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Final Report

Northern Geelong Growth Area, Lovely Banks and Lara, Victoria:

Phase 1 Aboriginal Heritage Assessment

Client

Lovely Banks Landowner Consortium

28 November 2016

Ecology and Heritage Partners Pty Ltd

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ACKNOWLEDGEMENTS

We thank the following organisations for their contribution to the project:

- Wilcon Projects Pty Ltd for project and site information.
- Lovely Banks Landowner Consortium for project and site information.
- The City of Greater Geelong for project information.
- Wathaurung Aboriginal Corporation for cultural heritage information.
- Aboriginal Victoria for information regarding Aboriginal Places.

Cover Photo: Looking north across the base of the Lovely Banks Monocline from Anakie Road

(Photo by Ecology and Heritage Partners Pty Ltd)

DOCUMENT CONTROL

Activity	Northern Geelong Growth Area
Address	Lovely Banks and Lara, Victoria
Project number	8300
Project manager	Rick Bullers
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Mapping	Monique Elsley
File name	8300_EHP_NGGA_AHIA_Final-v3_RB_28112016
Client	Lovely Banks Landowner Consortium
RAP	Wathaurung Aboriginal Corporation
Bioregion	Victorian Volcanic Plain
CMA	Corangamite
Council	City of Greater Geelong

Report versions	Comments	Comments updated by	Date submitted
Draft v1	Draft for QA Review	-	20.09.2016
Draft v2	Draft to Client for Comment	Rick Bullers	21.09.2016
Final v1	Draft Report to CoGG	Rick Bullers	25.10.2016
Final v2	Revised Report to Client/CoGG	Rick Bullers	22.11.2016
Final v3	Final Report to Client/CoGG	Rick Bullers	28.11.2016

Protocols for Handling Sensitive Information

Some of the information contained within this Aboriginal Heritage Assessment (AHA) is culturally sensitive. Before releasing the contents of this CHMP to the public, permission should be sought from the relevant authorities and communities.

Disclaimer

Although Ecology and Heritage Partners Pty Ltd have taken all the necessary steps to ensure that an accurate document has been prepared, the company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report and its contents.

ABBREVIATIONS

Acronym	Description
Act, the	*Aboriginal Heritage Act 2006*
AHA	Aboriginal Heritage Assessment
AV	Aboriginal Victoria, formerly the Office of Aboriginal Affairs Victoria
CHL	Commonwealth Heritage List
CHMP	Cultural Heritage Management Plan
CHP	Cultural Heritage Permit
CMA	Catchment Management Authority
CoGG/Council	The City of Greater Geelong
DELWP	Department of Environment, Land, Water and Planning (Victoria)
DoEE	Department of the Environment and Energy (Commonwealth)
DPC	Department of the Premier and Cabinet (Victoria)
EES	Environment Effects Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EVC	Ecological Vegetation Class
HA	Heritage Advisor
HHA	Historical Heritage Assessment
HO	Heritage Overlay
HV	Heritage Victoria
LDAD	Low Density Artefact Distribution
NES	National Environmental Significance
NGGA	Northern Geelong Growth Area
NHL	National Heritage List
NNTT	National Native Title Tribunal
PGC	Primary Grid Coordinate
PMST	Protected Matters Search Tool
RAP	Registered Aboriginal Party
RNE	Register of the National Estate
Regulations, the	*Aboriginal Heritage Regulations 2007*
SGD	Significant Ground Disturbance
SLV	State Library of Victoria
T/O	Traditional Owner/s
VAHR	Victorian Aboriginal Heritage Register
WAC	Wathaurung Aboriginal Corporation
WHL	World Heritage List

EXECUTIVE SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd was commissioned by Wilcon Projects Pty Ltd (on behalf of the Lovely Banks Landowner Consortium) to prepare a Phase 1 (Desktop) Aboriginal Heritage Assessment (AHA) for the Northern Geelong Growth Area (NGGA) in Lovely Banks and Lara, Victoria (City of Greater Geelong) (Map 1).

The Activity

The City of Greater Geelong (CoGG) is preparing a Framework Plan to guide the future development of the lands within the study area.

The Study Area

The study area is the Northern Geelong Growth Area. It is approximately 2,127 ha in size and is bounded by Staceys Road to the north, Geelong-Bacchus Marsh Road to the east, the Geelong Ring Road to the southeast, Anakie Road to the south west, and private rural land to the west (Map 2).

Methods

The assessments undertaken as part of this AHA were a desktop assessment in accordance with the brief and scope of works issued by CoGG. The desktop assessment consisted of reviews of relevant heritage registers and databases, previous archaeological publications and unpublished reports, and a review of the environmental context of the study area, culminating in a predictive statement and preliminary sensitivity mapping regarding the likelihood of Aboriginal cultural heritage occurring in the study area.

In addition, a rapid site inspection was also carried out to obtain an overview of landforms across the study area and any obvious areas of previous ground disturbance. Formal archaeological survey or subsurface testing did not form part of the scope of works for this assessment.

Results

Desktop Assessment

The desktop assessment indicated that there have been a total of 12 Aboriginal Places previously recorded within a 1 km search buffer around the study area (Map 6). Of these, two previously registered Aboriginal places are located within the study area itself (Map 9). The desktop assessment concluded that stone artefact sites, including artefact scatters and low density artefact distributions are the types of Aboriginal Places most likely to occur within the study area. Scarred trees may also occur where mature native vegetation is still present, most likely along roadsides or fencelines. Other Aboriginal place types are considered unlikely to be present.

Field Inspection

The field inspection was undertaken on 10 and 11 September 2016 by Rick Bullers (Senior Archaeologist/Heritage Advisor). The inspection comprised visual observation from roadsides only. The

inspection was not part of the scope of works but was conducted in-house in order to achieve a level of ground-truthing for the desktop evaluation.

Aboriginal Cultural Heritage

There are a total of two previously registered Aboriginal Places within the study area (Map 6):

- VAHR 7721-0424 (Lara-Colac 17). This site is an isolated silcrete artefact identified in the easement of a gas pipeline in the northern section of the study area on top of the escarpment on flat plains landform.
- VAHR 7721-0587 (Western Bypass 9). This site is an isolated silcrete artefact identified during the surveys for the Geelong Ring Road. The site is located in the Tower hill Drive road reserve and is likely to have been destroyed.

The lack of registered Aboriginal places in the study area is unlikely to be a result of limited use by Aboriginal people, but more likely to be a result of the highly limited extent of archaeological investigation in the study area.

A preliminary Aboriginal site sensitivity map was prepared (Map 9).

Sensitivity Mapping

Following the desktop assessment, a preliminary Aboriginal site sensitivity map was prepared as follows (Map 9):

High Potential

A review of desktop sources did not identify any areas of **high** archaeological potential, except:

- In the vicinity of one of the registered Aboriginal place in the study area (7721-0424), located in the northern section of the study area on the elevated plain. This area is also a legislated area of cultural heritage sensitivity.

The second Aboriginal place in the study area is not listed as a high archaeological potential area because it consists of a single stone artefact that is located in a road reserve and has therefore likely been destroyed.

Moderate Potential

A total of five areas are considered to have **moderate** potential, marked orange in Map 9:

- The crest of the minor ridge on the top of the escarpment;
- The courses of the four drainage lines/valleys.

Low to Moderate Archaeological Potential

Two areas are considered to have **low to moderate** potential, marked green in Map 9:

- The lowland plain landform, in areas where isolated disturbances have not occurred; and
- The outer lip at the crest of the escarpment. This area would have afforded Aboriginal people good 'outlook' across the lowland plains to the east.

Low Potential

All other areas in the study area are considered to have **Low** sensitivity, and are outlined in purple in the sensitivity map (Map 9). These areas are defined with reference to the limited number of previous investigations. These areas include steep slope/escarpment landforms, as well as some elevated areas where post-contact disturbance or distance from water reduces the probability that the areas were used for sustained occupational activity.

However, even within this category, there are differing levels of sensitivity. For example the gentle, undulating plains across most of the study area are more likely to retain low density Aboriginal cultural heritage deposits, than the very steep slopes along the escarpment. It is considered highly unlikely that Aboriginal cultural heritage will be present on the steep escarpment slopes of the Lovely Banks Monocline; these steeper slopes are considered unlikely to have deposits due to the impracticality of either camping or even transiting when easier access routes are available between the low and high ground.

However, it is acknowledged that isolated artefacts (or LDADs) can be found anywhere in the landscape, particularly in relation to transit routes or opportunistic hunting activities. Therefore, the low sensitivity rating is based more on the lower balance of probability for Aboriginal cultural heritage to be present.

Disturbance Areas

A number of disturbance areas were noted during the desktop assessment and some were verified during the site inspection. These include:

- Lovely Banks Basins.
- Low Density Residential Development.
- Intensive farming/agriculture.
- Rural Industry.
- Low Intensity Farming:
    - Farmhouses and farm complexes; and
    - Farm/stock management infrastructure, e.g. dams, sheds, etc.;
- Commercial infrastructure.
- Educational infrastructure.
- Numerous roads and tracks.

These areas are considered to have been previously disturbed and are unlikely to retain in situ Aboriginal archaeological deposits within the development footprint. Where they occur in legislated areas of cultural heritage sensitivity (Map 10) they void that part of the area of sensitivity.

Summary of Management Recommendations

Based on the results of the desktop assessment and site inspection, the following management recommendations are made regarding the preparation of the Framework Plan and future archaeological investigation.

Recommendation 1: Framework Planning – Protection of Aboriginal Cultural Heritage

It is an offence under the *Aboriginal Heritage Act 2006* to harm[1] any Aboriginal cultural heritage in Victoria. It is recommended that further archaeological investigation is carried out in any areas that are considered to have Aboriginal archaeological potential, as discussed further in the recommendations below.

Recommendation 2: Requirement for Mandatory Cultural Heritage Management Plan

Due to the low number of previous investigations in and around the study area, with the result that only two Aboriginal places have been registered, together with a lack of relevant landforms defined under the *Aboriginal Heritage Act 2006*, there are only six areas of legislated cultural heritage sensitivity in the study area. All six areas of sensitivity involve land within 50 m of a registered Aboriginal place (Regulation [r.]22). Only two of these places is within the study area; the other four are located in the adjacent Geelong Ring Road reserve, but there is land in the study area within 50 m of the places.

Due to the size of land parcels over much of the study area, the parcel north of Elcho Road with a registered Aboriginal place includes large tracts of land that are remote from the area of sensitivity. If the footprint of an activity (i.e. the 'activity area') is remote from the area of cultural heritage sensitivity, then that activity will not require a mandatory CHMP (VCAT Red Dot: Big Hill Vineyard v Greater Bendigo CC, VCAT 397). However, if the 'activity area' contains an area of cultural heritage sensitivity as defined by the Regulations and if, following the preparation of the Framework Plan, these parcels are subject to development that meets the definition of a high impact activity under the Regulations, a CHMP will need to be prepared and approved prior to issue of a Planning Permit. Such activities may include one or more of the following as examples: a subdivision of three lots or more (r.46); a road or bike/walking track with a length exceeding 100 m (r.44); buildings and works for specified uses (e.g. car parks, schools, offices, churches/halls, retail premises, utilities, etc.)(r.43).

An overview of existing land parcels that may be subject to mandatory CHMP is shown in Map 10.

The desktop assessment results in this report may be used to fulfil the requirements of the desktop assessment component of CHMPs in land parcels covered by this assessment. In that instance, a CHMP may proceed directly to complex assessment under s.58(2) of the *Aboriginal Heritage Act 2006*. However, if a CHMP is commissioned more than six months after the cover date of this report, then a new search of the Victorian Aboriginal Heritage Register should be carried out to ensure that the most current list/locations/extents of relevant Aboriginal Places is used.

As there is a RAP in place for the study area (Wathaurung Aboriginal Corporation), they must be involved in the CHMP process, and they will usually evaluate and approve the CHMP.

[1] The introduction of amendments to the *Aboriginal Heritage Act 2006* on 1 August 2016 removed the word 'knowingly' from the Act (regarding harming Aboriginal cultural heritage) and created a strict-liability offence.

If, in the period between this investigation and commissioning of a CHMP, an individual Sponsor (developer) believes that significant ground disturbance has occurred in an area of cultural heritage sensitivity that may void the entire area of sensitivity in the activity area, then they may consider engaging a qualified cultural heritage advisor to assess the area of SGD and make a recommendation as to whether a CHMP is required.

In sections of an activity area where no ground disturbance or development is proposed, complex assessment is not required.

Recommendation 3: Framework Planning – CHMPs Currently in Preparation

When a CHMP is commissioned for a given activity area a Notice of Intent (NOI) is lodged with AV, Council and the RAP. However, the VAHR does not provide details of active NOIs and therefore it does not provide information on any CHMPs that are currently being prepared at the time of writing. It is important that any future archaeological investigations in the study area take into account any relevant CHMPs that are underway; a CHMP is a statutory document and the approved management recommendations/conditions are binding.

