"*[74].

5.8.5 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.[75] 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

[72] *Thomas op. cit. pp. 93*

[73] *Thomas op. cit. pp. 88*

[74] *ibid*

[75] *Presland 1983: 35-7*

scrapers'.[76] These tools were often employed in the production of other elements of material culture, including clothing and ornaments made from animal skin and bone.[77]

5.8.6 Early Settlement & Frontier Relations

In 1835, permanent European settlement began in the Port Philip region. On the 6th June 1835, John Batman arranged the signing of a 'treaty' with spokespersons from *Woi wurrung* and adjacent clans, in order to purchase the land now occupied by Melbourne. The 'treaty', such as it was, was not considered a legal transaction by the British authorities at the time, and doubts exist over the extent to which the Aboriginal people who signed the document understood the nature of the contract.[78] From this point forward, the rapidly advancing European settlement brought about devastating changes to the already disrupted Aboriginal clans of the Melbourne region.

Dispossession of traditional land occurred as the settlers and their livestock arrived and the pastoral expansion began in earnest. Severe depletion of food resources led to malnutrition within the local Aboriginal communities by the late 1830s.[79] 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.

Throughout the nineteenth century and later, the lives of Aboriginal people in the activity area region and all across Victoria were greatly influenced by various government policies of Aboriginal “protection” and “management”. The first of these was put in place in an attempt to lessen the impact of European settlement on the Aboriginal people of the then Port Phillip District of New South Wales (now Victoria). As a result of recommendations made by the Select Committee Inquiry into the condition of Aboriginal Peoples, the Port Phillip Aboriginal Protectorate was created. The Protectorate consisted of Chief Protector George Robinson and

[76] *Presland 1983: 37*

[77] *Presland 1983: 37*

[78] *Goulding 1988: 27*

[79] *Presland 1983: 13*

four Assistant Protectors whose task it was to not only physically protect the Aboriginal people of the district, but also to "civilize them, to teach them agriculture, house-building and other white employments, to educate them to a settled European life style and to convert them to Christianity".[80] The protectorate lasted for only 10 years (1839-1849) and was generally deemed to be a failure.

By the early 1850s the Aboriginal population of the region had severely declined and following the abolition of the protectorate came a decade of what Christie has described as "almost complete government neglect" of the Aboriginal people of Victoria.[81]

In 1863 the Coranderrk Aboriginal Station was established in the area of present-day Healesville on the land of the *Wurundjeri-willam*. The original occupants of the station were *Woi wurrung* and *Daung wurrung* speaking people although in later years people from other areas settled at the station.[82]

The commencement of the reserve and mission system saw the beginnings of greater government control and regulation of the lives of Aboriginal people. The passing of the 1869 Act for the Protection and Management of the Aboriginal Natives of Victoria provided the Central Board, then changed to the Board for the Protection of the Aborigines (BPA), with greater power over the lives of individuals, making the reserves or mission "prescribed places for Aboriginal people to live [and] set out the form of work contracts and certificates for which they were eligible".[83] The BPA could stipulate where people could live and decide whether and where they could work. Aboriginal people living within the Port Phillip district were gradually relocated to Coranderrk, which operated until the 1920s.[84]

[80] *Christie 1979: 85, 89*

[81] *Christie 1979: 136*

[82] *Barwick 1969: 8*

[83] *Broome 2005: 131*

[84] *Goulding & Menis 2006: 75-9*

5.9 Environmental Context (Landforms & Geomorphology).

Archaeological assessment reports include information about the environmental context of study 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.

5.9.1 Landscape and Published Geological Mapping

The Plumpton PSP is characterised by low slope gradients and a flat, gently undulating volcanic plain formed from sheet flow basalt parent material associated with the Newer Volcanics.

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 place. Ground truthing is usually required to confirm geological and soil types.

Published data produced by DSE interactive map shows the geology of the activity area is comprised entirely of an Unnamed sheet flow basalt (Qno1) (Figure 4):

The Qno1 Newer Volcanic plains that dominate the west of Melbourne are usually associated with thin clay loam soil profiles overlaying heavy clay B horizon subsoils formed from decomposing basalt parent material. The landscape is also typically littered with basalt boulders and cobbles.

5.9.2 Drainage and Water Resources

The nearest major watercourse to the activity area is Kororoit Creek, which is located to the south and west of the PSP 1078 activity area. At its nearest point, Kororoit Creek comes to within approximately 500m of the south west corner of property ID #41. Kororoit Creek is a higher order drainage line that rises in the outer north-western suburb of Sunbury and meanders through more densely urbanised suburbs of Caroline Springs, Sunshine, Deer Park, Brooklyn and Altona before flowing into Port Phillip.

Substantial drainage works associated with urban development have been undertaken along Kororoit Creek. These modifications have affected original hydrology patterns. There has also been works within and adjacent to the creek for road and bridge construction, landscaping, recreational purposes (parks), erosion control and flood management. These have resulted in straightening of the drainage line within the creek valley and flood scouring along the base and lower slopes of the valley.

There are several very minor unnamed drainage channels within PSP 1078 (Figure 11), these are first order tributaries of Kororoit Creek. The most substantial drainage channel within PSP 1078 runs parallel to the western boundary of the activity area. This drainage channel has been substantially modified by agricultural activities. Aerial photographs show sections of the drainage channel have been dammed, likely in areas where pondages were originally located. Makeshift earthen bridges have also been constructed across sections of the drainage channel.

5.9.3 Vegetation

Published information on vegetation and biodiversity is included on the Victorian Resources Online website (VRO). It provides a good indication of the prevailing vegetation patterns prior to European settlement (1750AD) and clearance of the land (2005). For the purposes of showing the general patterns of vegetation across the study area, the VRO 1750 and 2005 Vegetation Communities (EVC) Maps relevant to the study area are shown on Figure 5.

The predicted 1750 EVCs within the activity area are Plains Grassland and Plains Grassy Wetland. In 2005 only scattered patches of this vegetation type remain within the activity area. A small pocket of Plains Grassy Wetland is mapped within a property on the southern part of the activity area in both models.

Analysis of current aerial photographs of the activity area confirms that, with the exception of dispersed trees and isolated pockets of vegetation, the original vegetation has been largely overtaken by introduced species.

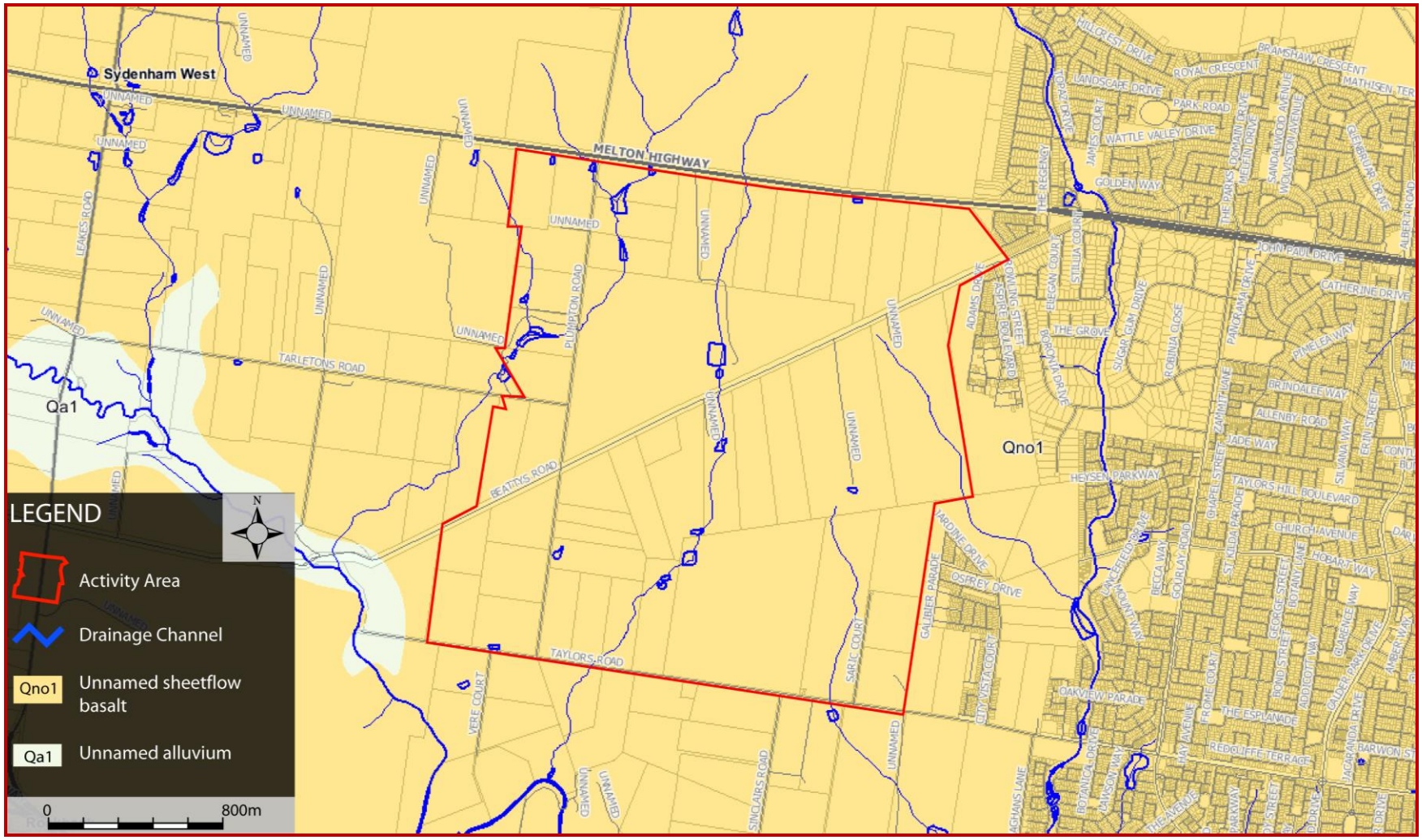

Figure 4. Geovic Geological Mapping. Dept of Primary Industries.

Figure 5. Ecological Vegetation Classes (EVCs) within the activity area. 1750 (left) and 2005 (right). Source: Department of Environment and Primary Industries Biodiversity Interactive Map.

5.9.4 Landforms within the activity area

Detailed LIDAR Contour mapping indicates the study area is situated on a low relief and generally featureless Volcanic Plain landscape. Landforms within PSP 1078 include one low crest landform, a shallow open depression adjacent to Taylors Road and a possible former swamp. The remainder of the activity area is a flat, featureless volcanic plain.

There are three minor drainage channels within the activity area, the largest of which runs almost parallel to the western boundary of PSP 1078. These drainage channels are first order tributaries of Kororoit Creek (Figure 6).