It is recommended that the registrar at AV is contacted for information on any active CHMP/NOIs in the study area prior to commencing any future activities in the study area to ensure that no activities conflict with the CHMP's management recommendations. However, if a new activity includes land that was previously assessed as part of a prior CHMP, then that overlapping land will not require further archaeological investigation and this should be incorporated into the proposed methodology for the new CHMP. It is recommended that further discussion between Council, the Sponsor and the RAP takes place to ensure consistency between the agreed provisions of the CHMP/s and the Framework Plan.

If the proposed activity within the land parcel/s covered by the previous CHMP activity area includes a high impact activity listed within the *Aboriginal Heritage Regulations 2007* (e.g. subdivision, roads, utilities, etc.), then a mandatory CHMP for that/those activities will be triggered.

Recommendation 4: Framework Planning – Previously Prepared CHMPs

One area of land east along Cowies Creek is the subject of a previous CHMP (#11340; Feldman et al. 2010) that has already been approved (Map 10). The activity described for the CHMP is for a water pipeline. If the activity is *for the same general purpose* as described in the previous CHMP, then no further assessments or CHMPs will be required for the previous activity area. However, if the proposed activity does form a material change of use then, in accordance with VCAT red dot decision (Three Pillars Property Group v Brimbank CC; VCAT 368), a new CHMP would be required for that area. However, subject to negotiation with the RAP for the area (Wathaurung Aboriginal Corporation), no further field investigation would be required and the CHMP need only be a desktop CHMP.

Recommendation 5: Aboriginal Places – Site Extent Testing

Except where Aboriginal places are located in reserved areas or areas that will not be disturbed, or if they are located in areas that have been significantly disturbed *after* the site has been registered, any complex assessment in an activity area that contains one or more of the Aboriginal places (or legislated areas of cultural heritage sensitivity) identified in this report should make provision for conducting site extent testing to fully record the extent, nature and significance of the sites *if no previous site extent testing has occurred*.

Recommendation 6: Areas where the requirement for a CHMP is not clear

In land parcels and road reserves that are within legislated areas of sensitivity but have been subject to significant ground disturbance (SGD) as defined by the Regulations, the legislated areas of sensitivity in the disturbance footprint are voided. However, assessments of SGD are often problematic and difficult to prove. Where it is unclear as to whether a mandatory CHMP is required (due, for example, to perceived SGD), then it is recommended that a Preliminary Aboriginal Heritage Test (PAHT) is conducted for those land parcels. The PAHT would be assessed by Aboriginal Victoria. If the assessment concurs with a finding of SGD across the whole area of sensitivity within an activity area, then the PAHT will be certified and a CHMP would not be required.

Recommendation 7: Voluntary CHMP

Parts of the study area are not located in a legislated area of cultural heritage sensitivity (Map 10), but are located in areas that have high or moderate archaeological potential based on the desktop assessment in this report. Although a mandatory CHMP is not required, it is recommended that the relevant developer considers preparing a voluntary CHMP as a risk mitigation strategy. The preparation of a voluntary CHMP has the following advantages:

- *No requirement for Cultural Heritage Permits at a later stage*: there are no cultural heritage permit requirements in relation to a CHMP as long as you are acting in accordance with the CHMP. There is no requirement for an excavation permit or a permit to harm, or any of the other permit requirements. In effect, the approved CHMP is a permit. If Aboriginal cultural heritage is unexpectedly discovered during the activity, there is therefore no permit requirement if a CHMP has in place. Any unexpected Aboriginal cultural heritage is dealt with through contingency plans in the CHMP, already signed off and agreed to by RAP in the CHMP process;
- *Increased certainty for your project*: as there are no Cultural Heritage Permit requirements at a later stage, there is more certainty for the project. This certainty is provided during the planning phase, allowing the activity to remain unimpeded by cultural heritage legislation. A CHMP removes the activity from the harm provisions of the Aboriginal Heritage Act 2006, as long as the proponent acts in accordance with the CHMP; and
- *Good Risk Management*: rises and elevated areas and the margins of water courses are well documented as areas that retain Aboriginal cultural heritage sites in the general region. A voluntary CHMP could effectively investigate the area for any evidence of Aboriginal sites and minimise the risk that any significant Aboriginal sites would be impacted by the activity, which would cause delays and added expense to the construction process.

In the event that the developer elects to pursue a voluntary CHMP, this must be undertaken by a qualified Cultural Heritage Advisor in association with the RAP for the local area, the Wathaurung Aboriginal Corporation. Any voluntary CHMP undertaken for the study area may be able to utilise the results of this report for the desktop assessment component of the CHMP.

Recommendation 8: No Further Assessment Required

Large parts of the study area are not located in a legislated area of cultural heritage sensitivity (Map 10) or areas that are considered to be of low-moderate archaeological potential or higher. Land parcels and road reserves in the study area that do not occur within a legislated area of cultural heritage sensitivity under the Regulations do not require a mandatory CHMP.

No further archaeological investigation is considered necessary in areas that are considered to be of low archaeological potential; this is predominantly the western half of the study area.

However, it should be noted that all Aboriginal cultural heritage in Victoria is protected. If any Aboriginal cultural heritage issues are encountered during the course of any subsequent construction activities, then works should cease within 20 m of the area of concern and a qualified Heritage Advisor (or AV), in conjunction with the RAP, should be contacted to investigate.

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1 INTRODUCTION

Ecology and Heritage Partners Pty Ltd was commissioned by Wilcon Projects Pty Ltd, on behalf of the Lovely Banks Landowner Consortium (hereafter referred to as 'the Consortium') for a Phase 1 cultural heritage assessment of parcels of land at Lovely Banks and Lara, Victoria, for the proposed Northern Geelong Growth Area (City of Greater Geelong) (Map 1).

1.1 Background and Scope of Works

1.1.1 Background

The G21 Regional Growth Plan (G21 RGP) identified two Further Investigation Areas (FIAs) to set the context for future urban growth in the City of Greater Geelong (CoGG). These FIAs comprise the Northern and Western Geelong Growth Areas (NWGGA). The combined NWGGA includes the Northern Geelong Growth Area (NGGA) at Lovely Banks and the Western Geelong Growth Area (WGGA) at Batesford, Fyandsford and Hamlyn Heights. Previous high level assessment has been undertaken and presented in the G21 RGP, Implementation Plan and the associated Background Report, as well as various technical studies.

In April 2016, CoGG released the Context Report for the NWGGA, which scopes the planning process for the NWGGA project in the preparation of an Integrated Infrastructure Delivery Plan (IIDP) and a Framework Plan for each of the two Growth Areas. The Framework Plan will set the overall strategic land use and development vision for the NGGA. The Context Report also defined a project plan on how the IIDP and FP will be delivered including timeframes for technical report inputs. The project plan separated the project into three distinct phases, with the initial technical reports forming part of Phase 1. In relation to the scope of works for this project, the project plan identified the need for Indigenous cultural Heritage assessments and Post-Contact (non-Aboriginal) cultural heritage assessment reports to be completed as part of Phase 1 by November 2016.

1.1.2 Scope of Works

Aims of the Assessment

The CoGG scope of works identifies the following aims for both the Indigenous Heritage and the Post-Contact Heritage Assessments:

- Completion of both Cultural Heritage Reports by November 2016, at the latest. The technical report should:
    - Verify the results of any prior assessment and review their implications for the development of the Study Area;
    - Identify any significant archaeological issues, which will constrain development of the Study Area; and
    - Provide an outline of further investigations and associated processes for the future resolutions of these issues.

- Completion of the Non-Technical Summary (Template provided in Appendix 1) to input to the Framework Plan Background Report.

Consultation

In accordance with the CoGG SoW all stakeholder consultation was coordinated through CoGG. An amended consultation methodology was submitted to CoGG for endorsement based on the following:

- CoGG in relation to endorsement of overall consultation methodology, information regarding overall planning policy, information regarding previous Council Heritage Studies and consultation with the Council Heritage Advisor (if deemed necessary);
- Aboriginal Victoria (formerly OAAV) for access to the Victorian Aboriginal Heritage Register for provision of registered site information and previous archaeological reports;
- Wathaurung Aboriginal Corporation for any cultural heritage information relevant to the study area that they may wish to provide.

Desktop Assessment

An up to date review of the relevant cultural heritage databases and literature will be undertaken. The following tasks include investigations for both the Indigenous and Post-Contact assessments, including:

- Victorian statutory heritage databases including:
    - Victorian Aboriginal Heritage Register (VAHR) administered by the Office of Aboriginal Affairs Victoria [OAAV];
    - Victorian Heritage Register and Inventory (VHR and VHI), administered by Heritage Victoria; and
    - Local Government (CoGG) Heritage Overlay;
- The Australian Government's Protected Matters Search Tool for places listed on the National Heritage List (NHL), Commonwealth Heritage List (CHL);
- Various non-statutory heritage registers, for contributory information, including:
    - Register of the National Estate (RNE);
    - National Trust Register (NTR); and
    - Victorian War Heritage Inventory (VWHI).
- Recent aerial photography will be accessed to determine the locations of any built structures (including houses, homesteads, dry stone walls, outbuildings, etc.), areas of previous ground disturbance and areas of remnant native trees (potential cultural scarring) within the project area and the surrounding landscape;
- Any relevant available literature (e.g. previous archaeological reports or Council Heritage Studies), legislation and policies; and
- A brief review of the land use of the study area.

Reporting

The results of the Phase 1 cultural heritage assessment will be presented in a technical report containing the following:

- The environmental context of the study area, including the geology, geomorphology, hydrology, soils, vegetation and recorded fauna;
- A review of the ethnohistorical context of the study area, including any information provided by Aboriginal stakeholders regarding the oral history of the study area;
- The history of the region and the study area;
- The results of the database searches/desktop assessment as discussed above;
- Provision of maps showing:
    - locations and extent of any recorded Aboriginal and historical heritage places;
    - Location and extent of any identified areas of cultural heritage sensitivity as defined under the *Aboriginal Heritage Regulations 2007* (i.e. triggers for a CHMP);
    - any identified areas of Aboriginal and/or historical archaeological sensitivity (as identified through desktop assessment of previous reports and/or aerial photo interpretation); and,
    - any identified areas of significant ground disturbance.
- Identify legislative implications and determine potential impacts on heritage values under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *Aboriginal Heritage Act 2006* and *Planning and Environment Act 1987* (the local Planning Scheme and Heritage Overlay), which may be impacted by the proposed works;
- Describe any potential impacts to cultural heritage values as a result of the proposed action;
- Recommend any additional assessments likely to be required (e.g. Aboriginal Cultural Heritage Management Plan [CHMP]);and
- Identify and describe measures and options for the future Framework Plan to avoid and/or mitigate potential adverse impacts on cultural heritage values.

The results of the Phase 1 cultural heritage assessment will also be presented in a:

- Non-Technical Summary - Aboriginal Cultural Heritage Assessment.

1.2 Location and Description of the Study Area

The study area comprises the whole of the NGGA, is approximately 2,127 ha in size and is bounded by Staceys Road to the north, Geelong-Bacchus Marsh Road to the east, the Geelong Ring Road to the southeast, Anakie Road to the south west, and private rural land to the west. The land parcels of the study area are shown in Map 2.

The study area is characterised primarily by the Lovely Banks escarpment, which cuts from north east to south west through the eastern section of the study area. The land is largely open, treeless pasture, primarily used for pastoral and cropping activities.

The study area comprises multiple land titles and ownership, and several road reserves.

There are currently multiple land use zones across the study area. The largest percentage is Urban Growth Zone (UGZ), occupying the north eastern and central western sections of the study area. The second largest area is Rural Land Zone (RLZ) in the southern and eastern sections. Other zones include Public Use Zone (PUZ) at the Lovely Banks Basins along Anakie Road and Farming Zone (FZ) occupying the land along the western and north western boundaries.

1.3 Proposed Activity

The City of Greater Geelong is preparing a Framework Plan for the NGGA to guide the future development of the area. The Framework Plan forms part of the planned growth for Geelong. The plan will set out Council's long term, high level vision for the future residential expansion of Geelong.

As a high level plan, there are no specific development proposals at this early stage.

1.4 Name of Client

This report was commissioned by Wilcon Projects Pty Ltd, on behalf of the Lovely Banks Landowner Consortium.

1.5 Name of Cultural Heritage Advisors

This report was prepared by Rick Bullers (Senior Archaeologist/Heritage Advisor). The quality assurance review was undertaken by Oona Nicolson (Director/Principal Heritage Advisor). Mapping was provided by Monique Elsley (GIS Coordinator).

1.6 Consultation with Aboriginal Parties

The Registered Aboriginal Party (RAP) for the study area is the Wathaurung Aboriginal Corporation. Consultation with the RAP was commenced early in the study to ensure that the RAP's knowledge and wishes were incorporated into the assessment. Details of the consultation are provided in Table 1 (below).

Table 1: Consultation in Relation to the Assessment

Date	Participants	Details and Outcomes of Consultation
21.11.2016	Rick Bullers Ecology and Heritage Partners Pty Ltd; Katrina Thomas Wathaurung Aboriginal Corporation.	Email Email request sent to the RAP inviting the early participation in the Phase 1 assessment and inviting the RAP to provide any information they wish to provide regarding the known Aboriginal cultural heritage values of the NGGA study area. In order to meet the timeframes for the project, the RAP was requested to provide any information by 25.11.2016. As at 28.11.2016 there had been no response from the RAP.

1.7 Native Title

There are currently no Native Title claims extending over the study area and as parts of the study area comprises privately owned land Native Title has been extinguished in those parts. However, there are areas of Council road reserves.

1.8 Report Review and Distribution

Copies of this AHA will be lodged with the following organisations:

- Wilcon Projects Pty Ltd (and the Lovely Banks Landowner Consortium);
- The City of Greater Geelong;
- Wathaurung Aboriginal Corporation;
- Aboriginal Victoria.

1.9 Heritage Legislation

An overview of the *Aboriginal Heritage Act 2006*, the Commonwealth *Native Title Act 1993*, the Victorian *Planning and Environment Act 1987*, the *Heritage Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is included in Appendix 1. This legislation is subordinate to the Victorian *Coroners Act 2008* in relation to the discovery of human remains.

2 ENVIRONMENTAL CONTEXT

Environmental factors influence how land may have been used in the past. This section reviews the environmental context of the study area to gain an understanding of environmental factors relevant to Aboriginal cultural heritage.

2.1 Geology, Geomorphology and Soils

2.1.1 Geology

Geologically, the majority of the study area occurs on the Pliocene to Holcene-aged deposits of the Newer Volcanic Group (designated 'Qn' in Map 3) (DELWP 2016a). The formation comprises extrusive deposits of theolitic to alkaline basalts, minor scoria and ash. A narrow band along the escarpment slopes in the north eastern and southern sections of the study area occur on Pliocene to Miocene-aged deposits of the Moorabool Viaduct Sands (designated 'Nbm')(DELWP 2016a). The deposits consist of gravels, sands and silt. A major fault, known as the Lovely Banks Monocline, occurs along the base of the escarpment. One smaller area of older (Miocene-aged) deposit known as Newport Silt (designated 'Nhn') occurs in the valleys of two drainage lines on the escarpment slope. These deposits are marine-deposits of glauconitic silt, marl and minor limestone.

2.1.2 Geomorphology and Soils

The study area lies upon the Victorian Volcanic Plains, built up by sporadic eruptions over a period of about 5 million years (Map 4; DELWP 2016a). There is one geomorphological subunit in the study area, GMU 6.1.3 (Plains with Poorly Developed Drainage and Shallow Regolith), which is derived from volcanic deposition from the older Newer Volcanics that formed in the Late Pliocene about two million year ago and during the Pleistocene, up to one million years ago. This unit is generally characterised by thin regolith development and poorly developed drainage. In these landscapes, flow boundaries are obvious, and corestones ('floaters') are often seen at the surface. Shallow drainage lines have developed, often along the boundaries of lava flows. Discontinuous drainage lines may end in ephemeral wetlands and swamps (DEDJTR 2016).

Associated soil types are sodic and non-sodic texture contrast (moderately deep to deep) soils (Sodosols) and some gradational (shallow to moderately deep) soils (Dermosols), and gilgai (mound and rise ground surfaces) due to swelling and shrinking clay soils can lead to road and building foundation problems (DEDJTR 2016).

2.2 Landforms and Hydrology

Topographically, the study area is defined by the edge of the Lovely Banks Monocline, which forms an escarpment through the eastern section of the study area from north east to south west (Map 7). The study area has a topographic relief of over 70 m from its highest points (>90 m amsl) on the elevated undulating plains west of the escarpment to the lowland plains in the south eastern corner of the study area (<20 m

amsl). The most rugged part of the study area is steep escarpment sides and the incised gullies for the several minor drainage lines that are present.

The nearest reliable water is Cowies Creek, approximately 2 km south of the study area, or Hovells Creek, approximately 2.8 km north east of the study area at its closest point.

Consequently there are four primary landforms present in the study area:

1. Lowland plains;
2. Steep escarpment slopes;
3. Drainage lines; and
4. Undulating elevated plains.

These landforms are discussed in greater detail in relation to Aboriginal cultural heritage sensitivity in Section 5.1.

2.3 Late-Holocene Vegetation and Aboriginal Resource Use

Prior to European settlement, the soils types of the study area would have historically supported a mosaic of vegetation communities combining open woodland and grassland characteristics. According to the Department of Environment, Land, Water and Planning's (DELWP) mapping of vegetation prior to European arrival (Pre-1750 EVCs), the entire study area would have comprised Plains Grassland (EVC132)(Map 5). This vegetation class would have comprised largely treeless vegetation mostly less than 1 m tall dominated by largely graminoid and herb life forms. The EVC occupies fertile cracking basalt soils prone to seasonal waterlogging in areas receiving at least 500 mm annual rainfall. Medium to small tufted graminoid species dominate the vegetation cover, including species such as Kneed Spear-grass (*Austrostipa bigeniculata*), Long-hair Plume-grass (*Dichelachne crinita*), Kangaroo Grass (*Themeda triandra*), Common Wallaby-grass (*Austrodanthonia caespitosa*) and Common Wheat-grass (*Elymus scaber* var. *scaber*) (DSE 2004).

Many of these types of vegetation would have been utilised by Aboriginal people in the area for food and the creation of weapons and vessels, and would have supported a range of game that could be hunted for food. Kangaroo Grass seeds ripen in summer and can be ground into a flour for the preparation of damper. Rice-flower bark could be made into a fine net for the purpose of catching insects during the summer (Nash 2004). Other plants and fungi were also valuable food and medicine; however, the ethnobotanical records of their use are limited. Eucalypt and tea tree leaves were crushed and soaked in water to prepare medicinal ointments. Bowls and dishes were made from the bark and gnarled growths, for food and water transportation. Canoes were also made from the bark of gum trees. The removal of bark characteristically results in visible modification of the trees that make them identifiable as scarred or culturally modified trees. Other items such as spears, boomerangs and shields were made from the timber of Eucalypts (Nash 2004).

2.4 Traditional Food Resources

Before European arrival, the area was being occupied by Aboriginal people; written accounts have indicated that the area north of Geelong was occupied by the *Neerer balug*, whose territory centred on Hovells Creek,

but extended from Geelong to the You Yangs (Clark 1990: 326), see Figure 1 below. Hunting and gathering would have been common activities occurring throughout this area, and the region would have provided people with abundant food and freshwater resources especially around the distant creek areas. However, within the study area itself, there are no reliable freshwater sources and food resources will have been limited to dryland species such as small mammals and reptiles.

Kangaroos and wallabies would have been abundant in the grassy lowland plains and undulating elevated plains of the study area and Brush-tailed and Ring-tailed possums would have been present in the isolated woodland trees. As noted above the rich grassland habitat would have provided food and tool resources for Indigenous people; however, it is considered likely that Aboriginal use of the study area would have been for ephemeral activities such as hunting and gathering rather than long term occupational use.

2.5 Paleoenvironment and Climate

During the Late and Terminal Pleistocene from 60,000 to 12,000 years ago, climactic conditions in southeastern Australia were considerably drier and cooler. Although there is uncertainty as to how much cooler the conditions actually were at the Last Glacial Maximum approximately 18,000 years, a significant variation of 8°C below current temperatures is considered likely for southern Australia (Markgraf et al. 1992; Mills et al. 2013:5, Pickett et al. 2004: 1431). River channels in the Murray-Goulbourn system were much larger during the terminal Pleistocene; this is attributed to much greater seasonality of flows related to snow melt during periods of overall drier landscape (Mills et al. 2013:5-6). Sedimentary and microfossil data from lakes in Victoria suggest the period of maximum aridity was after the LGM, from 15,000 to 10,000 bp (Mills et al. 2013: 6).

Due to the significant lowering of sea level at this time, a land bridge extended from southern Victoria across Bass Strait to Tasmania (Lambeck and Chappell 2001). Several studies indicate that increased aridity also resulted in significant reduction in Australia's forests and expansion of arid steppe or savannah vegetation. Reconstructions of LGM forest loss in temperate Australia suggest that a thin and broken band of temperate forest or woodland persisted along the eastern and south-eastern coast of Australia as some coastal pollen sites indicate forest and others do not (Dodson et al. 1988). Other studies (Thom et al. 1994) suggest woody vegetation was confined to localised favourable microsites such as river valleys. In Tasmania pollen evidence shows that areas now mainly covered by temperate evergreen forest were a semi-arid steppe, rich in chenopods, during the LGM (Markgraf et al. 1992, Pickett et al. 2004: 1430). This sparse xerophytic vegetation would have extended across the land bridge to southern Victoria. By the beginning of the Holocene around 6,000 years ago, pollen cores indicate vegetation was similar to that which existed just before European settlement though a moister climate, and hence moisture-demanding vegetation, prevailed (Pickett et al. 2004).

The climate of Lovely Banks/Lara is characterised by cool summers and cold winters, with climatic factors influenced by the Otway Ranges to the west. Temperatures range between an average maximum of 26.3°C in summer and minimum of 5.1°C in winter. Rainfall varies between a maximum average of 49.2 mm in November and a minimum of 26.8 mm in March, with annual average rainfalls of 457.8 mm (BOM 2016).

3 ABORIGINAL CONTEXT

The following section reviews the Aboriginal context of the study area and includes; an examination of historical and ethnohistorical sources, previously recorded Aboriginal archaeological site types and locations in the geographic region of the study area and, archaeological studies undertaken in the area. Together, these sources of information can be used to formulate a predictive site model concerning what types of sites are most likely to occur in the study area, and where these are most likely to occur.

3.1 Archaeological Research

Archaeological evidence suggests that Aboriginal peoples had occupied all of Australia's environmental zones by 40,000 years BP. Pleistocene archaeology of the Port Phillip Bay and Hinterland area documents human occupation dating back at least 40,000 years. The oldest dated archaeological site in Victoria occurs at Keilor in Melbourne. Charcoal from a hearth excavated in 1973 has been dated to 31,000 years BP (Flood 1995: 286). More recently research at the Bend Road site in Melbourne's southeast has dates extending back to 30–35,000 BP (Hewitt and Allen 2010). However, the majority of the site is associated with the late Holocene backed artefact period – the site has now yielded hundreds of asymmetric points and geometric microlith forms. The site points to more common resource orientation patterns relevant to many greater Melbourne Aboriginal Places. Notably, the site is located on an undulating sand promontory jutting out into the northern end of Carrum Swamp. Such land was likely subject to irregular inundation and periodic drying, as such, "Aboriginal use of this resource was also likely to have been seasonal. Ethnographic accounts suggest that birds, eggs, fish, yabbies, shellfish, eels and edible swamp plants, together with the focus the swamp provided for foraging terrestrial marsupials, would have made the area an important resource for Aborigines, especially in spring" (Hewitt and Allen 2010: 3).

The archaeological record of the Geelong/Lara area includes a rich record of artefact scatters, scarred trees and middens that documents Aboriginal life dating from the Pleistocene through to the immediate pre-European past. Most of these sites point to important relationships between sites and landscapes and resources within the immediate area.

3.2 Ethnohistory

The *Wadawurrung*/*Watha wurrung* language was one of the five primary languages spoken in south-western Victoria. The *Wadawurrung* people are part of the greater Kulin nation surrounding Port Phillip and Western Port Bays (Clark 1990), with an area that is bounded to the east by the Werribee River, to the south by Port Phillip Bay and Bass Strait, to the west by various watercourses and roadways including Painkallac Creek at Aireys Inlet, Salt Creek at Woorndoo Upper and Fiery Creek to the west of Beaufort and the ridgeline of the Great Dividing Range to the north.

Linguistically, the *Wadawurrung* were most similar to the *Djadja wurrung* to the north and the *Woi wurrung*, *Bun wurrung* and *Daung wurrung* to the east (Clark 1990: 276). Collectively these five groups form the Kulin Nation, who shared similarities in language, customs, and some traditions. It appears that the *Wadawurrung*

were genetically related to the other four Kulin groups, but diverged enough in terms of language, their burial practices and distinctive facial and body markings at corroborees (Clark 1990: 276-277) to be a separate tribal group. Their traditional land includes both coastal and inland environments, and thus the *Wadawurrung* interacted with neighbouring clans along their western boundary (*Gulidjan* and *Djargurd wurrung*), whose speech was essentially the same, as well as various clans belonging to other Eastern Kulin groups, such as the *Woi wurrung* (Wurundjeri), and the Bun wurrung to the east, the *Dja Dja wurrung* to the north.

The *Wadawurrung* and their eastern and northern neighbours shared a patrilineal form of moiety system. The Kulin social world was divided into either one of two moieties; the *Waa* (crow) or B*unjil* (eaglehawk) moieties (Clark 1990: 276). Marriage was always across the moieties, with a *Waa* person having to marry a *Bunjil* person, preferably from a distant clan group (Barwick 1984: 104-105). In some instances, members of the *Wadawurrung* clans intermarried with the matrilineal clans of the *Gulidjan, Djab wurrung*, and the *Djargurd wurrung,* although in many instances, these practices ended in inter-clan hostility.