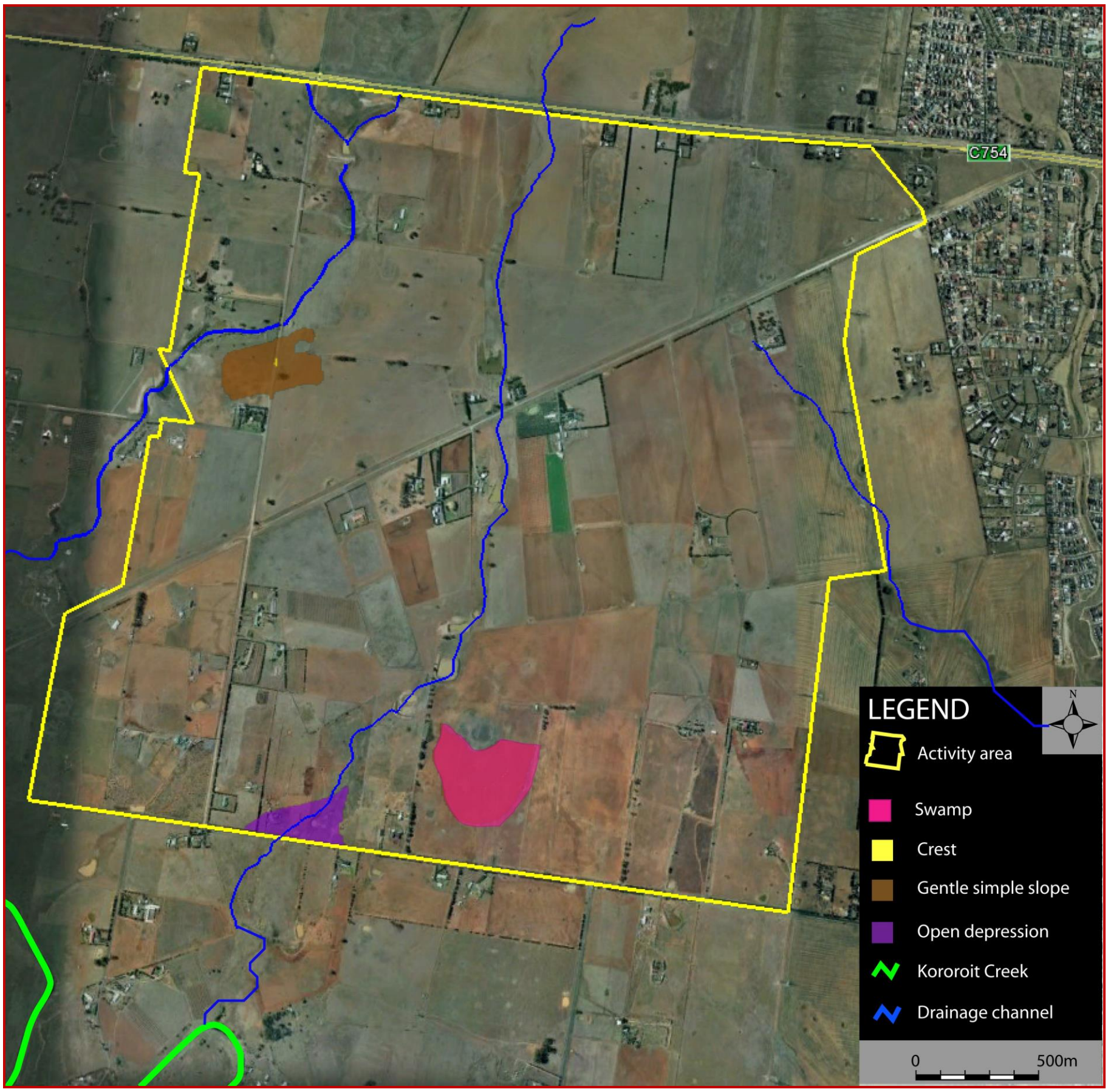

Figure 6. Landforms identified within the Plumpton PSP 1078 activity area

5.10 Land Use History

5.10.1 Land Use History in the West Region

Andrew Long and Associates[85] completed a generalised land use history for the West Growth Areas. The following is a brief summary of the findings for the region:

Early settlement in the West Region between 1850 to 1890 was largely by pastoralists, namely the Chirnside family who held a large sheep run in the area. By 1900 agriculturalism was beginning to spread throughout the Western region and by the 1940's dairy farming, market gardening, fruit growing and poultry farming had also been introduced across the region. Due to the dry climate of the western region crops were limited initially to cereals, however, once efficient irrigation systems were introduced other more luxury crops were introduced across the area[86].

5.10.2 Land Use disturbance history in the activity area

In order to identify the extent and nature of past land use disturbance within the activity area we reviewed recent NearMap high resolution aerial photography and a series of historical aerial photographs obtained from the Land Victoria Laverton Aerial Photography Archives. Our analysis of the aerial photography indicates the primary land uses within the activity area were pastoral and agricultural with some cultivation.

Prior land-use disturbances identified during our analysis of current and historical aerial photographs are listed below and are shown on Figure 7 and Figure 8.

- Repeated ploughing;
- Clearing of native vegetation across the majority of the activity area;
- Construction of fences;
- Construction of houses and out buildings;

[85] *Andrew Long and Associates 2010 Volume 2 Section 10 (Draft PP49-58)*

[86] *Andrew Long and Associates 2010 Volume 2 Section 10 (Draft PP 72-85)*

- Construction of driveways and tracks throughout the activity area;
- Excavation of Dams within the activity area; and
- Some limited orcharding, not visible on historic aerial images, but evident on recent Nearmap 2013 images.

Figure 7. 1969 & 1973 Composite of Historic Aerial of the PSP 1078 Activity Area. Source: Department of Environment & Primary Industries Historic Aerial Library

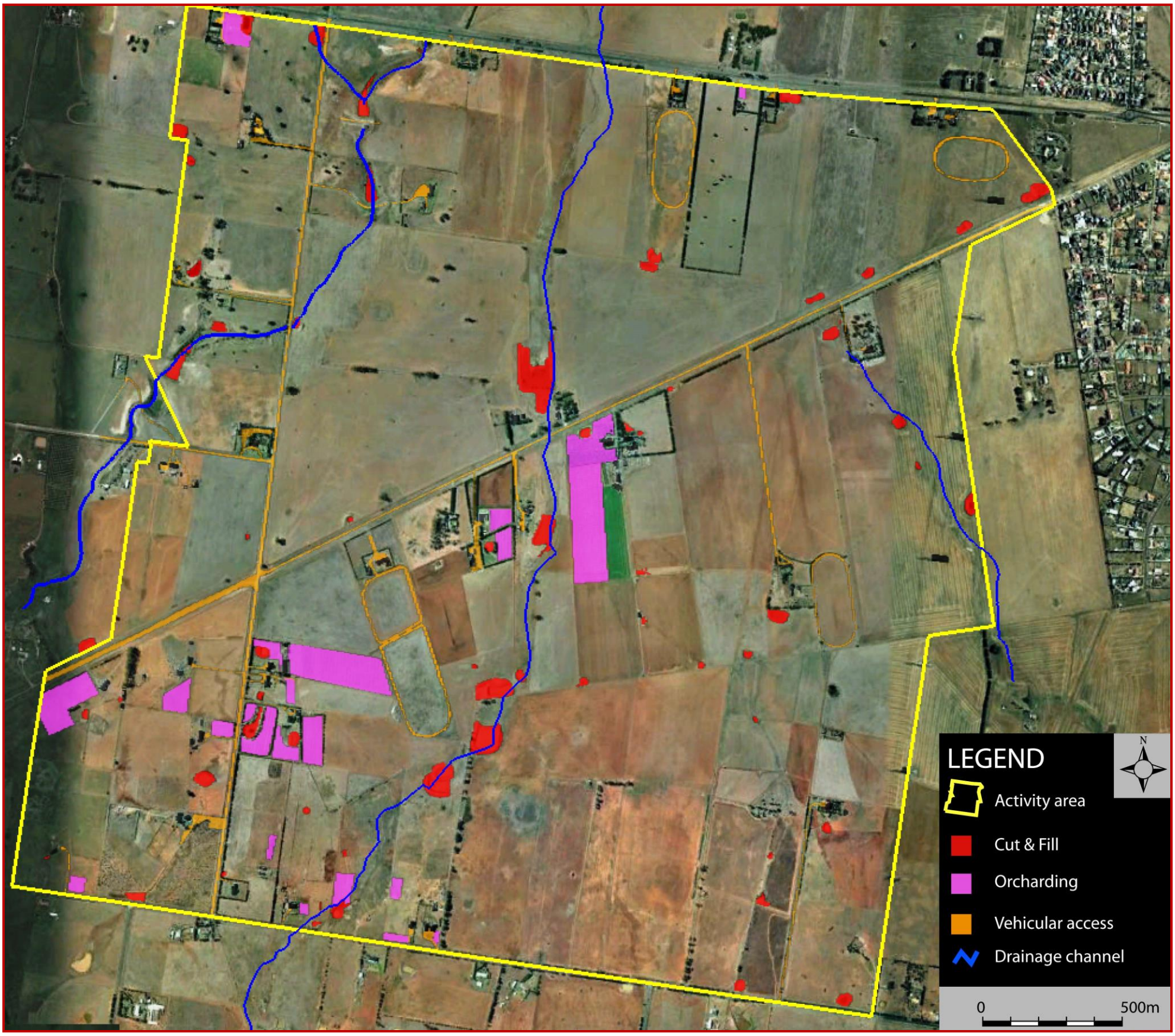

Figure 8. Disturbance identified within the Plumpton 1078 activity area. Source: Google Earth 2013 Image.

5.11 Desktop Assessment Conclusions

The desktop assessment described in the preceding chapters of this report has been used to identify prevailing Aboriginal site settlement patterns within the region and in the local area surrounding the activity area.

Analysis of historical aerial photographs, maps and plans and early accounts of Aboriginal settlement allowed us to identify original environmental characteristics of the area. This was useful in identifying areas of past ground disturbance that may have affected the integrity and significance of archaeological deposits. It also assisted in identifying portions of the activity area that would have been more attractive places for Aboriginal occupation and use.

The VAHR site distribution patterns and regional studies summarised above indicate the dominant site types within the Plumpton PSP activity area are likely to comprise artefact scatters, sub-surface stone artefact deposits, scarred trees and isolated artefact occurrences.

Properties which currently require completion of a mandatory CHMP In advance of Planning Permit approvals for future subdivision and development are listed in Table 5. All landowners should seek advice from a Cultural Heritage Advisor or OOAAV early in their development planning process to ensure no new areas of cultural heritage sensitivity have been added that may trigger a requirement to prepare a CHMP.

The distribution, density and size of known Aboriginal archaeological sites is largely dependent on environmental context, post-contact land use and erosion / site formation processes. There is likely to be a correlation between fresh water sources and Aboriginal archaeological deposits. Numerous studies have indicated a higher density and frequency of deposits exist in close proximity to water sources. There is likely to be a higher density and frequency of archaeological deposits in close proximity to drainage channels within the activity area.

Stone sources are also likely to be associated with a higher density and frequency of archaeological deposits reflecting on-source primary reduction. Resource intersection zones, stream confluences and transitional vegetation may also be associated with a higher density and frequency of archaeological deposits. Crest landforms may also be associated with a higher density and frequency of surface artefacts and sub-surface archaeological deposits.

Other factors (as yet untested in the region) in archaeological potential may include slope gradient, aspect, landform and soil landscape type.

Past disturbance is also likely to have affected the potential for and integrity of archaeological deposits in any given area. Areas that have been permanently or regularly inundated (such as large swamps) may have a lower level of potential because they were unsuitable for occupation and use.