3.2.1 Land Tenure

The *Wadawurrung* were divided into 25 or 26 clans, each of which was responsible for a specific area of land within the wider *Wadawurrung* territory, with group sizes between 40 to 60 people. According to Clark (1990: 311) and Presland (2010: 28-29), each of these clans occupied a distinctive geographical area and belonged to one of the two moieties. *Wadawurrung* groups that belong to the *Waa* moiety include the *Beerekwart balug* (Mount Emu), *Bengalat balug* (Indented Head), *Carninje balug* (Emu Hill station, Lintons Creek), *Corrin corringer balug* (Carranbulluc), *Moner balug* (Trawalla station, Mount Emu Creek), and the *Tooloora balug* (Mount Warrenheip, Lal Lal Creek, west branch of Moorabool River).

Clans of the *Bunjil* moiety include the *Burrumbeet balug* (Lakes Burrumbeet and Learmonth), *Keyeet balug* (Mount Buninyong), *Marpeang balug* (Blackwood, Myrniong, Bacchus Marsh), *Moijerre balug* (Mount Emu Creek), *Peerickelmoon balug* (near Mount Misery), *Wadawurrung balug* (Barrabool Hills), and the *Wongerrer balug* (head of Woady Yallock Creek).

Clans of unknown moiety association include the *Barere barere balug* (Colac and Mount Bute stations), *Borogundidj* (Yarrowee River), *Carringum balug* (Carngham), *Corrac balug* (Commeralghip station and Kuruc-a-ruc Creek), *Gerarlture* (west of Lake Modewarre), *Neerer balug* (between Geelong and the You Yangs), *Pakeheneek balug* (Mount Widderin), *Woodealloke gundidj* (Wardy Yallock River, south of Kuruc-a-ruc Creek), *Worinyaloke balug* (west side of Little River), and the *Yaawangi* (You Yang Hills).

The study area falls within the Neerer balug clan territory (Clarke 1990: 311), whose territory occupied the lands between Geelong and the You Yangs, around Hovells Creek (Figure 1).

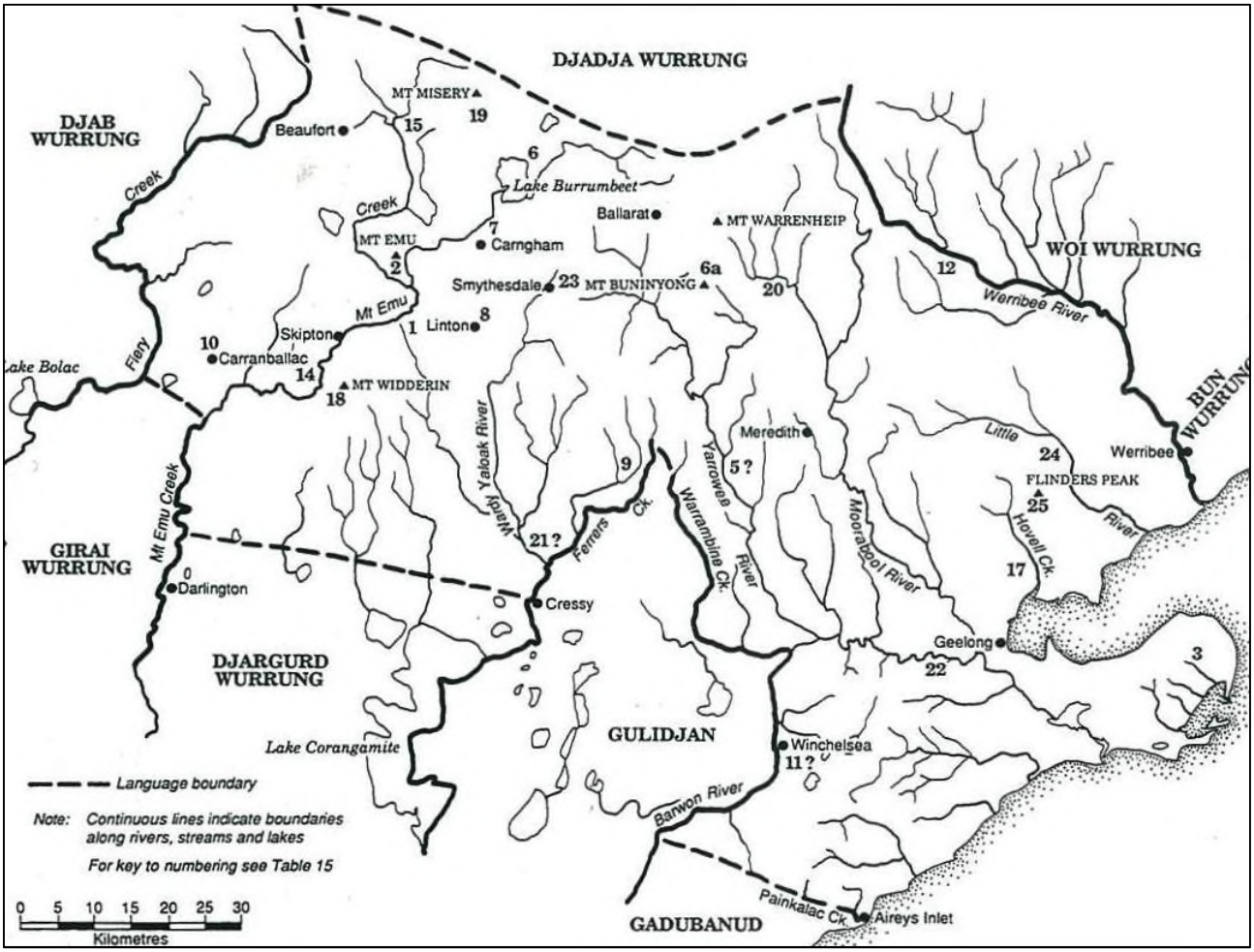


Figure 1: Language Group: Clan areas of the Wada wurrung Language group. No 17 signifies the Neerer balug (Clarke 1990: 311)

3.2.2 Resources

The mainstays of the Aboriginal diet were plants and roots. One of the most important foods was called Murnong (*Microseris lanceolata*), a tuber that resembled a dandelion, also known as Yam Daisy or Native Dandelion. Other roots that were also cooked by boiling them in hot water include potatoes (Milkmaids: *Burchardia umbellata*), tarook (Blushing bindweed) and puewon (Bulbine lily). In a similar fashion to other Kulin clans, especially the *Wurundjeri*, the *Wadawurrung* used sharp sticks *(karni)* to dig roots out, separate bulbs and aerated the soil. Other commonly utilised plants and fruits included watercress (Boyungkaal: *Nasturtium officinal***)**, Warrigal Cabbage (New Zealand Spinach, Captain Cook's Lettuce: *Terragonia tetragoniodes*) and native raspberry (*Rubus parvifolius*), all of which can be eaten either fresh or used as a flavour enhancer. Other plants consumed all over Australia were also utilised by the *Wadawurrung*, including aquatic plants such as the water ribbons (*Triglochin procera*) (Gott and Conran 1991: 9).

The coastal and riverine *Wadawurrung* clans had access to a wide variety of fish, including mullet, whiting, flounder, flathead, salmon, trevally, tommy-rough and many other species were speared and netted, particularly along tidal flats and in estuaries. Shellfish and seafood were also exploited including abalone (*Haliotis* sp.), turbot (gastropod) and pipi shell (*Paphies australis*) (Barwon Bluff Marine Sanctuary 2012).

Finally, all mammals present were probably target species for hunting. Birds and eggs were also taken, along with lizards and insects.

When the *Wadawurrung* were migrating to the north where there are fewer freshwater streams, women used to collect water from freshwater wells. These wells are natural depressions on rocks, of which there are still some in use, one located near the Werribee River (about a mile from its mouth), and one more located on Big Rock in the You Yangs (Presland 2010: 62-63).

Presumably the *Wadawurrung* along with the *Girai wurrung* clans gathered at Lake Bolac with local *Djab wurrung* clans in early Autumn to take advantage of the annual migratory season of eels (*Anguilla australis*) (Clark 1990: 276).

3.2.3 Conflict

It has been reported that during the 1830s the *Wadawurrung* were 'at enmity' with both the *Dgargurd wurrung* and the *Gulidjan* clans as a result of disputes related to marriage arrangements (Robinson journal 7.04.1840, in Clark 1990:275). This 'war' was the result of *Djargurd wurrung* and *Wadawurrung* men competing for *Gulidjan* women. During the early years of the Buntingdale mission, it was reported that the *Wadawurrung* and the *Djargurd wurrung* clashed several times as they competed for superiority within the mission (Clark 1990: 275).

Shortly after the first contact with the Europeans, the clan populations diminished rapidly. Contact between the *Wadawurrung* and European people first occurred in 1802, when Matthew Flinders and his party made their way to the nearby You Yangs. By 1803 contact between European explorers and *Wadawurrung* people had turned violent on at least one occasion, whereby one or two *Wadawurrung* were killed and several others were injured (Clark 1990: 277). Violent encounters between Aboriginal people and settlers continued through the late 1830s and early 1840s. By 1841 some of the clans had rapidly declined and by 1849 one report estimated that the number of Aborigines in the Geelong region had been reduced to 25% of their 1836 population. Restricted access to resources, disease, inter-tribe hostility and European extermination were cited as the main causes (Clark 1990: 308).

3.2.4 Religion

The basic unit of *Wadawurrung* social organisation was the clan, a group based on kinship through the male line with a shared religious identity (Barwick 1984: 105-6). The clan was a land-owning unit whose territory was defined by ritual responsibilities (Barwick 1984: 106). The common spiritual identities resulted in the larger tribal groups also being intimately interconnected. The basis of the *Wadawurrung* religious identity is totemism, which is likened to the Dreamtime – the time of creation when the ancestral being roamed the land, creating people and naming the animals and plants.

Wadawurrung society is divided into two groups, called moieties, each with specific Totemic Beings belonging to it. Every person belongs to one or the other moiety (*Bunjil* the eaglehawk or *Waa* the crow) (Barwick 1984: 105-6). Clan moiety in *Wadawurrung* society is patrilineal. For the members of this unit, the clan, the totem is a symbol of membership of the unit. It is recognised for the members of this clan and those of other clans. This totem has strong territorial and mythological ties associated with it, and it is believed that it can warn them of approaching danger.

3.2.5 Ritual and Magic

The *Wadawurrung* beliefs system is shared with the other Kulin clans; however, the ethnographic information regarding the *Wadawurrung* is scarce. All Kulin groups believe in black magic and the curative powers of medicine-men or witchdoctors. A peculiar practice by the *Wadawurrung* was to put the rough cones of the She-oak (*Casuarina quadrivalvis*) into a man's fire, so that the smoke might blow into his eyes and blind him (Howitt 2001: 366).

In terms of disposal of the dead, the *Wadawurrung* from the Barrabool Hills (the Wathawurrung balug) and those from around Port Phillip practiced the inhumation of their dead as a symbol of respect. This practice is in sharp contrast to that of neighbouring clans from the *Woi wurrung* (such as the *Gunung willam balug*) who practice cremation (Howitt 2001: 458). Different disposal practices are one of the cultural differences between the *Wadawurrung* and their neighbours that set them apart, as mentioned earlier (Clark 1990: 276-277).

However, being part of the larger Kulin sub-group, the *Wadawurrung* share some ritual practices, included cannibalism. Cannibalistic practices have been documented, including the ceremonial consumption of human flesh and/or blood, not only from enemies, but also from relatives. The connotations of these two practices are different, with the former being more a sign of revenge, and the latter mostly ceremonial. In 1837 some members of the *Wadawurrung* killed an old man and a child and brought with them on the ends of their spears portions of their flesh, which they ate with great exultation (Howitt 2001: 752).

3.3 Post-Contact History and European Settlement

From the 1830s, European settlement of the coast, as well as settlement of the inland by explorers and overlanders from NSW, resulted in Aboriginal people experiencing displacement from their lands and massive changes in their way of life. The encroachment onto Aboriginal land by pastoralists resulted in numerous conflicts, reduction in the availability of food resources and the introduction of new diseases. Despite the upheavals, Aboriginal people tried to maintain some of their traditions, with some ceremonies such as initiations and occasionally corroborees observed by settlers. In many places Aboriginal people became part of the new colonial life, finding work as shepherds, stockriders, shearers, bark cutters and domestic servants.

By the 1850s the *Wada wurrung* had suffered a massive decrease in numbers (Clark 1990: 298). Direct causes of the population decline included introduced disease (e.g. influenza, whooping cough, measles, smallpox), dispossession, alcohol abuse, and massacre by Europeans via poison or gunshot (Robinson 1846; Thompson 1985: 19). Based on Dawson's (1881) calculations, Clark (1990:307-308) estimates that the *Wada wurrung* population comprised between 1,620 to 3,240 people at the time of European contact. However by 22 August 1865, a total of 108 *Wada wurrung* people were recorded in their language area.

Many of the clans were also driven away from the heavily settled areas of Geelong and Melbourne to the north and west. By the end of 1836, European squatters had established extensive sheep runs (stations) within a 25 mile radius around Geelong, extending well into *Wada wurrung* territory. During the 1840s and 1850s, squatting runs were claimed to the west towards the Colac district, north to Bacchus Marsh, and then to the headwaters of the Leigh River and the Buninyong District. As a result Aboriginal resources were rapidly

depleted through European hunting, livestock grazing and trampling, while access to traditional lands was usually prevented by squatters and their servants (Curr 1965: 45, 86; Shaw 1996: 109-10; Barwick 1998: 31).

Widespread conflict led to a system of official protectorates (operating between 1835-1849), reserves, missions and rations depots aimed at providing protection and supplies to displaced Aboriginal people. In 1839 the Aboriginal Protectorate Scheme was introduced in Victoria. Four Assistant Protectors were appointed in 1837 under a Chief Protector, George Augustus Robinson. The role of the protectorates was to provide food, shelter and medical supplies, record cultural and population information and to indoctrinate Aboriginal peoples in to the western European cultural and economic systems. Aboriginal reserves and stations were established across Victoria and Aboriginal people were encouraged to move to them (Clark 1990: 311-329; Caldere and Goff 1991: 3-5; Culvenor 1992: 1). Captain Charles Wightman Sievewright was responsible for the Western part of the Port Phillip District which included Geelong, the Western District, Portland Bay and the Wimmera district (Massola 1971: 10, Arkley 2000). *Wada wurrung* clans moved to the reserves and stations set up at Wesleyan Buntingdale Mission Station, at present-day Birregurra (Clark 1990: 293; Broome 2005: 36). The Buntingdale Mission was the second mission to open in Victoria, being established in 1838 by the Rev. Francis Tuckfield (Cannon 1982: 75-150), but closed a decade later (Broome 2005:38). The Protectorate was largely unsuccessful and was disbanded in 1849 and replaced with a form of Guardianship, 'to watch over the interests of Aborigines', overseen by William Thomas in 1850 (Woolmington 1973: 173). This involved two systems: local reserves and local guardians who operated Honorary Correspondent Depots distributing food and clothing to local Aboriginal people (Clark 1990: 301).

The Central Board for the Protection of the Aborigines was founded in 1860 to provide an administrative structure to manage Aboriginal people in Victoria. This involved local reserves and local guardians who operated Honorary Correspondent Depots, distributing food and clothing to local Aboriginal people (Clark 1990: 301). By the end of 1861 three reserves were established for use by the *Wadawurrung*: 640 acres at Steiglitz, located between the Moorabool and Werribee Rivers, three acres at Karngun, and one acre at Mt Duneed (Clark 1990: 300). The Duneed Aboriginal Reserve, a parcel of one-acre located on present-day Ghazeepore Road at Warun Ponds, was used by the *Wada waurrung* between 1861 and 1885. The land was home to seven people until the last of their number died in 1885 (Barton, 1999, cited in OAAV site card 7721-0903). All three reserves were handed back to the Department of Lands between 1901 and 1906, as they were no longer required due to the decrease in Aboriginal population (Clark 1990: 307).

In addition unofficial reserves were established in the Geelong region for local Aboriginal populations by local benefactors. For example, in about 1856 John Stewart, who held the River Run Station at Armstrong Creek, donated a parcel of land along Armstrong Creek, south of present-day Geelong, for use by local Aboriginal people as a place where the "dispossessed could camp unmolested" (Rowe and Huddle 1998-2000: 10). The reserve is registered as VAHR 7721-0787 (Stewarts Reserve). Stewart donated food to the Aboriginal people who camped at this unofficial reserve. Stewart's son, interviewed in the late 1960s when he was 80, recalled "he could clearly remember the last camp of the Aborigines… they camped in Stewarts Lane opposite the Stewarts farm gates on a bush setting". Walter Burville, a resident of the area, born on Whites Road in 1871, later purchased part of Armstrong's station and old homestead south of Stewarts Reserve. He noted that local Aboriginal people often called in to his homestead for food and tobacco (Pescott 1985:148). Lane claims that this area was significant to Aboriginal people, with Armstrong Creek

forming part of a travel route leading from Mount Moriac to Lake Connewarre, then onto Barwon Heads (L. Lane Collection: GHC 1104/1/37).

While many Aboriginal people lived on the missions and government stations, a significant number of people worked and lived on farms and pastoral stations. Some Aboriginal people farmed the land on smallholdings, or worked in industries such as fishing, goldmining and logging. People outside the reserves sometimes gathered together in camp sites on the outskirts of towns. They were also involved in sports such as cricket, football and athletics.

Today the descendants of the *Wadawurrung* are represented by the RAP for the activity area, the Wathaurung Aboriginal Corporation.

3.4 Oral History

The Wathaurung Aboriginal Corporation did not offer any oral histories relating to the study area for inclusion in this report.

3.5 History

3.5.1 Regional History

The history of European exploration and occupation of the region dates from the beginning of the 19th century, although prior to 1835, when Victoria was formally settled, European exploration or occupation in the area was sparse. The first European person in the region was probably Matthew Flinders when he walked from the north east coast of Corio Bay to the You Yangs in 1802 (Brownhill 1955). A year later, in 1803, a convict named William Buckley escaped from the established settlement at Sorrento, and lived with Wada wurrung communities for the next 32 years (Clarke 1990: 331).

In 1824, Hamilton Hume and William Hovell traversed the region, naming Kennedy's Creek (later Hovell Creek) after camping near where the memorial now stands. According to Brownhill (1955: 4) Hume and Hovell were told by the local Aboriginal people that the bay was called 'Jilong' (Geelong) and the land was called 'Corayo' (Corio).

In 1835 John Batman explored the region for the Port Phillip Association (PPA) from Tasmania. After exploring parts of the Bellarine Peninsula they sailed across Corio Bay and landed at the mouth of Hovells Creek. Batman's party was followed soon after by John Helder Wedge, a PPA surveyor, who declared it suitable for sheep and cattle grazing (LHF 2004: 18-19). Batman's and Wedge's glowing accounts of the area encouraged formal settlement of Victoria in 1835, and the PPA to take up land within the region. Large numbers of sheep were shipped from Van Diemen's Land to the extensive grazing lands around Port Phillip.

Pastoral squatters soon arrived in the region forming large sheep and cattle pastoral runs, these runs dominated the region through the 1850s. The activity area is located in this rural environment.

Following Batman's Treaty in 1835 European graziers settled the area and Geelong was established in 1836. In 1837 Governor Bourke 'instructed the Surveyor General of New South Wales to lay out the township of Geelong, between the Barwon River and Corio Bay. By the following year, sheep stations had been

established within a 40 km radius of the town (Clark 1990: 291). The town of Geelong officially came into existence on 26 October 1838, though the first sale of town lots was not held until February 1839. Large parcels of land were purchased from the Crown from 1840 onwards (Broome 1984; Bonwick 1983).

3.5.2 Land Use History

The study area is located across the boundary of two historical parishes, with Evans Road forming the boundary: the Parish of Moranghurk is located to the east of Evans Road, covering the majority of the study area, and the Parish Yowang is located to the west. Parish Plans from the 1850s show that the Parish of Moranghurk had already been subdivided into 70-100 acre allotments, with the northern section of the study area still retaining much of the same cadastre from this early period. The 1880 Moranghurk Parish map shows that George Armytage held almost all the land north of Houston Road. The southern section of the study area was granted to four people: W. Timms, who held about 660 acres in a band across the centre of the study area, James Austin and Henry Phillips, who held five parcels totalling some 460 acres, Thomas Edols, who held seven parcels totalling some 500 acres, J. Williamson, who held five parcels in the study area totalling some 370 acres (plus additional parcels west of Anakie Road), plus several smaller landholders such as S. Wilson, J. Costello, S. Kain and H. Broderick amongst others.

In the Yowang Parish, west of Evans Road, parcels were often slightly larger, ranging from 100 to 180 acres. In the study area, land was granted to James Cahir (two parcels totalling 110 acres), Jeremiah Grohe (105 acres), George Hall (105 acres), George Armitage (sic)(101 acres) and James Amos (101 acres).

Land use was primarily grazing and farming, much of which continues today. Other land uses include water storage at the Lovely Banks Basins, and modern developments including smaller subdivisions for residential rural living, small-scale commercial and industrial development, private colleges and small- scale intensive farming/nurseries.

3.6 Database Searches

The following database searches were conducted:

3.6.1 Victorian Aboriginal Heritage Register

A search of the Victorian Aboriginal Heritage Register (VAHR) was conducted on 15 August 2016 for sites within 1 km of the study area (AV 2016a). The search was expanded beyond the study area to obtain a broader representative picture of Aboriginal occupation in the local area, in order to obtain a more representative site prediction statement.

The search identified a total of 12 registered Aboriginal places within the search area (Map 6; Table 2). These sites consist of a total of 12 site components comprising one site component type (Table 3).

Table 2: List of Aboriginal Places Previously Registered in the Search Area

Place No	Place Name	Place Type	In Study Area?
7721-0424	Lara-Colac 17	Artefact Scatter	Yes
7721-0580	Western Bypass 2	Artefact Scatter	No

Place No	Place Name	Place Type	In Study Area?
7721-0581	Western Bypass 3	Artefact Scatter	No
7721-0582	Western Bypass 4	Artefact Scatter	No
7721-0583	Western Bypass 5	Artefact Scatter	No
7721-0584	Western Bypass 6	Artefact Scatter	No
7721-0585	Western Bypass 7	Artefact Scatter	No
7721-0586	Western Bypass 8	Artefact Scatter	No
7721-0587	Western Bypass 9	Artefact Scatter	Yes
7721-0588	Western Bypass 10	Artefact Scatter	No
7721-0589	Western Bypass 11	Artefact Scatter	No
7721-0590	Western Bypass 12	Artefact Scatter	No

Table 3: Summary of Previously Identified Aboriginal Place Types within the 1km Search Area

Site Type	Quantity	
	Places	Percentage (%)
Artefact Scatters	12	100
Total	**12**	**100**

Table 3 shows that stone artefact sites (either artefacts scatters, isolated artefacts or Low Density Artefact Distributions [LDADs]) are the only site type that have been recorded previously in the broader search area. No culturally scarred trees, Aboriginal quarries, shell middens, stone arrangements, stony rises, earth features (mounds) or Aboriginal ancestral remains (burials) have been identified to date.

Of the 12 Aboriginal places in the search area, only two are located in the study area itself (Table 4; Figure 2; Map 6). This place comprises an artefact scatter. There are no shell middens, scarred trees or other site types (e.g. earth features/mounds, stone arrangements or Aboriginal burials known to occur in the study area. A full list and discussion of Aboriginal places in the study area is provided in Section 4.

Table 4: Summary of Previously Identified Aboriginal Place Types within the Study Area

Site Type	Quantity	
	Places	Percentage (%)
Artefact Scatters	2	100
Total	**2**	**100**

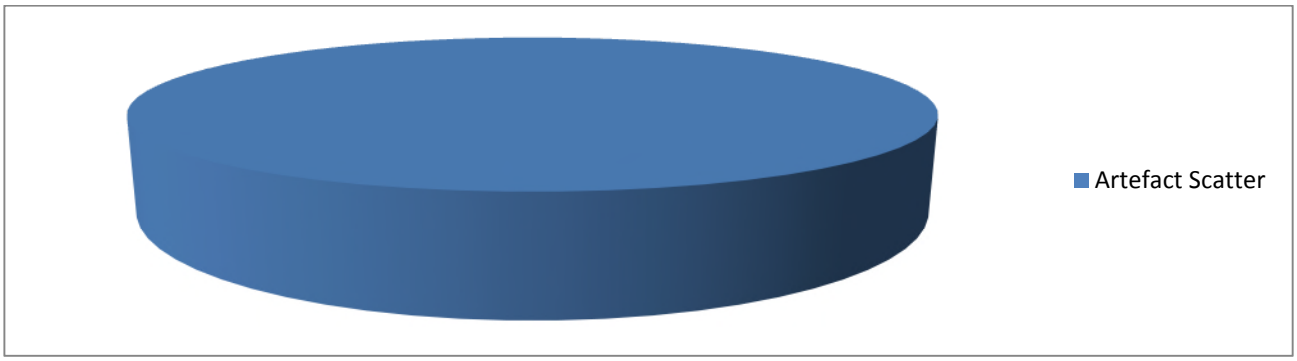


Figure 2: Summary of Aboriginal place types in the study area

3.6.1.1 Local Council

The activity area is located within, and is governed by, the Greater Geelong Planning Scheme. Planning schemes set out policies and provisions for the use, development and protection of land.

The Heritage Overlay of the Greater Geelong Planning Scheme was examined (DELWP 2016b). There are no Aboriginal places listed on the Heritage Overlay within the study area.