5.12 Predictive Model

Drawing on the results of desktop research and our analysis of landforms and prior disturbance within the PSP, we make the following predictions:

- Stone artefact deposits are likely to be found at varying densities across most landforms within PSP 1078;
- Higher density artefact scatters and sub-surface deposits may be found on crest landforms;
- Higher density artefact scatters and sub-surface deposits may be found around the periphery of swamps;
- Higher density artefact scatters and sub-surface deposits may be found adjacent to original drainage channels, particularly permanent and reliable water sources;
- 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 will be found in close proximity to stone sources (either outcrops or river pebble sources);
- 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;
- Ceremonial places may be present in the landscape, but may not be archaeologically visible; and
- Stone arrangements may be found across the landscape.

Due to the large area covered by the Plumpton PSP, 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 Metropolitan Planning 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, and
- 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 Predictive Model

The following is a list of variables that contribute to archaeological potential within the Plumpton PSP 1078 activity area. The variables are ranked in order of importance.

Proximity to water sources (including creeks, drainage channels & swamps).

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 has been used to determine the likely extent of former drainage channels and water sources.

The drainage lines that cross the activity area are low order and were unlikely to have provided permanent or reliable water sources, therefore the level of likely sensitivity associated with these water sources is lower than would be the case for higher order permanent drainage lines.

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 and LiDAR topographic mapping. The extent of the crest landforms was mapped using Map Info GIS software.

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 negligible archaeological sensitivity.

Areas of orcharding

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.

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.

These places/sites have been shown on the sensitivity maps but 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.

It is important to note that under the Aboriginal Heritage Act 2006 it is offence to disturb or destroy Aboriginal sites or objects except where a Permit to Harm has been approved by OAAV and/or an approved CHMP allows for the disturbance. It is also important to note that areas within a 50m radius of known Aboriginal places are considered to be areas of cultural heritage sensitivity under the Aboriginal Heritage Regulations 2007 and may have implications for whether or not a CHMP is required for a proposed development activity.

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 study 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 study areas, it does not have an influence on the model.

Stable aeolian landforms.

No stable Aeolian dune landforms were identified within the study areas during the desktop research. They are considered unlikely to occur within PSP 1078 as the landform is characterised by its shallow volcanic soils overlying B horizon clays.

Areas of remnant vegetation.

Areas of remnant vegetation are considered archaeologically sensitive because cultural deposits within these areas often have a high level of integrity as they have not been disturbed by past land-uses. These areas also have some potential to contain scarred trees. Areas of potential remnant vegetation were identified by analysing a series of historic aerial photographs of the activity area. No such areas were identified during our analysis.

Slope Gradient.

The local landscape within the study areas is flat to very gently undulating. There is no steep terrain within PSP 1078. 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 very low. The modeling and mapping is based on a probabilistic approach, where a combination of traits was used to determine the level of potential.

The model traits for PSP 1078 are:

- Crests = moderate sensitivity
- Areas within 200m of swamp = High Sensitivity;
- Areas 200 – 400m of high order stream = Moderate Sensitivity;
- Areas 200m of low order drainage channel = Moderate sensitivity
- Areas within swamp = Very Low Sensitivity
- Orcharding Disturbance = Very Low Sensitivity
- Cut and Fill Disturbance = Nil Sensitivity; and
- 50m buffer around Aboriginal artefact scatters

Figure 9 shows the results of the GIS predictive model. The figure shows areas of moderate potential (darker pink) grading to low potential (lighter pink) to very low potential (white) to disturbed (grey).

It is important to note that the predictive sensitivity mapping is based on the results of desktop research. 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 in the western 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 centers 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 was refined after the standard assessment survey work, particularly to tighten-up identification of sensitive landforms and areas of prior disturbance. Additional surface sites found during the standard assessment survey were also included on the revised final sensitivity map (Figure 26).

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 Office of Aboriginal Affairs Victoria.

It 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 Wurundjeri, Bunurong and Boon Wurrung.

REDACTED FIGURE.

Figure 9. Predictive archaeological sensitivity model based on the results of the Desktop Assessment research.

6 STANDARD ASSESSMENT

6.1 Archaeological Survey Details

The following sections describe the results of a survey carried out by AHMS between the 3rd – 6th of June, the 9th of September 2013 and the 30th of January 2014.

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 Shannon Sutton & Liz Foley of AHMS. Representatives of each Registered Aboriginal Party Applicant or Traditional Owner Group were present during the survey (the participants are listed in the Table 6 below):

Table 6: Survey Participants

Date	Wurundjeri	Boonwurrung	Bunurong
03/06/2013	[redacted]	[redacted]	[redacted]
04/06/2013	[redacted]	[redacted]	[redacted]
05/06/2013	[redacted]	[redacted]	[redacted]
06/06/2013	[redacted]	[redacted]	[redacted]
09/09/2013	[redacted]	[redacted]	[redacted]
30/1/14	[redacted]	[redacted]	[redacted]

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. All of the 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 10 and the property details are shown on Table 7.

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 in areas of ground surface exposure. The team typically walked in transects with a spacing of 5m 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.

Figure 10. Landholdings within PSP 1078.

6.3 Survey Coverage

A total of 33 properties were surveyed within the activity area (Figure 10)[87]. Details of the accessible properties and influences on survey coverage for each property are outlined in Table 7.

Survey coverage aimed to balance sampling of areas of ground surface exposure on these properties with detailed coverage of areas of moderate – high sensitivity as 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 the unnamed, low order drainage channels which bisect parts of the PSP.

Effective survey coverage during the survey was generally good. At the time of survey visibility was typically high, as most of the fields had been ploughed during the time of survey, however areas under crop or which had been seeded were avoided to prevent disturbance.

[87] *Note that several landowners own more than one property*

Table 7. Survey Coverage Data – PSP 1055 (refer to Figure 2 for property IDs).

PSP ID	Disturbance / Landuse	Key Landforms	[redacted]
2	House, sheds and landscaped yards in SW corner of property. 95% of paddock was ploughed at time of survey. Dam in NE of property.	Flat - gently undulating volcanic plain.	[redacted]
4	House, sheds, a dam and landscaped yards in SW corner of property. Basalt floaters have been stockpiled in the centre of the property near the periphery of the house. Fields had been ploughed at time of survey.	Flat – gently undulating volcanic plain	[redacted]
5	Primarily ploughed fields for crops. Section of drainage channel that runs through this property has been heavily modified through track, road construction and damming.	Modified low order drainage channel (open depression) on a flat to gently undulating volcanic plain.	[redacted]
6	Substantial modification of drainage channel. Drainage channel has been dammed, sections of the channel have been excavated and fill dumped around the margins of the channel.	Modified low order drainage channel (open depression) in NW Corner of property. Flat – gently undulating volcanic plains landform. Gentle simple slope leading to open depression.	[redacted]
7	Primarily ploughed fields for crops. Some horses. Infrastructure includes a single storey brick dwelling, a shed and access driveways	Modified drainage channel (open depression) on a flat to gently undulating volcanic plain. This section of the drainage channel has been substantially modified by Melbourne Water drainage control and revegetation works.	[redacted]

PSP ID	Disturbance / Landuse	Key Landforms	[redacted]
10	Ploughed field, 1 small dam in SE quadrant. Vehicular access tracks. No infrastructure.	Flat – gently undulating volcanic plain, devoid of landform features.	[redacted]
11	Ploughed field under crop.	Flat-gently undulating volcanic plain, devoid of landform features	[redacted]
12	Ploughed field under crop.	Flat-gently undulating volcanic plain, devoid of landform features	[redacted]
13	Heavily modified drainage channel. Channel has been excavated and dammed. Basalt floaters have been removed from the local landscape and stockpiled around the edge of the drainage channel. Earthen bridge has been constructed over drainage channel. Small single storey house, shed and landscaped yards east of drainage channel.	Modified low order drainage channel runs north-south through centre of property. Gentle simple slope to drainage channel from flat volcanic plain. Small oval shaped swamp on eastern boundary fence extending into neighbouring property (ID # 16).	[redacted]
15	Heavily modified. This property has been used extensively as a dumping ground for imported soil.	Modified low order drainage channel runs north-east to south west through property.	[redacted]
16	Small house and shed in NW corner of property. Basalt floaters removed from landscape and stockpiled. Land was ploughed and under crop at time of survey Some livestock, including pigs and goat kept in northern paddocks.	Predominantly flat – gently undulating volcanic plain. Small swamp landform in south west quadrant of property extending to neighbouring property (ID # 13).	[redacted]

PSP ID	Disturbance / Landuse	Key Landforms	[redacted]
17	Ploughed fields for crops. No infrastructure.	Low order drainage channel extending from eastern boundary fence and exiting through centre of southern boundary fence. Flat - gently undulating volcanic plain.	[redacted]
18	Ploughed fields for crops. No infrastructure	Shallow minor unnamed drainage channel extending from NW property boundary. Otherwise flat, featureless volcanic plain.	[redacted]
19	Ploughed fields for crops. Small single storey house and landscaped yards adjacent to Melton Freeway. Small dam near southern boundary of property	Flat to gently undulating volcanic landscape, slopes very gently towards the south.	[redacted]
20	Fields appear to have been used for ploughing in the past. But were not cropped at time of survey. Visibility was minimal due to low grasses.	Flat to gently undulating volcanic landscape, slopes very gently towards the south.	[redacted]
21	Single storey house, shed landscaped yards and 2 dams in northern section of the property, vehicular access tracks running parallel to eastern boundary fence. Small horse running track in paddock. Fields had been recently ploughed and seeded at time of survey.	Flat-gently undulating volcanic plain	[redacted]
22	Ploughed field under crop.	Flat-gently undulating volcanic plain, devoid of landform features	[redacted]

PSP ID	Disturbance / Landuse	Key Landforms	[redacted]
23	Primarily ploughed fields for crops. High pressure gas pipeline running parallel to western boundary fence.	Flat volcanic plain	[redacted]
25	High pressure gas pipeline running directly through the centre of the property. High voltage powerlines also running directly through the centre of the property. Infrastructure includes a house and shed in the Northwest corner of the property and two dams abutting Beattys Road.	Flat to gently undulating volcanic plain which slopes gently to the east, south and southeast.	[redacted]
27	Ploughed fields for crops. Drainage channel on property has been substantially modified, having been dammed in several place (probably where original pondages stood), and large sections of the drainage channel have been in filled.	Volcanic plain sloping gently from the centre of the property to the east and west. Minor unnamed drainage channel running diagonally NW-SE through property.	[redacted]
28	Majority of disturbance concentrated in southern section of property – small house, sheds, landscaped yards, horse stalls and dams as well as horse trotting track. Fields had been recently ploughed at time of survey.	Flat – gently undulating volcanic landscape.	[redacted]
29	Ploughed fields for crops. Infrastructure includes a single storey house, a large dam north of house, three dams in a paddock south of the house and numerous steel sheds.	Flat volcanic plain.	[redacted]

PSP ID	Disturbance / Landuse	Key Landforms	[redacted]
32	Primarily ploughed fields for crops. Other uses include viticulture, orcharding of prickly pear and a piggery. Associated disturbances include substantial ploughing across most of the activity area and numerous sheds for meat and wine processing.	Flat volcanic plain devoid of landform features.	[redacted]
35	Ploughed paddock used to keep miniature ponies and grow barley.	Flat volcanic plain devoid of landform features.	[redacted]
36	Brick double storey dwelling with landscaped yards adjacent to Plumpton road. Large olive grove covering most of property.	Flat volcanic plain devoid of landform features.	[redacted]
37	Single storey dwelling and landscaped yards adjacent to Plumpton road. Small olive grove at rear of house. Vehicular access track running parallel to western boundary. Area in SE corner of property had been excavated – large redeposited soil dump in this area.	Flat volcanic plain devoid of landform features.	[redacted]
39	Ploughed fields for crops. South easternmost paddock had sheep grazing in it at time of survey. Small olive grove also located on property.	Flat volcanic plain devoid of landform features.	[redacted]
41	Ridge and furrowing in SE quadrant of property. Ploughing throughout most of property – currently used to graze sheep. Small single storey dwelling (unoccupied) in centre of property	Flat volcanic plan, slopes gently to the west	[redacted]