3.6.2 Previous Aboriginal Archaeological Investigations

3.6.2.1 Regional-Scale Archaeological/Ethnographical Studies

The majority of background data applicable to the study area is based on regional-scale studies such as those conducted by Mulvaney (1964), McBryde (1979), Presland (1977, 1980, 1981), Black (1984), Amarosi (1998), du Cros and Rhodes (1998), and Marshall and Shell (1998). These older studies provide a broad-based discussion on Aboriginal occupation characteristics across the region based on the (then) level of archaeological knowledge.

In addition some archaeological investigations have been carried out in the local area, which are broad-based also, but are investigations for specific developments, e.g. Marshall (2002), Marshall et al. (2004). The latter study (Marshall et al. 2004) is one of the most reliable studies as it covers Section 1 of the Geelong Ring Road, which passes directly south of the study area. Therefore the results of that assessment are directly relevant to the lowland plains landform along the southern and eastern sections of the study area.

Another study by Marshall (2006) was a more localised study along Plantation Road just to the south of the Ring Road and study area. This assessment is also relevant to the lowland plains landform.

3.6.2.2 Archaeological Investigations within the Study Area

Although many broad-scale investigations have been carried out across the region, which may influence predictive statements about the presence of Aboriginal sites within the current study area, few have been carried out specifically within the study area. Only one archaeological report was obtained from ACHRIS that contained detailed investigation. This report (Feldman et al. 2010) was a CHMP for a proposed 28 km water pipeline with the southern end being within the current study area. No Aboriginal places were identified in the current study area.

Although dated, the study by Story (1991) is perhaps the most relevant for assessing other landforms in the study area such as the elevated undulated plains and the steep escarpment slope. This desktop study concluded that the lack of resources (freshwater; native trees and shrubs) will have reduced the likelihood of long term Aboriginal occupation and therefore reduced the likelihood that Aboriginal cultural heritage material will be present in those areas.

No other CHMPs are known to have commenced within the study area.

A summary of archaeological reports relevant to the geographical region of the study area appears below (Table 5).

Table 5: Archaeological Reports Relevant to the Study Area

Author, Date, Report #	Description and Location	Results
Presland, G. 1981 #33	An archaeological survey for a transmission line corridor between Sydenham and Portland.	The survey identified and recorded three stone artefact sites and a disturbed oven mound. Two of the artefact scatters were located on alluvial deposits beside permanent water courses, and the third was also located beside a permanent watercourse, but on a volcanic plain. It is thought that the stone tools date to the late Pleistocene period.
Mulvaney, D.J. 1964 #187	Reviews the population, relics and trade of the basalt plains in Victoria.	When the first census was taken in 1877 there was 774 Victorian full-blooded Aborigines recorded, 170 lived in the Western District. This paper suggests a higher population by discussing the Aborigines of the Basalt Plain using environmental adaptation, archaeological and anthropological references.
McBryde, I. 1979 #294	Diffusion of culture and cultural traits discussed in relation to the exchange of lithics focusing on axe heads in Northern New South Wales and greenstone in Victoria.	The Victorian quarry sites of Mt William, Mt Camel and Berrambool extend up to 700 km from their source. For all quarries the distribution lies west of the main Dividing Range and east of the lower Murray and Mt Lofty Ranges. The movement of goods could reflect the existence of exchange networks, patterns of seasonal movement within tribal territories and regular meetings. Significantly, material is defined by a broad classification scheme and distribution suggests the incorporation of greenstone trade into existing networks over an extended area.
Story, A. 1991 #474	A preliminary archaeological assessment of potential solid waste disposal sites.	This report is the first stage (desktop) of an archaeological assessment of five potential landfill sites in the Shire of Corio. The five investigation areas were labelled Zones R, S, B, Y and M. Parts of the current study area were covered by Zone S, which was further subdivided into five 'sites' (A to E). Story concluded that the comparative scarcity of fresh water and natural resources such as timber and stone within this zone suggests that there is little likelihood of occupation remains being present. Most of the zone has been cleared for agriculture. Zone SD was considered to be slightly more archaeologically sensitive due to its position between two drainage features (although this is slightly north of the current study area), and the top of the Lovely Banks Monocline may have been utilised as a vantage point over the plains.
Presland, G. 1977 #652	Journals of G. A. Robinson, detailing his engagement with the Aboriginal peoples during his tour from Melbourne to Portland in March-May 1841.	The journal was written during his time as Chief Protector of the Victorian Aborigines. Every detail of his interaction with the various Aboriginal tribes was recorded, as well as drawings he sketched whilst in their company. This journal details his 6 month journey to the Western District, during which time he visited many stations on his way to Portland.

Author, Date, Report #	Description and Location	Results
Presland, G. 1980 #552	Journals of G. A. Robinson, detailing his engagement with the Aboriginal peoples during his tour from Portland to Melbourne in August 1841.	The journal was written during his time as Chief Protector of the Victorian Aborigines. Every detail of his interaction with the various Aboriginal tribes was recorded, as well as drawings he sketched whilst in their company. Robinson's journal includes details of his journey to Melbourne via the Grampians and Pyrenees Ranges.
Black, C.F. 1984 #728	A report on the history of the occupying tribes of Melbourne and Geelong (Wathaurung, Kurung, Wurundjeri, Taungurong and Bunurung), and other Aboriginal people in the study area.	This report examines previous archaeological surveys and historical documents to include information on tribal areas, ethnographic and demographic information, current land use of the area by Aborigines, and Aboriginal archaeological sites.
Amorosi, L. 1998 #1260	A personal collection of Aboriginal artefacts of W.L. Koenig.	The W. L. Koenig Collection is primarily made up of Aboriginal stone artefacts from the area surrounding his home in Winchelsea which is approximately 37 km west of Geelong, Victoria. This collection contains Aboriginal stone artefacts, two ground axes from New Guinea, skeletal remains, a Tjurunga stone, a basket, boomerangs, a spear thrower and cord made from vegetable matter. 139 of the 651 artefacts have a provenance or name provided, usually by the name of a town or landmark. Koenig's collection contains a high frequency of complete artefacts and interesting examples of artefact types. However, this report is only a broad indicator of areas where the artefacts were traded or collected due to the lack of provenance.
du Cros, H. and Rhodes, D. 1998 #1320	This report aimed to provide an overview and assessment of waterways and floodplains for The Waterways and Drainage Group within Melbourne Water to understand the impact on cultural heritage.	The predictive models provided in this report illustrate that waterways and floodplains in and around Melbourne should still be considered highly likely to yield evidence of Aboriginal occupation. Site types considered common are surface artefact scatters, isolated artefacts and scarred trees. Rarer site types are fresh water middens, burials and quarries. du Cros and Rhodes suggested several creeks and rivers may have acted as clan estate boundaries, which could have a bearing on the nature of the campsites found along them. A high density of material has been found along the bank and escarpment of the Werribee River, including several large and dense artefact scatters. These have been interpreted as large campsites, perhaps as gathering places for meetings. The smaller sites have been interpreted as transitory, either travelling along or across waterways. du Cros and Rhodes determined waterways and floodplains contained the highest number of sites.
Marshall, B. & Schell, P. 1998 #1370	A desktop investigation of thirty six locations along the Victorian coastline aimed at assessing the impact on cultural heritage by CA/CCG projects and providing future management of Aboriginal resources by CA/CCG projects.	Some project areas were defined as having high densities sites and scientifically important due to deposits of Pleistocene age. Isolated artefacts, surface scatters and shell middens were the dominant sites; rarer sites were scarred trees, isolated hearths, quarry/stone sources, fish traps, art sites and human remains.

Author, Date, Report #	Description and Location	Results
Marshall, B. 2002 #2296	Desktop study along three possible corridors for a ring road around Geelong.	A total of 57 Aboriginal places were recorded within 2.5 km of the bypass corridors, although few sites were recorded in the corridors the geomorphologic landforms were used to determine sensitivity; Volcanic Plains low, alluvial plains unknown, Moorabool Hills low, Rivers and Creeks high, Reedy Lake unknown, Corio bay high and point Henry high. Subsurface testing was recommended for all three corridor possibilities.
Marshall et al. 2004 #2838	An archaeological survey of Section 1 of the Geelong Bypass (Corio Interchange to the Midland Highway).	The desktop assessment identified one previously registered Aboriginal place (VAHR 7721-0402) in the activity area. The field survey identified an additional 15 new Aboriginal places (VAHR 7721-0577 and -0579 to -0592).
Marshall, B. 2006 #3601	An archaeological survey of a 20 ha parcel at 200 Plantation Road, Corio.	The survey did not identify any Aboriginal cultural heritage material, but concluded that, due to the study area's proximity to registered Aboriginal places along the route of the Geelong Ring Road, there is potential that unidentified subsurface artefacts could be present in the lowland plains landform.
Feldman, R., et al. 2010 #11340	A CHMP for a 28 km water pipeline as part of a project to connect the Melbourne to Geelong water supplies, between Cowies Hill Reservoir in Tarneit to Lovely Banks Basins in Lovely Banks.	The desktop assessment identified four Aboriginal Places in the activity area: VAHR 7721-0582, to -0587. The subsurface testing comprised a total of 144 excavations, including 141 shovel probes and three test pits. The test excavation identified a total assemblage of 161 artefacts. These comprised a total of six Aboriginal Places: VAHR 7721-0996, -0997, 7722-0745, -0746, -0747, and -0748. No places were found in the current study area.

4 DETAILS OF CULTURAL HERITAGE IN THE STUDY AREA

4.1 Aboriginal Cultural Heritage in the Study Area

4.1.1 Previously Registered Aboriginal Places

Only two Aboriginal Places have previously been registered within the study area (Map 9). A list of active Aboriginal places in the study area is provided in Table 6 (below), and a discussion on the types of sites in the study area and across a broader region is provided in Section 3.6.1.

Table 6: Previously Identified Aboriginal Place within the Study Area

VAHR Site Number	Component Number	Place Name	Component Type	Description (from Site Card)
7721-0424	1	Lara-Colac 17	Artefact Scatter	The site is an isolated silcrete waste flake, located on the flat, lowland plain landform. The site was identified in 1999 during an archaeological investigation for the Lara to Colac gas pipeline.
7721-0587	1	Western Bypass 9	Artefact Scatter	The site "is an isolated artefact consisting of a blocky piece of white 'Maude' silcrete. Although the artefact had no clear flake scar, there were removals present on all surfaces and the material is definitely a manuport. The artefact is [was] situated between a large dam and a drain at the foot of the Lovely Banks Monocline in Survey Area 4."

4.2 Assessment of the Aboriginal Cultural Heritage

4.2.1 Site Formation Processes

Aboriginal site formation processes are usually assessed through a study of the landform, soil types, stratigraphy and taphonomic processes.

With only one registered Aboriginal place in the study area, a review of site formation processes is problematic. However, when compared with other known Aboriginal places in the local region, a high level assessment may be presented (for further review during future detailed archaeological assessments).

Subsurface Deposits

From original deposition of artefacts on the land surface, site formation processes may include:

- Burial by Aeolian (wind-born) sediments;
- Burial by alluvial deposits (along the courses of creeks and minor drainage lines; and
- Burial by colluvial deposits, e.g. burial of artefacts at the base of slopes by the subsidence of soils on the adjacent slopes.

Surface Deposits

Surface artefacts may become exposed when overlying soils are removed by:

- Exposure of artefacts by natural processes such as sheet or rill erosion;
- Exposure of artefacts by cultural processes or anthropogenic disturbances, e.g. construction activity or farming activities (such as ploughing); and/or
- Exposure of subsurface deposits by other natural phenomena.

With a study area this size any or all of these site formation processes may be relevant.

4.2.2 Significance Assessment.

Significance assessment in Australia is primarily based on the internationally recognised Burra Charter (Australia ICOMOS 2013a), combined with the requirements of state-specific heritage legislation and professional standards. The Burra Charter sets forward a logical process that can be applied across a diverse range of places, objects, sites, practices, beliefs and landscapes, both in colonial history and Aboriginal history. It recognises five aspects of cultural significance (Article 1.2):

Historic: association with historic people, processes, events

Aesthetic: scale, form, appearance, sensory experience

Scientific: ability to contribute to research questions, including archaeological. It takes into account the rarity or commonness of a site and its condition or quality. Frequently, determining scientific significance requires some form of testing or sampling, such as a test excavation.

Social: contemporary community opinions, attachments, esteem

Spiritual: intangible meanings, importance in spiritual identity

In the context of the Charter, a place or object may have significance under all categories or only one or two. Heritage managers can also rank the level of significance as low, medium or high. For example, a place may have high social significance but low historic or scientific significance. Heritage managers working with Aboriginal sites tend to give considerable weight to social significance, in recognition that Aboriginal people have a right to control their own cultural heritage. The Victorian *Aboriginal Heritage Act 2006* reflects this view, stating that one of its objectives is to (3[b]) *to recognise Aboriginal people as the primary guardians, keepers and knowledge holders of Aboriginal cultural heritage.* The Victorian *Aboriginal Heritage Act 2006* (Part 4) defines cultural heritage significance as:

a. archaeological, anthropological, contemporary, historical, scientific, social or spiritual significance; and

b. significance in accordance with Aboriginal tradition;

In this assessment we summarise the significances of each place against these categories. Given the diverse values associated with cultural heritage in the activity area, we think this approach is more appropriate than trying to 'quantify' the significance of these places. We present the community significance statements about the Aboriginal Places and Landscapes of the activity area as "Significance in accordance with Aboriginal tradition" (4.2.2.3), recognising that this allows for other methods of significance attribution that are specific to Indigenous worldviews.