PSP ID	Disturbance / Landuse	Key Landforms	[redacted]
42	Majority of cut and fill disturbance is located within 100m of Plumpton road. Single storey dwelling, small orchard, dam and sheep pen. Fields west of house have been ploughed for crops.	Flat volcanic plain	[redacted]
43	Property has been extensively disturbed as it is used as a commercial Christmas tree farm. Soil within property has been graded and pushed back to the southern boundary of the property. Commercial premises (buildings and outhouses) in north western quadrant of the property.	Flat volcanic landscape, devoid of landscape features. Slopes gently to the east.	[redacted]
48	Entire paddock had been ploughed at the time of survey. Vehicular access track running north-south to small shed in centre of property, otherwise no infrastructure. Small dam in NW corner of property. Basaslt floaters have been removed from the landscaped and stockpiled.	Large gently undulating volcanic plain landform with a southerly aspect. Highest point in landscape is at northern boundary fence.	[redacted]
53	Ploughed fields for crops. Large basalt floaters have been removed from the landscape and stockpiled.	Flat to gently undulating volcanic plain	[redacted]

6.4 General Observations

The dominant landform within the activity area is a flat to gently undulating volcanic plain bisected by several small unnamed drainage channels which generally drain southwards towards Kororoit Creek. These minor drainage channels have been substantially modified with agricultural and pastoral landuse. The majority of the Plumpton PSP is currently used for the planting of crops (predominantly barley).

Figure 11. Section of unmodified drainage channel on property [redacted]. Section of drainage channel has been dammed.

Figure 12. Basalt floaters which have been removed from paddock and stockpiled [redacted]. This is common across most of the properties throughout PSP 1078.

Figure 13. Paddock on property [redacted] which had been recently ploughed and seeded at the time of survey.

The landscape of PSP 1078 is characterised by low-lying poorly drained volcanic plains, with very gentle undulations. There are very few discrete areas of elevation which could be categorised as rises.

Most of the properties had been freshly ploughed during the time of survey. Ground surface visibility was correspondingly very high across nearly all properties.

Discrete areas within the PSP have been used for orcharding with associated deep garden beds, 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 mitigates against finding any intact cultural deposits in these areas.

Vegetation consists predominantly of modified native vegetation (immature eucalypts) and exotic Cyprus pines used to demarcate property boundaries. 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:

- Extensive ploughing across most of the PSP;
- Furrowing and ploughing for orcharding;
- Construction of dams;
- Limited construction of houses and out-buildings;
- Construction of formal gardens around the periphery of houses;
- Construction of sheds for farm activities;

- Construction of 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 Figure 8. It is considered unlikely that archaeological material will be located within areas of cut and fill disturbance (shaded dark grey on Figure 26) because these areas comprise substantially modified and/or highly disturbed ground resulting from cut and fill for construction of dams, buildings and a gas pipeline. This is likely to have resulted in the complete removal of archaeological deposits from these parts of the activity area.

6.5 Aboriginal Cultural Heritage in the Activity Area

Fifty-five stone artefacts were identified over eleven different properties within the boundaries of the PSP. The density of recorded artefacts across the entire activity area was less than ten artefacts per $10m^2$. Therefore, according to the Office of Aboriginal Affairs Guidelines, the place fulfils the requirements of a "Low Density Artefact Distribution" (LDAD) Aboriginal Place. This LDAD has been recorded on the VAHR and assigned the name "Plumpton PSP" (VAHR 7822-3639 1-55). The locations of artefacts recorded within the activity area are shown on (Figure 26). Details of the Aboriginal place found during the survey are described below, segregated by Property ID as place condition and sub-surface potential varies across the PSP.

In addition to locating new Aboriginal places, an attempt was made during the survey to relocate the previously registered places within the activity area (VAHR 7822-2255; 7822-2256), both located in disturbed contexts [redacted]. Despite good ground surface visibility, VAHR 7822-2255 and VAHR 7822-2256 could not be relocated.

FIGURE REDACTED.

Figure 14 Location of VAHR 7822-2255 (top) and 7822-2256 (bottom)

6.5.1 [redacted] (VAHR 7822-3639 1-21)

Table 8- Description of VAHR 7822-3639 1-21

Site name: Site number:	Plumpton PSP 7822-3639 1-21
Grid references:	[redacted]
Location:	[redacted]
Landform:	[redacted]
Artefacts:	21
Place extent:	Primary grid co-ordinates above
Place condition:	Moderate- ploughing has impacted the vertical and lateral integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 9- Artefacts within 7822-3639 1-21 LDAD

Raw material	Artefact type							
	Core	Complete flake	Split flake	Proximal flake	Medial flake	Distal flake	Flake tool	Backed blade
Quartz				1				
Silcrete	2	9	2	2	1	2	1	1
Total	**2**	**9**	**2**	**3**	**1**	**2**	**1**	**1**

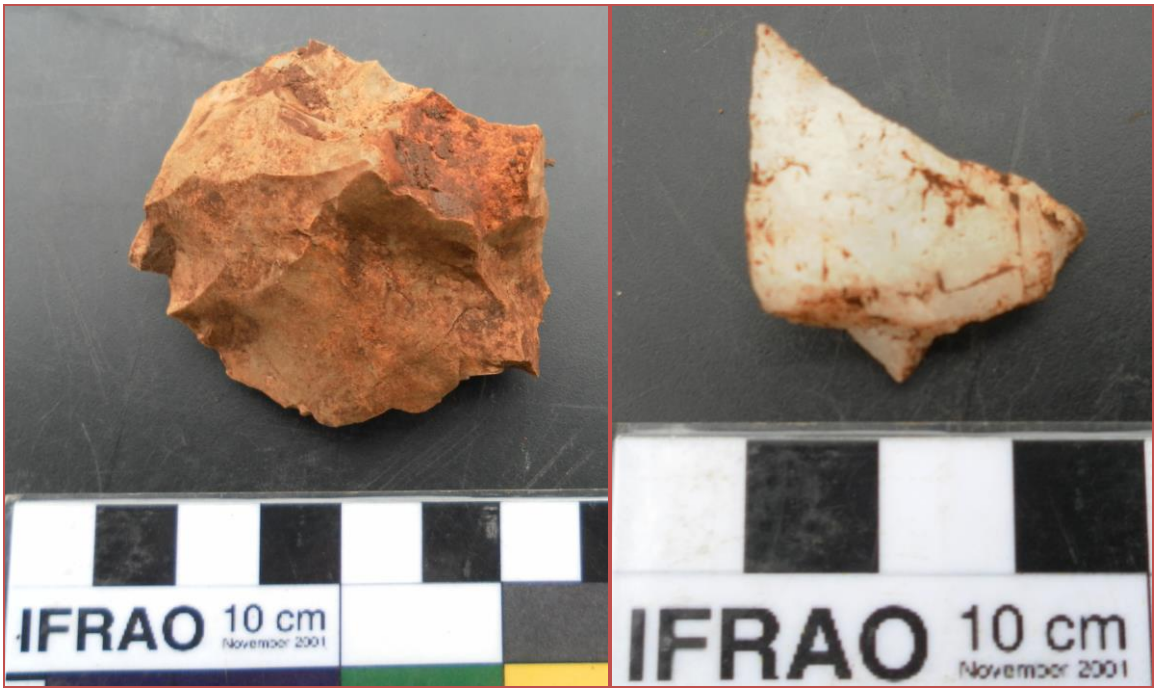

Figure 15. Artefacts from 7822-3639 1-21 [redacted].

VAHR 7822-3639 1-21: Nature

The Aboriginal place comprises a low density scatter of surface stone artefacts distributed across a flat gently sloping landform adjacent to a minor drainage channel. [redacted]. Evidence for cut and fill activity was identified on the northern side of the drainage channel within this property. The stone artefacts were located on [redacted] relatively unmodified

ground. The located artefacts located were made from quartz and silcrete and comprised cores, complete flakes and broken flakes (Table 9). Two retouched implements were also identified, comprising one backed blade and one flake tool. The number and variety of artefacts exposed within an archaeologically sensitive area is suggestive of a larger site of which only the surface component has as yet been identified.

Examination of the landscape during survey indicates much of the site area has been subject to prior disturbance in the form of ploughing which has affected the horizontal and vertical integrity of the artefacts as well as any archaeological deposits.

VAHR 7822-3639 1-21: Extent

The extent of 7822-3639 1-21 has been recorded as a low density artefact distribution and a series of co-ordinates have been recorded on the Victorian Aboriginal Heritage Register for each artefact. These co-ordinates relate to the location of each artefact on the ground surface (Table 8).

Despite the impact of ploughing on the Aboriginal place, it is expected that there would be potential for sub-surface artefacts in the vicinity of these artefacts.

VAHR 7822-3639 1-21: Scientific Significance

VAHR 7822-3639 comprises a low density artefact scatter on a ploughed field next to a minor drainage channel. The site type (LDAD) is very common across the volcanic plains. The place currently has limited research potential due to the low density of artefacts identified and the impact of soil disturbance which has affected the integrity of the scatter. Therefore VAHR 7822-3639 1-21 has been assessed as having low scientific significance because it is locally common, has limited research potential and has a low level of integrity. It should be noted, however, that the place has sub-surface archaeological potential and the nature, extent and significance of the place would need to be revisited after test excavation.

6.5.2 [redacted] (VAHR 7822-3639 22)

Table 10 – Description of VAHR 7822-3639 22

Site name: Site number:	Plumpton PSP 7822-3639 22
Grid reference:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (vehicle track)
Artefacts:	1
Place extent:	Primary grid co-ordinate above
Place condition:	Poor- ploughing and vehicle use has impacted the integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 11- Artefact description 7822-3639 22 LDAD

Plumpton PSP LDAD (artefact number)	Location (MGA 55)	Description
22	[redacted]	Silcrete distal flake. Axial termination. Measures 21 x 24 x 7mm.

Figure 16. Artefact 7822-3639 22 [redacted]

VAHR 7822-3639 22: Nature

The Aboriginal place comprises an isolated stone artefact located on a vehicle track within a ploughed field. The artefact is a silcrete distal flake (Table 11).

Examination of the landscape during survey indicates much of the site area has been subject to prior disturbance in the form of ploughing which has affected the horizontal and vertical integrity of the site by removing the artefact from its primary archaeological context.

VAHR 7822-3639 22: Extent

The extent of 7822-3639 22 has been recorded as part of a low density artefact distribution and a primary grid co-ordinate has been recorded on the Victorian Aboriginal Heritage Register for the artefact. These co-ordinates relate to the location of the artefact on the ground surface (Table 10).

As the artefact is isolated and in a disturbed context, it is expected that there would be low-nil potential for sub-surface artefacts at this location.