Significance assessment is not objectively determined or intransient; all aspects of significance can change as circumstances change. As Bowdler (1984: 1) originally observed "archaeological significance is mutable, even a transformational, quality, which changes as the subject changes." For example, a flood may alter the landscape and impact the aesthetic value of a place; a new generation may not attach the same social significance to a place as the previous one; new research or access to information may make the scientific significance of a site more or less important. A once commonplace site may take on a higher significance if others of its type have been destroyed.

There can be differences of opinion with regards to management recommendations (Section 61 matters) when there is a disparity between scientific and social/spiritual significance of Aboriginal Heritage. Management recommendations are based on consideration of the various types of significance, and the nature of the impacts to the site, and the constraints of the development. Management has two main steps: what is required to determine significance, and what is required to retain or conserve significance. In both cases, non-invasive processes are preferred if possible. The main mantra of the Burra Charter is "do as much as is necessary but as little as possible" (Article 3.1).

4.2.2.1 Scientific and Archaeological Significance

We have employed a conventional approach to the assessment of archaeological significance. Specifically we consider archaeological significance synonymous with or a type of scientific significance (see Table 7). The archaeological significance of an Aboriginal Place is related to the volume, uniqueness/ representativeness and information potential of the data (artefacts, features and contexts) of the site (see Sullivan 2012: 256). This view of archaeological/scientific significance was framed primarily around the idea that archaeological sites were able to generate and test 'timely and specific research questions' (Bowdler 1981: 129). Our assessment of archaeological significance is thus primarily concerned with the research potential of each place.

The Burra Charter defines 'cultural significance' to include 'scientific…value for past, present or future generations'. Scientific value refers to the information content of a place and its ability to reveal more about an aspect of the past through investigation or research. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and the potential to contribute further important information about the place itself or a type or class of place (Australia ICOMOS 2013a: 2-3). Thus the Burra Charter practice note directly reflects Bowdler's (1981: 129) original idea that archaeological significance should be assessed according to research potential and representativeness. However, as Brown (2008: 19) has suggested the significance assessment process for Aboriginal heritage itself has been unable to adequately integrate scientific with other values in a way that is beneficial to archaeological research. The scientific significance of an archaeological site may depend (among other things) on whether or not other sources (e.g. written or photographic documents), and other places, can yield additional or comparative data (Australian ICOMOS 2013: 3). Thus the Burra Charter recognises that the scientific significance of a site may be related to studies outside archaeological practice (such as historical, anthropological and palaeoenvironmental studies) and to comparative data that is not specific to that place.

4.2.2.2 Social Significance

As Brown (2008:24) noted there has been a "shift in cultural heritage management from a focus on managing the fabric of sites for their archaeological value to managing almost exclusively for Aboriginal cultural and social value." Nonetheless, Brown (2008: 25) recognised that there are "no methods for recognising the social value of pre-contact heritage items to contemporary Aboriginal People". In assessing the significance of the Spring Creek Aboriginal Places we have taken into consideration the significance of these Aboriginal places and natural/cultural landscapes in terms of their social value to the relevant Aboriginal stakeholders. This is in accordance with the Burra Charter Practice Note (Australia ICOMOS 2013b: 3) which states, "Places containing archaeological evidence may be significant for their social and spiritual values. This is often the case with places of archaeological significance associated with Indigenous cultures…"

Social significance is regularly characterised in terms of the degree of contemporary community esteem which is attached to archaeological sites and intends to ascertain whether, for example, damage to sites or its contents would cause the Aboriginal stakeholders a sense of loss, or whether the site(s) contributes a sense of community identity to the Aboriginal stakeholders; they are seen as an 'authentic expression of cultural heritage' (Brown 2008: 26; Burke and Smith 2004: 250). However, these objects and places are archaeological, and it is largely these physical remains that are evaluated under the A*boriginal Heritage Act 2006.* Thus the social significance of these places incorporates the economic benefits of conducting the archaeology, and the political engagement and power afforded to Aboriginal groups through the mechanism of the legislation (Brown 2008: 25; Byrne et al. 2001). Thus, the social significance (like other forms of significance) of these places is mutable, yet is largely dependent on the rigour and extent of archaeological investigations as the assessment process (and the resulting recommendations for mitigation and/or preservation) can substantially inform the social significance placed on objects, places and landscapes.

Whilst many Aboriginal Places do not have known traditional associations, these places have significance in relation to Aboriginal Tradition in the sense that these places represents past Aboriginal lifestyles and symbolize the continuity of Aboriginal society (e.g. Pearson and Sullivan 1995: 19, 159). By generating a archaeological information about past Aboriginal lifeways and adaptation the social significance of these places can be elevated and can contribute to the broader reconciliation goal of many Aboriginal communities. In this manner the scientific values of the archaeological heritage can contribute to the social significance of these places and landscapes, even as they are transformed or destroyed (Pearson and Sullivan 1995: 157).

4.2.2.3 Significance in Accordance with Aboriginal Tradition

The below statement was received in regard to the Aboriginal Heritage of the activity area from Registered Aboriginal Party:

> *All sites within the Wada wurrung area are significant in cultural terms as they are a tangible link to our past and a non-renewable source of information about the lifestyles of our ancestors.*
>
> *The cultural significance afforded these sites by the Aboriginal community must be given a higher standing than the scientific rating as the scientific rating is based on a European perspective without due regard to the value of the Aboriginal culture as a whole.*
>
> Bryon Powell - Chairperson

The scientific significance assigned to each Aboriginal place is provided in Table 7.

Table 7: Overall Significance Levels of Aboriginal Places as per Assessment Reports

VAHR Site Number	Site Name	Component Type	Significance
7721-0424	Lara-Colac 17	Artefact Scatter	Low
7721-0587	Western Bypass 9	Artefact Scatter	Low

4.3 Conclusions

The results of the desktop assessment indicate there are a total of 12 registered Aboriginal places in close proximity (within 1 km) of the study area, but only two are within the study area itself. All of these sites are stone artefact scatters. However some of the sites comprise single artefacts, registered at a time when the AV registration conventions combined artefact scatters and isolated artefacts as a single site type, regardless of artefact numbers or density (both sites in the study area are isolated artefacts). Wider afield, the known Aboriginal places are mostly associated with Hovells Creek to the north and east, and Cowies Creek to the south. Closer to the study area, Aboriginal places tend to be lower density artefact scatters or isolated artefact reflecting am ore ephemeral use of the landscape for traditional hunting and/or gathering practices, rather than long-term occupation. However, the spatial patterning of registered sites is not indicative that these are the only areas where Aboriginal archaeological sites are likely to be found; the patterning is more a symptom of the limited amount of archaeological investigation that has occurred.

The results of the site inspection indicates that less developed sections of the study area are likely to have very low ground surface visibility due to dense pasture and/or crops. This is likely to reduce effective archaeological survey coverage in any archaeological surveys conducted across this landscape. The poor ground visibility across the majority of the study area indicates that ground surface surveys are unlikely to be sufficiently effective in identifying the nature, extent and significance of cultural heritage across the study area.

The following limited conclusions regarding likely archaeological patterning based on desktop assessment include:

- Disturbed areas are less likely to be culturally sensitive. However, disturbance in the study area is relatively limited, even within individual land parcels; therefore there is potential for intact topsoils to be present across almost all the study area;
- Areas of high, moderate and low sensitivity (Section 5) should be included in a programme of landform-based test excavation as part of complex assessments prepared for future CHMPs, although the focus of testing should be weighted more towards the higher sensitivity areas;
- Previous complex CHMP activity areas should be assessed in light of the proposed development but, where complex assessment has previously been conducted, no further archaeological fieldwork is warranted;
- Areas of previous disturbance identified during the desktop assessment were briefly examined during the site inspection and confirmed. The disturbance in these areas has likely resulting in the

complete removal of any archaeological deposits that may have originally been present, and therefore should be excluded from the scope of future complex assessment as part of a CHMP process. Where these areas occur in mapped areas of cultural heritage sensitivity (as identified under the *Aboriginal Heritage Regulations 2007*), they void that part of the area of sensitivity.

5 ABORIGINAL ARCHAEOLOGICAL SENSITIVITY

This section provides an analysis of the cultural heritage sensitivity of the study area informed by a synthesis of known Aboriginal archaeological sites and locations and archaeological investigations in the desktop assessment, as well as a visual assessment of landforms and disturbances during the site inspection.

5.1 Landforms and Aboriginal Site Potential

As stated previously there are four primary landforms in the study area. These are discussed below in relation to the likelihood of Aboriginal cultural heritage being present.

5.1.1 Lowland Plains

The southern and eastern sections of the study area are located on low-lying flat plains. These areas have been subject to low-scale rural residential development with varying levels of disturbance (see below). All the archaeological investigations in the local region have been carried out across this landform and a number of Aboriginal places have been identified on this type of landform, particularly around Lara to the north; however, the sites are in much closer proximity to the reliable water source at Hovells Creek or along Cowies Creek to the south. In those areas some fairly high density artefact scatters occur, suggesting long-term occupational use along the water courses. In contrast, although several Aboriginal sites are known to occur in the lowland plains landform, e.g. immediately south of the study area in the Geelong Ring Road corridor, these are almost exclusively low density stone artefact sites that suggest an ephemeral use of the landscape, e.g. whilst transiting or hunting, rather than intensive occupation/camping. The lowland plain in the study area is located some distance from the reliable water sources. Therefore any sites are likely to be low density artefact sites.

Plate 1: Looking southwest across the lowland flats in the north east corner of the study area near Staceys Rd

Plate 2: Looking north east across the low density development on the lowland plans in the south

5.1.2 Steep Escarpment Slopes

The Lovely Banks Monocline (Section 2.1.1) has uplifted the land to the west of the lowland plains, creating a steep escarpment with an elevation of some 70 m above the lower plains. Parts of the escarpment have been developed as part of the low density rural development in the southern section of the study area. In most locations, however, the escarpment slopes are undeveloped pasture.

Steep slopes are not generally recognised as being sensitive landforms for Aboriginal cultural heritage.

Plate 3: Steep escarpment slopes of the Lovely Banks Monocline looking west from Tower Hill Drive

Plate 4: Steep escarpment slopes off Staceys Road, looking south west

5.1.3 Drainage Lines

A number of first- and second-order drainage lines flow of the escarpment to drain eastwards towards Hovells Creek and Corio Bay. Based on Strahler's (1957) system of watercourse categorisation, these watercourses are short and ephemeral first- and second-order streams. As low order streams, comprising headwaters and steep, narrowly defined catchments, there are unlikely to have had sufficient water flow to provide Aboriginal people with a reliable water source.

One drainage line is located on the southern side of Staceys Road and runs parallel to the road (Plate 5). The other three are located between Elcho Road and Heales Road. One of these, just south of Elcho Road, comprises a confluence of three first order streams converging to form a deeply incised second-order stream (Plate 6).

These drainage lines generally have quite deep valleys with narrow floodplains and steep sides. As first and second order streams with relatively short lengths and limited catchments, water catchment is ephemeral at best, and may only occur in times of heavy continual rainfall. These streams are unlikely to have provided Aboriginal people with a reliable source of water and therefore intensive occupation and camping is unlikely to have occurred. However the valleys may have provided a convenient transit route from the lowland plains to the elevated plateau, and therefore there is potential that low density artefact sites may be present along their courses.

Plate 5: Looking east along a watercourse valley on the southern side of Staceys Road

Plate 6: Looking south east along a first order watercourse where it crosses Elcho Road

5.1.4 Undulating Elevated Plains

Apart from low ridge crest (see below), the remainder of the landscape in the study area to the west of the Monocline comprises rolling undulating plains on the upper edge of the escarpment (Plates 7 and 8). The elevated plains are not considered to be particularly sensitive for Aboriginal cultural heritage as occupational use of the landscape is likely to have concentrated on waterways to the north and south. However ephemeral activities such as hunting and gathering are likely to have occurred meaning that low density artefact sites may be present as a result of either accidental or deliberate discard of stone tools and fragments.

Plate 7: Flat to gently undulating landforms west of the Monocline looking south from Evans Road

Plate 8: Elevated plains, looking north west from Evans Road towards Elcho Road

Just west of the escarpment edge, the land rises to form a discrete elevate ridge. This ridge is relatively extensive and would have provided Aboriginal people with suitable panoramic vies of the landscape, and may have been used for ephemeral camping. It is unlikely that long term intensive occupation would have occurred due the ridge's distance from reliable water.