VAHR 7822-3639 22: Scientific Significance

VAHR 7822-3639 22 is an isolated artefact comprising part of a broad low density surface stone artefact scatter. The number of artefacts recovered is too low for any meaningful analysis to be performed. This type of site is very common throughout the geographic region. The integrity of the site has been affected by repeated ploughing and vehicle activity. The artefact has very low research potential and is unlikely to provide any new information about past Aboriginal use and occupation. As a result of these factors 7822-3639 22 is assessed as having low scientific significance.

6.5.3 [redacted] (VAHR 7822-3639 23-24)

Table 12- Description of VAHR 7822-3639 23-24

Site name: Site number:	Plumpton PSP 7822-3639 23-24
Grid reference:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (ploughed field)
Artefacts:	2
Place extent:	Primary grid co-ordinates above
Place condition:	Poor- ploughing has impacted the integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 13- Artefact description 7822-3639 23-24 LDAD

Plumpton PSP LDAD (artefact number)	Location (MGA 55)	Description
23	[redacted]	Silcrete proximal flake. Plain platform. Measures 24 x 17 x 2mm.
24	[redacted]	Quartzite angular fragment. Measures 47 x 24 x 22mm.

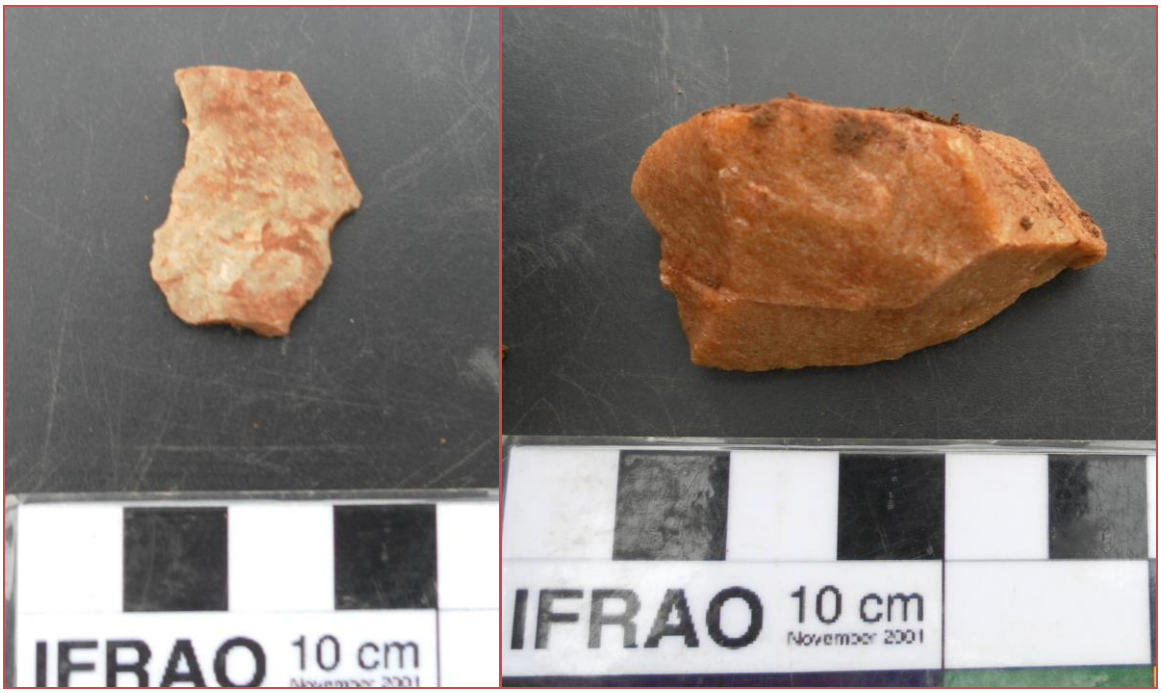

Figure 17. Artefacts 7822-3639 23-4 [redacted].

VAHR 7822-3639 23-24: Nature

The Aboriginal place comprises two stone artefacts located in a ploughed context on the volcanic plain landform. The artefacts comprise a silcrete proximal flake and a quartzite angular fragment (Table 13).

Examination of the landscape during survey indicates much of the site area has been subject to prior disturbance in the form of ploughing which has affected the horizontal and vertical integrity of the artefacts and removed them from their primary archaeological context.

VAHR 7822-3639 23-24: Extent

The extent of 7822-3639 23-24 has been recorded as part of a low density artefact distribution and the primary grid co-ordinates have been recorded on the Victorian Aboriginal Heritage Register for the artefacts. These co-ordinates relate to the location of the artefacts on the ground surface (Table 12)

As the assemblage from this property is very low density and in a disturbed context, it is expected that there would be low potential for sub-surface artefacts at this location.

VAHR 7822-3639 23-24: Scientific Significance

VAHR 7822-3639 23-24 comprises two artefacts which form part of a broad low density surface stone artefact scatter. The number of artefacts recovered is too low for any meaningful analysis to be performed. This type of site is very common throughout the geographic region. The integrity of the site has been affected by repeated ploughing. The artefacts have very low research potential and are unlikely to provide any new information about past Aboriginal use and occupation. As a result of these factors 7822-3639 23-24 are assessed as having low scientific significance.

6.5.4 [redacted] (VAHR 7822-3639 25-37)

Table 14 - Description of VAHR 7822-3639 25-37

Site name: Site number:	Plumpton PSP 7822-3639 25-37
Grid references:	[redacted]
Location:	[redacted]
Landform:	Creek flat adjacent to drainage channel [redacted]
Artefacts:	13
Place extent:	Primary grid co-ordinates above
Place condition:	Poor- dam construction has impacted the vertical and lateral integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 15- Artefacts within 7822-3639 25-37 LDAD

Raw material	Artefact type					
	Core	Complete flake	Proximal flake	Distal flake	Angular fragment	Total
Quartzite			1			1
Silcrete	1	6	2	1	2	12
Total	**1**	**6**	**3**	**1**	**2**	**13**

Figure 18. Artefacts from 7822-3639 25-37 [redacted]

VAHR 7822-3639 25-37: Nature

The Aboriginal place comprises a low density scatter of surface stone artefacts distributed across a flat associated with a minor drainage channel. [redacted]. The stone artefacts were located on the east and western sides of the dam.

Artefacts located were made from quartzite and silcrete and comprised cores, complete flakes, broken flakes and angular fragments (Table 15).

Much of the site area has been subject to prior disturbance [redacted], which has affected the horizontal and vertical integrity of potential archaeological deposits.

VAHR 7822-3639 25-37: Extent

The extent of 7822-3639 25-37 has been recorded as a low density artefact distribution and a series of co-ordinates have been recorded on the Victorian Aboriginal Heritage Register for each artefact. These co-ordinates relate to the location of each artefact on the ground surface (Table 14).

Despite the impact of dam construction on the Aboriginal place, the presence of artefacts in association with the minor drainage channel suggests that there would be potential for sub-surface artefacts to be located in the vicinity, away from the areas that have been impacted by cut and fill.

VAHR 7822-3639 25-37: Scientific Significance

VAHR 7822-3639 comprises a low density artefact scatter next to a minor drainage channel. The site type (LDAD) is very common throughout the volcanic plains. The place currently has limited research potential due to the history of disturbance and the low density of artefacts identified. Therefore VAHR 7822-3639 25-37 has been assessed as having low scientific significance. It should be noted, however, that other locations within the property boundary have sub-surface archaeological potential and the nature, extent and significance of the place would need to be revisited after test excavation.

6.5.5 [redacted] (VAHR 7822-3639 38)

Table 16 – Description of VAHR 7822-3639 38

Site name: Site number:	Plumpton PSP 7822-3639 38
Grid reference:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (ploughed), near swamp depression
Artefacts:	1
Place extent:	Primary grid co-ordinate above
Place condition:	Poor- ploughing has impacted the integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 17- Artefact description 7822-3639 38 LDAD

Plumpton PSP LDAD (artefact number)	[redacted]	**Description**
38	[redacted]	Quartz complete flake. Plain platform, feather termination. Measures 28 x 31 x 8mm.

Figure 19. Artefact 7822-3639 38 [redacted]

VAHR 7822-3639 38: Nature

The Aboriginal place comprises an isolated stone artefact located on the edge of a swamp-like depression within a ploughed field. The artefact is a quartz complete flake (Table 17).

Examination of the landscape during survey indicates much of the site area has been subject to prior disturbance in the form of ploughing which has affected the horizontal and vertical integrity of the artefact through the removal of its archaeological context.

VAHR 7822-3639 38: Extent

The extent of 7822-3639 38 has been recorded as part of a low density artefact distribution and a primary grid co-ordinate has been recorded on the Victorian Aboriginal Heritage Register for the artefact. These co-ordinates relate to the location of the artefact on the ground surface (Table 16).

As the artefact is isolated and in a disturbed context, it is expected that there would be low-zero potential for sub-surface artefacts at this location.

VAHR 7822-3639 38: Scientific Significance

VAHR 7822-3639 38 is an isolated artefact comprising part of a broad low density surface stone artefact scatter. It contains no evidence of intact occupation deposits or features. The number of artefacts recovered is too low for any meaningful analysis to be performed. This type of site is very common throughout the geographic region. The integrity of the site has been affected by repeated ploughing of the property. The artefact has very low research potential and is unlikely to provide any new information about past Aboriginal use and occupation. As a result of these factors 7822-3639 38 is assessed as having low scientific significance.

6.5.6 [redacted] (VAHR 7822-3639 39)

Table 18 – Description of VAHR 7822-3639 39

Site name: Site number:	Plumpton PSP 7822-3639 39
Grid reference:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (ploughed field)
Artefacts:	1
Place extent:	Primary grid co-ordinate above
Place condition:	Poor- ploughing has impacted the integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 19- Artefact description 7822-3639 39 LDAD

Plumpton PSP LDAD (artefact number)	[redacted]	**Description**
39	[redacted]	Quartz proximal flake. Plain platform. Measures 27 x 17 x 6mm.

Figure 20. Artefact 7822-3639 39 [redacted].

VAHR 7822-3639 39: Nature

The Aboriginal place comprises an isolated stone artefact located within a ploughed context on the volcanic plains landform. The artefact is a quartz proximal flake (Table 19).

Examination of the landscape during survey indicates much of the site area has been subject to prior disturbance in the form of ploughing which has affected the horizontal and vertical integrity of the site by removing the artefact from its primary archaeological context.

VAHR 7822-3639 39: Extent

The extent of 7822-3639 39 has been recorded as part of a low density artefact distribution and a primary grid co-ordinate has been recorded on the Victorian Aboriginal Heritage Register for the artefact. These co-ordinates relate to the location of the artefact on the ground surface (Table 18).

As the artefact is isolated and in a disturbed context, there is a low potential for sub-surface artefacts at this location.

VAHR 7822-3639 39: Scientific Significance

VAHR 7822-3639 39 is an isolated artefact comprising part of a broad low density surface stone artefact scatter. This type of site is very common throughout the geographic region and reflects background scatter that extends across the volcanic plains. The integrity of the site has been affected by repeated ploughing and vehicle activity. The artefact has very low research potential and is unlikely to provide any new information about past Aboriginal use and occupation. As a result of these factors 7822-3639 39 is assessed as having low scientific significance.

6.5.7 [redacted] (VAHR 7822-3639 40)

Table 20 – Description of VAHR 7822-3639 40

Site name: Site number:	Plumpton PSP 7822-3639 40
Grid reference:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (vehicle track)
Artefacts:	1
Place extent:	Primary grid co-ordinate above
Place condition:	Poor- ploughing has impacted the integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 21- Artefact description 7822-3639 40 LDAD

Plumpton PSP LDAD (artefact number)	[redacted]	**Description**
40	[redacted]	Silcrete complete flake. Plain platform, axial termination. Measures 41 x 29 x 15mm.

Figure 21. Artefact 7822-3639 40 [redacted]

VAHR 7822-3639 40: Nature

The Aboriginal place comprises an isolated stone artefact located within a ploughed field. The artefact is a silcrete complete flake (Table 21).

Examination of the landscape during survey indicates much of the site area has been subject to prior disturbance in the form of ploughing which has affected the horizontal and vertical integrity of the site by removing the artefact from its primary archaeological context.

VAHR 7822-3639 40: Extent

The extent of 7822-3639 40 has been recorded as part of a low density artefact distribution and a primary grid co-ordinate has been recorded on the Victorian Aboriginal Heritage Register for the artefact. These co-ordinates relate to the location of the artefact on the ground surface (Table 20).

As the artefact is isolated and in a disturbed context, there is a low potential for sub-surface artefacts at this location.

VAHR 7822-3639 40: Scientific Significance

VAHR 7822-3639 40 is an isolated artefact comprising part of a broad low density surface stone artefact scatter. This type of site is very common throughout the geographic region and reflects background scatter that extends across the volcanic plains. The integrity of the site has been affected by repeated ploughing and vehicle activity. The artefact has very low research potential and is unlikely to provide any new information about past Aboriginal use and occupation. As a result of these factors 7822-3639 40 is assessed as having low scientific significance.

6.5.8 [redacted] (VAHR 7822-3639 41-48)

Table 22- Description of VAHR 7822-3639 41-48

Site name: Site number:	Plumpton PSP 7822-3639 41-48
Grid references:	[redacted]
Location:	[redacted]
Landform:	Depression and surrounding flat (volcanic plain)
Artefacts:	8
Place extent:	Primary grid co-ordinates above
Place condition:	Moderate- ploughing has impacted the site integrity
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 23- Artefacts within 7822-3639 41-48 LDAD

Raw material	Artefact type					
	Core	Core fragment	Flake tool	Complete flake	Split flake	Proximal flake
Quartz				2		
Silcrete	1	1	1		2	1
Total	**1**	**1**	**1**	**2**	**2**	**1**

Figure 22. Artefacts from 7822-3639 41-48 at [redacted]

VAHR 7822-3639 41-48: Nature

The Aboriginal place comprises a low density scatter of surface stone artefacts distributed across land associated with a swampy depression. [redacted]. The highest density of artefacts is located close to the periphery of the depression on the northern edge, although lower densities are found up to 300m from the depression.

Artefacts located were made from quartz and silcrete and comprised a core, retouched flake, complete flakes, broken flakes and a fragment from a core (Table 23). The range of artefact types, moderate condition of the site context and proximity to a former water-source are suggestive of a sub-surface component being associated with these artefacts.

The site area has been subject to prior disturbance due to ploughing, which has affected the horizontal and vertical integrity of the artefacts and any potential archaeological deposits.

VAHR 7822-3639 41-48: Extent

The extent of 7822-3639 41-48 has been recorded as a low density artefact distribution and a series of co-ordinates have been recorded on the Victorian Aboriginal Heritage Register for each artefact. These co-ordinates relate to the location of each artefact on the ground surface (Table 22).

Despite the impact of ploughing on the Aboriginal place, the presence of artefacts in association with a potential swamp resource suggests that there would be potential for sub-surface artefacts to be located in the vicinity of the depression.

VAHR 7822-3639 41-48: Scientific Significance

VAHR 7822-3639 comprises a low density artefact scatter next to a swamp-like depression. The site type (LDAD) is very common throughout the volcanic plains. The place currently has limited research potential due to the low density of artefacts identified. Therefore VAHR 7822-3639 41-48 has been assessed as having low scientific significance. It should be noted, however, [redacted] contains sub-surface archaeological potential and the nature, extent and significance of the place would need to be revisited after test excavation.

6.5.9 [redacted] (VAHR 7822-3639 49-51)

Table 24- Description of VAHR 7822-3639 49-51

Site name: Site number:	Plumpton PSP 7822-3639 49-51
Grid references:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (vehicle track)
Artefacts:	3
Place extent:	Primary grid co-ordinates above
Place condition:	Poor- ploughing and vehicle activity have impacted the site integrity
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 25- Artefacts within 7822-3639 49-51 LDAD

Plumpton PSP LDAD (artefact number)	[redacted]	**Description**
49	[redacted]	Quartz proximal flake. Plain platform. Measures 26 x 22 x 4mm.
50	[redacted]	Silcrete medial flake. Measures 14 x 24 x 4mm.
51	[redacted]	Silcrete longitudinal split flake. Hinge termination. Measures 37 x 28 x 8mm.

Figure 23. Artefacts from 7822-3639 49-51 [redacted]

VAHR 7822-3639 49-51: Nature

The Aboriginal place comprises a low density scatter of surface stone artefacts distributed across a flat volcanic plain. [redacted].

The artefacts were manufactured from quartz and silcrete and comprise three broken flakes: 2 transverse snaps and a longitudinal split (Table 25).

Much of the property has been subject to prior disturbance due to ploughing and some vehicle activity, which has affected the horizontal and vertical integrity of the artefacts.

VAHR 7822-3639 49-51: Extent

The extent of 7822-3639 49-51 has been recorded as a low density artefact distribution and a series of co-ordinates have been recorded on the Victorian Aboriginal Heritage Register for each artefact. These co-ordinates relate to the location of each artefact on the ground surface (Table 24).

The low density of artefacts combined with the impact of ploughing on the Aboriginal place, suggests that there would be lower potential for sub-surface artefacts to be located at this property.

VAHR 7822-3639 49-51: Scientific Significance

VAHR 7822-3639 comprises part of a low density artefact scatter recorded as part of the Plumpton PSP. The site type (LDAD) is very common throughout the volcanic plains. The place currently has limited research potential due to the low density of artefacts identified. Therefore VAHR 7822-3639 49-51 has been assessed as having low scientific significance.

6.5.10 [redacted] (VAHR 7822-3639 52)

Table 26- Description of VAHR 7822-3639 52

Site name: Site number:	Plumpton PSP 7822-3639 52
Grid reference:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (driveway)
Artefacts:	1
Place extent:	Primary grid co-ordinate above
Place condition:	Poor- house and driveway construction as well as vehicle activity have impacted the integrity of the site
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 27- Artefact description 7822-3639 52 LDAD

Plumpton PSP LDAD (artefact number)	[redacted]	**Description**
52	[redacted]	Silcrete complete flake. Flaked platform, feather termination. Measures 15 x 8 x 2mm.

Figure 24. Artefact 7822-3639 52 [redacted]

VAHR 7822-3639 52: Nature

The Aboriginal place comprises an isolated stone artefact located on the side of a driveway [redacted]. The artefact is a silcrete complete flake (Table 27).

As the site area has been subject to prior disturbance [redacted], the primary context of the artefact has been removed. This disturbance means that it is unlikely that there be a subsurface component to this site at this location.

VAHR 7822-3639 52: Extent

The extent of 7822-3639 52 has been recorded as part of a low density artefact distribution and a primary grid co-ordinate has been recorded on the Victorian Aboriginal Heritage Register for the artefact. These co-ordinates relate to the location of the artefact on the ground surface (Table 26). As the artefact is isolated

and in a disturbed context, it is expected that there would be a low potential for sub-surface artefacts at this location.

VAHR 7822-3639 52: Scientific Significance

VAHR 7822-3639 52 is an isolated artefact comprising part of a broad low density surface stone artefact scatter. This type of site is very common throughout the geographic region and is reflective of background scatter that extends across the volcanic plains. The integrity of the site has been affected by repeated ploughing and vehicle activity. The artefact has very low research potential and is unlikely to provide any new information about past Aboriginal use and occupation. As a result of these factors 7822-3639 52 is assessed as having low scientific significance.

6.5.11 [redacted] (VAHR 7822-3639 53-55)

Table 28- Description of VAHR 7822-3639 53-55

Site name: Site number:	Plumpton PSP 7822-3639 53-55
Grid references:	[redacted]
Location:	[redacted]
Landform:	Volcanic plain (ploughed field)
Artefacts:	3
Place extent:	Primary grid co-ordinates above
Place condition:	Poor- ploughing has impacted the site integrity
Place type:	Low density artefact recording (surface)
Scientific significance:	Low

Table 29- Artefacts within 7822-3639 53-55 LDAD

Plumpton PSP LDAD (artefact number)	[redacted]	**Description**
53	[redacted]	Silcrete angular fragment Measures 26 x 17 x 9mm.
54	[redacted]	Silcrete flake tool. Plain platform, feather termination. Measures 58 x 37 x 17mm
55	[redacted]	Silcrete broken flake tool. Plain platform. Measures 33 x 17 x 6mm

Figure 25. Artefacts from 7822-3639 49-51 [redacted]

VAHR 7822-3639 53-55: Nature

The Aboriginal place comprises a low density scatter of surface stone artefacts distributed across a flat volcanic plain. [redacted].

Artefacts were manufactured from silcrete and comprise one angular fragment and two retouched flakes that were used as implements. The smaller of the tools has been broken at the distal end (Table 29). These tools may represent isolated discard events or they could be the remains of a disturbed occupation site in proximity to a minor water source.

Much of the property has been subject to prior disturbance due to ploughing which has affected the horizontal and vertical integrity of the artefacts and any potential deposits. [redacted].

VAHR 7822-3639 53-55: Extent

The extent of 7822-3639 53-55 has been recorded as a low density artefact distribution and a series of co-ordinates have been recorded on the Victorian Aboriginal Heritage Register for each artefact. These co-ordinates relate to the location of each artefact on the ground surface (Table 28).

The low density of artefacts close to a potential water source, combined with the impact of ploughing on the Aboriginal place, suggests that there would be moderate potential for sub-surface artefacts to be located at this property.

VAHR 7822-3639 53-55: Scientific Significance

VAHR 7822-3639 comprises part of a low density artefact scatter recorded as part of the Plumpton PSP. The site type (LDAD) is very common throughout the volcanic plains. The place currently has limited research potential due to the low density of artefacts identified. Therefore VAHR 7822-3639 53-55 has been assessed as having low scientific significance.

6.6 Summary of Aboriginal Place Data

A total of fifty-five artefacts were recorded as part of the Plumpton PSP Low Density Artefact Distribution (VAHR 7822-3639 1-55). The majority of artefacts were manufactured from silcrete (85%), with low percentages of quartz (11%) and quartzite (4%) also present across the activity area. The most commonly encountered artefacts were those representing by-products of stone knapping, or debitage, created during tool manufacture and maintenance. Artefacts classified as debitage include any unmodified (no retouch or usewear) flakes, broken flakes or angular fragments. These categories amount to 85% of the artefact assemblage.

In addition to debitage, a low proportion of cores (7.5%) and retouched implements (7.5%) were also identified. Cores represent the discarded parent material from which flakes are struck in the manufacture of tools. Retouched implements comprise either partially made formal tools, or unstandardised retouched flakes that are assumed to have been used as general purpose cutting tools (referred to as flake tools).

The variety of artefact types therefore suggest that all stages of stone reduction were occurring within the PSP, including core preparation and reduction, flake blank manufacture and tool resharpening and use.

The sample size of data collected from the PSP is not large enough to identify what stages of this stone tool reduction sequence were undertaken at different locations or at different times. However, several aspects of the predictive model were able to be verified as a result of the survey regarding where such larger sites might be located as part of future investigations.

For example, as a result of the desktop assessment it was predicted that “Higher density artefact scatters and sub-surface deposits may be found adjacent to original drainage channels”. Of the fifty-five artefacts recorded as part of the LDAD, thirty-eight (69%) were located within 100m of a drainage line Figure 27). A further ten (18%) were located within 200m of a drainage-line or swamp depression. The distribution of artefacts identified at these locations during the survey was generally low. At several properties, this was likely due to the

conditions of the ground surface on the day of the survey. [redacted].

The remaining seven artefacts are not associated with a water source or sensitive landform, but are categorised as per the predictive model: "Isolated finds may be found anywhere across the landscape".

6.7 Conclusions

The results of the archaeological survey indicate that the ground surface visibility was generally high across most of the PSP, which had been recently ploughed prior to survey. The results of the survey supported and expanded upon the predictions made in the predictive modelling and preliminary sensitivity mapping developed as part of the desktop assessment.

A limited number of conclusions regarding likely archaeological patterning were made drawing on the results of survey:

- Ground surface visibility in PSP 1078 was generally good due to the paddocks having been recently ploughed for crop planting;
- Although native vegetation was examined (particularly along the creek corridors), none contained evidence of scarring and no mature trees of sufficient age to retain cultural marking or scarring were encountered;
- Areas of prior cut and fill disturbance initially identified during the desktop assessment were examined during the survey and disturbance in these areas has been considerable – likely resulting in the removal of complete disturbance of any archaeological deposits that may have originally been present. The survey confirmed these areas are unlikely to contain Aboriginal cultural heritage, and therefore should be excluded from the scope of Complex Assessment;
- Sensitive landforms identified within PSP 1078 include areas within 200m of undisturbed drainage lines (tributaries of Kororoit Creek) and areas within

200m of swamps. Additional swamps located during the survey that were not identified during the desktop assessment have been added to the to the updated sensitivity map in Figure 26;

- Areas of very high, high, moderate and low sensitivity should be included in a programme of landform based test excavation as part of complex assessments prepared for future Cultural Heritage Management Plans;

- Areas of very 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 market gardening; and

- In the case of areas of 'disturbed' sensitivity, it is unlikely that these areas contain cultural heritage deposits and should therefore be excluded from future CHMP complex assessments.

6.8 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.

[redacted]

[redacted]

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. [redacted].

6.9 Predictive Sensitivity Mapping

The results of the standard assessment/survey were used to test and revise the predictions developed during the Desktop Assessment phase of the project. The standard assessment results generally supported the predictive model developed during the desktop assessment. Therefore the model and sensitivity traits are unchanged from that presented in the desktop assessment.

The sensitivity mapping has, however, been revised with the following additions (please refer to Figure 26):

- Two **swamps** were identified during the survey. These swamps have been now included into the sensitivity mapping presented in Figure 26.

[redacted] **areas with higher cultural values** [redacted] - have been overlain onto the sensitivity map. These areas were identified during the field survey [redacted]

[redacted]

These areas are outlined in pink overleaf on the revised sensitivity map (Figure 26).

- **Aboriginal places** – Previously recorded Aboriginal places registered on the VAHR and new Aboriginal places recorded by AHMS during the standard assessment are marked blue on Figure 26. Each place has a 50m buffer

included to show the extent of the Aboriginal cultural sensitivity CHMP trigger associated with each place.

It is important to note that the predictive sensitivity mapping is based on the results of Desktop research and the Standard Assessment. The accuracy of the modelling 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 centre and key infrastructure such as main roads that need to be established early in the PSP planning and design process.

The predictive modelling 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 modelling 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 Office of Aboriginal Affairs Victoria and Aboriginal traditional owner representative groups.

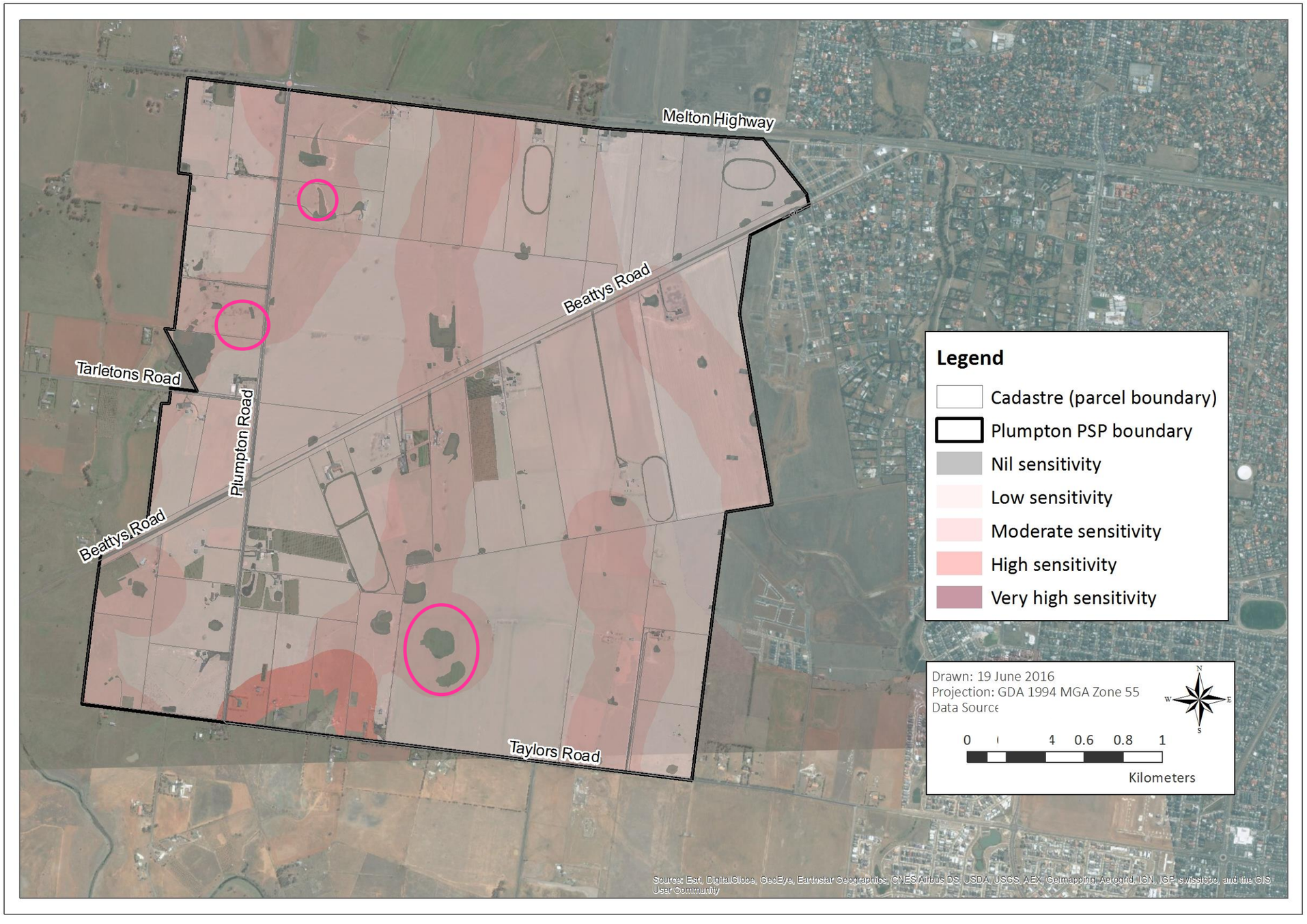

Figure 26. Predictive Archaeological Sensitivity Model incorporating results of Standard Assessment.

FIGURE REDACTED

Figure 27. Areas of Archaeological sensitivity as shown on the Aboriginal Cultural Heritage Register Information System (ACHRIS).

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 two previously recorded Aboriginal places registered on the VAHR within the activity area and the Standard Assessment identified one previously unrecorded Aboriginal place (LDAD) within the activity area.

The predictive model and archaeological sensitivity map shown on Figure 26 is designed to inform 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 26:

[redacted] **areas of higher cultural value: (outlined pink on Figure 26)**: 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 minimise future development impact on these areas where it is feasible within other planning, design and environmental constraints and considerations. This approach will protect areas with higher potential for archaeological deposits. The approach will also save time and money in reducing the scope of mitigation and salvage of higher 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 & Disturbed Sensitivity : 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.

7.2 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 (this currently includes all the areas shaded green on Figure 27 as well as any property allotments within 50m of the Aboriginal place locations marked on Figure 26) will be required to prepare a cultural heritage management plan (CHMP). **It is important to note that areas of cultural heritage sensitivity change over time as new Aboriginal places are identified and new landforms added – therefore it is critical that all proponents check the sensitivity overlay mapping included on OAAV's ACHRIS mapping system or on the Department of Primary Industries GeoVic website to determine whether a management plan may be triggered by their development proposal.**

There is an exemption from the requirement to complete a mandatory CHMP 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 26 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 PSP 1078 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 26. 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). Levels of sensitivity ranging from 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 Wurundjeri 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 Metropolitan Planning 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 30 below.

Table 30. Proposed Sampling Densities.

Sensitivity Level.	Testing Required (per 100 hectare for larger properties)*.
Low	10 Square Metres
Moderate	15 square metres

* *For properties that are less than 100 hectares the same sampling densities would also apply. For example, a 25 hectare property in moderate sensitivity zoning would still require 15 square metres sample because it is a minimum sample required to understand the nature, extent and significance of sub surface deposits. For properties that include a range of sensitivity zones, the sampling should be weighted according to the proportion of the land in different sensitivity zones.*

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 legislated cultural heritage sensitivity defined under the Aboriginal Heritage Regulations 2007** (shown on Figure 27 and any parcels of land located within 50m of Aboriginal places marked blue and green on Figure 26) 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 Office of Aboriginal Affairs Victoria website should be undertaken to ensure that the proponent has the up to date latest version of OAAV Aboriginal cultural heritage sensitivity overlay when determining whether or not a mandatory CHMP is required for an activity**.

b. Currently there is no Registered Aboriginal Party for PSP 1055 therefore the current evaluating authority would be Office of Aboriginal Affairs Victoria (OAAV). CHMPs must be prepared by a qualified Cultural Heritage Advisor and must be approved by OAAV 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. Activity areas that have been subject to *significant ground disturbance* as defined by the Aboriginal Heritage Regulations 2007 may not require a mandatory CHMP.

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 higher 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 Figure 26) 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 OAAV.

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 OAAV.

REFERENCES

Office of Aboriginal Affairs Victoria (2007) 'Guide to Preparing Cultural Heritage Management Plans'.

Aboriginal Heritage Act (2006)

Aboriginal Heritage Regulations (2007)

Andrefsky, W. (1998) 'Lithics: macroscopic approaches to analysis' Cambridge University Press, Cambridge.

Andrew Long and Associates, (2010) 'Strategic Approach to Aboriginal Heritage Management for Melbourne's Growth Areas Desktop Assessment Report West Growth Area (Volume 2 of 5)'. Unpublished report prepared for the Metropolitan Planning Authority.

Barker, M. and M. Barker. (2010). 'Opie Road Gross Pollutant Trap, Albanvale'. CHMP 11022. Sponsor: Brimbank City Council.

Barwick, D. (1984). 'A memorial for Thomas Bungeleen, 1847-1865'.

Bell, J. (2002). 'An archaeological survey caroline springs-middle neighbourhood', unpublished report to delfin p/l.

Bell, J. (2003). 'The grove diversion drain: archaeological salvage operations at site 7822/0489 caroline springs middle neighbourhood', unpublished report to Delfin.

Bell, J. (2003). 'Sub-surface testing of three proposed wetland areas: caroline springs middle neighbourhood', unpublished report to Delfin.

Bell, J. (2003). 'Sub-surface investigations, monitoring and salvage work caroline springs third neighbourhood', unpublished report to Delfin Lend Lease.

Broome, R. (2002) 'Aboriginal Australians: Black Responses to White Dominance' 1788- 2001 Allen & Unwin New South Wales.

Cekalovic, H. (1999).'Addendum: an archaeological survey of a proposed quarry site at Leakes road, Rockbank', unpublished report to moorland projects pty ltd.

Cekalovic, H. (2000). 'Archaeological survey – Taylors road, Plumpton, Victoria, unpublished report to Coombs consulting group.

Christie, M.F. (1979), 'Aborigines in Colonial Victoria 1835-86', Sydney: Sydney University Press.

Clark, I. (1990) 'Aboriginal Languages and Clans: An Historical Atlas of Western and Central Victoria, 1800-1900'. Monash Publications in Geography, no. 37.

Cochrane, G. (1999). 'The archaeology of stony hill creek and adjacent tributaries of Kororoit Creek, Hillside, Victoria', unpublished report to Woodward-Clyde, Environmental Consultants

Debney, T. (1998) 'Archaeological Sub-Surface Investigation within the Proposed River Sanctuary, Farm Road, Werribee'.

du Cros, H. (1989) 'Deer Park Archaeological Survey Stage 2 and Stages 3-7, Survey Report, Melton Shire Council.

du Cros, H. (1990). 'The Sydenham corridor: A Cultural Heritage Study', VAS occasional report 26.

du Cros, H. (1990). 'An archaeological overview of Gilbertsons property East Melton, Victoria', unpublished report to comes and partners pty ltd.

du Cros, H. & Watt, P. (1993). 'An archaeological survey of a proposed quarry site at Leakes Road, Rockbank, Victoria, unpublished report to the Stella family,

du Cros, h. & Murphy, A. (1995). 'An archaeological survey of the proposed Caroline Springs housing development area, East Melton, Victoria', unpublished report to urban development.

Edmonds, V. (2007). 'Department of education (doe): proposed Rockbank Primary School', unpublished report to DOE.

Edmonds, V. & Brooke, J. (2007). 'Department of education (doe) proposed caroline springs north primary school', unpublished report to DOE,

Ellender, I. & Weaver, F. (1994). 'An archaeological survey of Port Phillip Bay'. Unpublished report prepared for the Victorian Archaeological Survey.

Gaughwin, D. and H. Sullivan, (1983) 'Aboriginal Boundaries and Movements in Western Port, Victoria' *Aboriginal History* 8(1):80-98.

Goulding, M. (1988) 'Aboriginal Occupation of the Melbourne Area, District 2', unpublished report to the Land Conservation Council, Land Conservation Council, Melbourne.

Goulding, M. & Menis, M. (2006) 'Moreland Post-Contact Aboriginal Heritage Study', Unpublished report prepared for Moreland City Council by Goulding Heritage Consulting Pty Ltd.

Green, M. (2012). '1027 Taylors Road, Plumpton Residential Subdivision Cultural Heritage Management Plan.' unpublished report prepared for Plumpton Gardens Pty Ltd.

Hare, A. G. and R.A.F. Cas (2005). 'Volcanology and evolution of the Werribee Plains intraplate, basaltic lava flow-field, Newer Volcanics Province, southeast Australia' . *Australian Journal of Earth Sciences*, Volume 52, (1)59-78.

Hills, E. S. (1940). 'Physiography of Victoria. An Introduction to Geomorphology' Whitcombe and Tombs Pty. Ltd., Australia.

Hovell, W.H. 'Journal on the voyage to and at Western Port, New South Wales', 7 November 1826-25 March 1827, April 1827

Howell-Meurs, J., Albrecht, M. & Matthews, D. (2008). 'Westwood Drive Water Main, Burnside Aboriginal Cultural Heritage Management Plan.', unpublished report prepared for City West Water.

Hyett, J.(2006). 'An archaeological survey proposed service centre, rockbank', unpublished report to jayaland corporation.

Lawler, M., Vines, G. & McKinnis, D. (2008). 'Western Highway – Rockbank to Melton Access Restoration Project Cultural Heritage Management Plan.' unpublished report prepared for Vicroads,

Murphy, A. (1995) 'North western Wurundjeri area: a regional archaeological survey stage 1', unpublished report to Wurundjeri tribe land compensation and cultural heritage council, 1995.

Murphy, A. (1996). 'North western Wurundjeri area: stage 2 regional aboriginal archaeological heritage survey', unpublished report to wurundjeri tribe land compensation and cultural heritage council,

Murphy, A. (1998). 'An overview of the aboriginal and historic archaeology within department of defence land, rockbank, victoria', unpublished report to ppk environment & infrastructure pty ltd.

Murphy, A. & Morris, A. (2011). 'APA Gasnet Sunbury gas pipeline looping project Middle Road Truganina to Taylors Road, Plumpton.' unpublished report prepared for APA Gasnet Australia Pty Ltd.

Murphy, A. & Morris, A. (2013). 'Industrial Subdivision: Western Highway Ravenhall.' unpublished report prepared for Melrose Land Sales Pty Ltd.

Newby, J. & Muir, S. (1996). 'Melton highway duplication, sydenham railway crossing to landbury drive, archaeological survey', unpublished report to VicRoads.

Orr, A. & Hyett, J. (2011). 'Residential Development, 868 Melton Highway Hillside Cultural Heritage Management Plan.' unpublished report prepared for Simonds Developments.

Pavlides, C. & Atkinson, M. (2000). 'Archaeological testing of aboriginal and historic sites in the middle neighbourhood, caroline springs, unpublished report to delfin ltd,

Presland, G. (1983) 'An Archaeological Survey of Melbourne Metropolitan Park' Victoria Archaeological Reports 15.

Rhoads, J.W. (1986). 'Bellarine Peninsula: Archaeological Site Assessment & Management Study'. Unpublished report prepared for the Geelong Regional Commission.

Rhodes, D. (1990) 'City of Keilor Archaeological Survey.' Unpublished report prepared for the Western Region Commission Inc.

Rhodes, D. & Nicholson, O. (1998). 'An archaeological survey of a proposed development site, gourlay road, moreton, victoria', unpublished report to lawport pty ltd and australand holdings, ltd.

Stockton, J. (1983). 'Bellarine Peninsula Archaeological Survey Discussion Paper No. 2: Study Design'.

Terraculture. (2000) 'Caroline springs 3rd neighbourhood archaeological assessment', unpublished report to delfin.

Thomas, W. (1969) Brief account of the Aborigines of Australia Felix (1854), in Bride, T. F. ed. 'Letters from Victorian Pioneers', Melbourne.

Tucker, C. (2006). 'Archaeological subsurface testing leakes road interchange: western highway'm unpublished report to vicroads, 2006.

Tucker, C. & Athanasiadis, H. (2009). 'Sewerage Reticulation Pipeline, Stoney Hill Creek, Caroline Springs: A Cultural Heritage Management Plan', unpublished report prepared for City West Water.

Vines, G. (1990). 'report on the historical and archaeological survey for the melton east structure plan study area', unpublished report to melbourne's living museum of the west inc.

Vines, G. (1993). 'hopkins roads archaeological survey', unpublished report to melbourne's living museum of the west inc.,

Webb. C. 1991. 'An archaeological survey of the Melbourne to Adelaide telecom optical fibre cable route – Melbourne to ballarat', unpublished report to telecom Australia.

Online sources.

Department of Planning & Community Development.

http://www.dpcd.vic.gov.au/indigenous

Aboriginal Cultural Heritage Register and Information System.

http://www.dpcd.vic.gov.au/indigenous/heritage-tools/aboriginal-cultural-heritage-register-and-information-services-achris

Department of Primary Industries. Geological Interactive Mapping (Geovic).

http://new.dpi.vic.gov.au/earth-resources/exploration-and-mining/tools-and-resources/geovic.

Department of Sustainability and Environment.

http://www.dse.vic.gov.au/conservation-and-environment/evc-benchmarks-otway-plain-bioregion

Department of Sustainability and Environment.

http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim

Google Earth.

http://www.google.com/earth/index.html

Melbourne Water

http://www.melbournewater.com.au/waterdata/riverhealthdata/werribee/Pages/Werribee-catchment.aspx

NearMap.

https://www.nearmap.com/welcome-new

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 1800-726-003.

SECTION 1 - Sponsor information

Sponsor:	Growth Areas Authority		
ABN/ACN:	77 803 352 468		
Contact Name:	Stephanie Harder		
Postal Address	Level 29, 35 Collins Street, Melbourne, VIC 3000		
Business Number:	03 9651 9643	Mobile:	
Email Address:	Stephanie.Harder@gaa.vic.gov.au		

Sponsor's agent (if relevant)

Company:			
Contact Name:			
Postal Address			
Business Number:		Mobile:	
Email Address:			

SECTION 2 - Description of proposed activity and location

Project Name:	Plumpton Precinct Structure Plan (PSP) 1078
Municipal district:	Melton Shire Council

Clearly identify the proposed activity for which the cultural heritage managment plan is to be prepared (ie. Mining, road construction, housing subivision)

Subdivision

SECTION 3 - Cultural Heritage Advisor

Name	Company	Email address
Shannon Sutton	AHMS (Archaeological & Heritage Management Solutions Pty Ltd)	shannons@arksolutions.com.au

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

Start Date:	03-May-2013	Finish Date:	03-May-2014

Submitted on:03 May 2013

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?

Subdivision

Is any part of the activity an area of cultural heritage sensitivity, as listed in the regulations? Yes

☐ Other Reasons (Voluntary)

☐ An Environmental Effects Statement is required

☐ A Cultural Heritage Management Plan is required by the Mister for Aboriginal Affairs.

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

This section is to be completed where there are registered Aboriginal parties in relation to the management plan.

SECTION 7 - Notification checklist

Ensure that any relevant registered Aboriginal party/s is also notitifed. A copy of this notice with a map attached 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 registerd 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 with a map attached may be used for this purpose.

Submitted on:03 May 2013

APPENDIX 2 – GLOSSARY OF TECHNICAL TERMS

Aeolian	Wind generated geological processes. In an archaeological context it usually refers to wind blown deposits and sands.
Backed Artefact / Backing	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'.
Bipolar	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.
Blade	A flake that is twice as long as its width.
Bulbar	Refers to a bulb of percussion produced during a conchoidal fracture
Chert	'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).

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.
egative 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).