5.2 Anthropogenic Land Modifications

Artificial modification of the landscape within the study area has been modest. In the context of Aboriginal cultural heritage, disturbance relates to the potential for in situ Aboriginal archaeological materials to be present. As a general rule, where Aboriginal archaeological deposits are present, these will occur in the original topsoil (i.e. the upper stratum or 'A-horizon'), as the underlying strata generally pre-date human occupation of the landscape. When discussing the upper stratum this, obviously, does not mean layers of fill material tat have been imported and spread across an area in modern times – it refers the original topsoil beneath the fill (unless the topsoil was completely removed prior to importing the fill).

Disturbance in the study area appears to have been mainly localised and relatively minor, leaving large portions of the study area substantially unmodified. This means that original topsoils will still be present and, where Aboriginal people have camped in antiquity, there may still be artefactual deposits present.

Land modification, and the likely presence of Aboriginal cultural heritage, includes:

- *Lovely Banks Basins*. The basins were developed to provide water storage for the local area. Disturbance within the basin area is total and it is unlikely that Aboriginal cultural heritage will be present (Plate 9).
- *Low Density Residential Development*. Almost all the lowland plains landform has been subject to low density rural residential development, including subdivision, provision of additional roads and utilities, and home construction. The land parcels are relatively large and disturbance on the blocks may be localised for creating house pads (including extensive cut and fill on the escarpment slopes)(Plate 10), construction of sheds and outbuildings as well as localised landscaping; however, in many cases large parts of the parcels may not have been developed and original topsoils are intact. In some areas the land parcels have not yet been developed (Plate 11).
- *Intensive farming/agriculture*. One area of extensive hothouses is located between Anakie and Evans Roads. This comprises rows of covered structures that cover the majority of the land parcel (Plate 12). Disturbance of the land is likely to have been extensive during construction.
- *Rural Industry*. One area of rural industry is present in the north west corner of the study area. The nature of the industry is unknown, but a brief visual inspection suggests extensive disturbance of the topsoils throughout. Intact Aboriginal archaeological deposits are considered unlikely.
- *Low Intensity Farming*. The majority of the study area west of the Monocline is used for low intensity farming/grazing. Disturbance on these lands is likely to be isolated to
    - Farmhouses and farm complexes. There are numerous rural properties spread across the study area, although the majority are on the elevated undulating plains. These include both standing structures such as houses and outbuildings/sheds, and potentially historical archaeological remnants; and
    - Farm/stock management infrastructure, e.g. dams, sheds, etc. These often comprise complete removal of the original (culturally sensitive) topsoil;

Other disturbances would be limited to low impact works such as fencing, informal vehicle tracks and ploughing. These works are unlikely to have substantially impacted Aboriginal archaeological deposits.

Farming also often includes historical land clearance, where native trees are removed from the landscape. This can often mean that culturally-scarred trees may have already been removed from the landscape by historical land clearing; in this study area, however, the pre-contact vegetation was predominantly grassland, with little or no canopy vegetation.

- *Commercial infrastructure*, e.g. the BP roadhouse on the Geelong Ring Road. These usually include levelled areas, with concrete foundations for buildings, carparks and other infrastructure.
- *Educational infrastructure*, e.g. the Geelong Baptist CFollege on Anakie Road, south of the Lovely Banks Basins. The construction of school buildings and ovals for sporting usually involves levelling of the ground surface.
- *Numerous roads and tracks*. Many of the road reserves have been in existence since the 1850s, largely unchanged except for minor alterations and upgrades. Successive road improvements over the past century, or new roads, have caused extensive disturbance throughout the road reserve sections of the study area.

The high disturbance areas identified in this assessment are outlined in light red in the sensitivity map (Map 9). These areas are considered to have been previously disturbed and are unlikely to retain in situ Aboriginal archaeological deposits. Where they occur in legislated areas of cultural heritage sensitivity (Map 10) they void that part of the area of sensitivity.

Plate 9: Lovely Banks Basins, Anakie Road, looking east

Plate 10: Extensive cut and fill on the escarpment slope for residential developments, looking north

Plate 11: Undeveloped land parcels on the lowland plains and escarpment slopes, looking south east

Plate 12: Extensive hothouse complex on Anakie Road, looking south

5.3 Aboriginal Archaeological Site Prediction Statement

The following site prediction statement[2] has been formulated from the review of previous assessments. The statement presented is based on a site type approach. (For further information on site types see AV 2016b).

The review of the previously recorded Aboriginal archaeological sites and previous archaeological investigations indicates that the most likely[3] site types in the study area are stone artefacts scatters and low density artefact distributions (including isolated artefacts). Other potential site types to occur are scarred trees and, to a lesser extent, freshwater shell middens. Site types considered unlikely to occur in the study area are mounds, stone arrangements and Aboriginal burials.

A preliminary map of the archaeological sensitivity of the study area, based on the results of the desktop assessment, is shown in Map 9.

Stone Artefact Scatters *may* occur in the activity area. Very few archaeological investigations have been carried out in the immediate vicinity of the study area and even fewer in the study area itself. However, archaeological investigations have been carried out in the more developed areas to the north around Lara and to the south around Bell Post Hill, Corio and Batesford. These investigations have identified extensive artefact scatters along the margins of high-resource waterways such as the Moorabool and Barwon Rivers, and Cowies and Hovells Creek. As distance from these waterways increases, Aboriginal places tend to consist of isolated, low density stone artefact scatters or single artefacts.

To meet the current definition of an 'artefact scatter', the deposit must comprise a scatter of at least 10 artefacts in a 10 x 10 m area. If a site does not meet these thresholds, then it is registered as an LDAD (see below).

[2] The term "site prediction statement" is sometimes referred to as "site prediction model". Ecology and Heritage Partners Pty Ltd prefers the term "statement" as it is more accurate; "statistical modelling" is a rigorous and comprehensive process using empirical data.

[3] Likely is an assessment of site types with a 50% or more likelihood of occurring; Unlikely is an assessment of site types with less than 50% likelihood of occurring.

Stone tools were made by hitting one piece of stone, called a core, with another called a 'hammerstone', often a pebble. This would remove a sharp fragment of stone called a flake. Both cores and flakes could be used as tools. New flakes were very sharp, but quickly became blunt during use and had to be sharpened again by further flaking, a process called 'retouch'. A tool that was retouched has a row of small flake scars along one or more edges. Retouch was also used to shape a tool.

Not all types of stone could be used for making tools. The best types of stone are rich in silica, hard and brittle. These include quartzite, chert, flint, silcrete and quartz. Aboriginal people quarried such stone from outcrops of bedrock, or collected it as pebbles from stream beds and beaches. Many flaked stone artefacts found on Aboriginal sites are made from stone types that do not occur naturally in the area. This means they must have been carried over long distances.

Stone tools are the most common evidence of past Aboriginal activities in Australia. They occur in many places and are often found with other remains from Aboriginal occupation, such as shell middens and cooking hearths. They are most common near rivers and creeks. It is easier to find them where there is limited vegetation or where the ground surface has been disturbed, for example by erosion.

Artefact scatters are the material remains of past Aboriginal people's activities. Scatter sites usually contain stone artefacts, but other material such as charcoal, animal bone, shell and ochre may also be present. No two scatters are exactly the same.

Artefact scatters can be found wherever Aboriginal occupation has occurred in the past. Aboriginal campsites were most frequently located near a reliable source of fresh water, so surface scatters are often found near rivers or streams where erosion or disturbance has exposed an older land surface.

Low Density Artefact Distributions are considered likely to occur in the study area, based on the only site previously registered in the study area and those immediately south along the Geelong Ring Road, which comprised a isolated stone artefacts only. This is considered to be the most likely type of site to occur in the study area.

Low density artefact distributions are stone artefact sites that comprise less than 10 artefacts in a 10 x 10 m area and where artefact clusters are all contained within a single 1:100,000 scale mapsheet. LDADs can occur singly and may occur anywhere in the landscape. Surface artefacts may be indicative of further subsurface archaeological deposits. This site type can be found anywhere within the landscape, however, they are more likely to occur within contexts with the same favourable characteristics for stone artefact scatter sites.

Scarred Trees may occur in the study area, but only in areas where mature native vegetation occurs. These are most likely to be along fence lines or along roadsides, as historical vegetation clearance within the paddock areas has been extensive.

Aboriginal people caused scars on trees by removing bark for various purposes. The scars, which vary in size, expose the sapwood on the trunk or branch of a tree. Scarred trees are found all over Victoria, wherever there are mature native trees, especially box and red gum. They often occur along major rivers, around lakes and on flood plains.

Shell Middens are considered unlikely occur in the study area. There are no sizeable waterways in close proximity to the study area and fresh molluscs are unlikely to have been transported overland by Aboriginal people for consumption away from the source.

Shell middens may occur in both freshwater and coastal contexts. Shell middens are accumulations of shell produced by Aboriginal people collecting, cooking and eating shellfish. Shell middens often contain evidence of cooking such as charcoal, ash, fire-stones, burnt earth or burnt clay. Sometimes they also contain animal bones, fish bones, stone tools and Aboriginal burials.

Freshwater shell middens are found along river banks and flood plains, near swamps and lakes, and in sand dunes. They are sometimes found in dry areas, where fresh water was once present. Freshwater shell middens usually occur as fairly thin layers or small patches of shell. The shells usually come from both the freshwater mussel (*Velesunio ambiguus*) and river mussel (*Alathyria jacksoni*). The shells may be the remains of just one meal or hundreds of meals eaten over thousands of years.

Freshwater mussel shells may also be found in Aboriginal oven mounds, but usually only in small quantities. Middens may be visible as scatters of broken mussel shell, exposed along vehicle tracks. If you look closely, you may find mussel shells buried in the surrounding soil. Middens are also commonly visible as scatters of mussel shell eroding down the slopes of dunes. Again, the scatters can usually be traced up the dune to the buried shell layer. Shell fragments in the upcast from rabbit burrows in dunes may also indicate a midden.

Shell middens are also found in many areas along the Victorian coast. They can be located in sheltered positions in the dunes, coastal scrub and woodlands, within rockshelters, or on exposed cliff tops with good vantage points. They can occur near rocky or sandy shores and also close to coastal wetlands, inlets, estuaries, bays and river mouths. Coastal shell middens are found as layers of shell exposed in the sides of dunes, banks or cliff tops, or as scatters of shell exposed on eroded surfaces. They range in size from a few metres across to many hundreds of metres and can consist of a thin, single layer, or multiple layers forming a thick deposit.

Mounds are considered unlikely to occur in the study area. Historical land clearing and cultivation are likely to have removed all traces of earth mounds in the study area, particularly where land cultivation and/or other developments have occurred. The majority of the study area is on an elevated escarpment; whereas studies of mounds in Victoria indicate that they are primarily associated with low-lying wet areas.

Aboriginal mounds are places where Aboriginal people lived over long periods of time. Mounds often contain charcoal, burnt clay or stone heat retainers from cooking ovens, animal bones, shells, stone tools and, sometimes, Aboriginal burials.

Mounds usually occur near rivers, lakes or swamps but occasionally some distance from water. They are also found on dunes and sometimes among rock outcrops on higher ground.

Quarries are considered unlikely to occur in the study area as there are no known outcrops of suitable raw material for stone tool production present.

Aboriginal quarries are the sites where Aboriginal people took stone from rocky outcrops to make chipped or ground stone tools for many different purposes. Not all types of stone were suitable for making tools, so an outcrop of good stone that could be easily quarried was a valuable resource. Aboriginal people quarried different types of stone, each with its own special value and use. Stone tools were made from greenstone, silcrete, quartz, quartzite, basalt and chert. Pigments were made from quarried ochre, and grinding tools were made from sandstone.

Some quarries are small, consisting of just a single protruding boulder. Other quarries incorporate many outcrops and areas of broken stone that can cover thousands of square metres.

Stone Arrangements are considered unlikely to occur in the study area. Historical land clearing and cultivation will have removed all traces of earth mounds in the study area.

Aboriginal stone arrangements are places where Aboriginal people have positioned stones deliberately to form shapes or patterns. The purpose of these arrangements is unknown because their traditional use ceased when European settlement disrupted Aboriginal society. They were probably related to ceremonial activities.

Stone arrangements occur where there are plenty of boulders, such as volcanic areas, and where the land could support large bands of people. Surviving stone arrangements are rare in Victoria, and most are in the western part of the State.

Stony Rises are considered unlikely to occur in the study area. The geological and geomorphological structure of the landscape does not include lava flows usually associated with this type of landform.

Stony Rises are a geological formation that emerges from the smooth lava fields of the western plains of Victoria, a fertile region that for tens of thousands of years supported the lives of its indigenous Aboriginal people. Stony Rises occur in a number of forms but generically comprise loosely consolidated rocks and boulders elevated above the surrounding plain. Ephemeral lakes occur at low points often adjacent to the Stony Rises, and are often interspersed with low-lying, poorly-drained plains (Joyce 2003). Stony rises provided vantage points to local Aboriginal tribes across the tribal territory.

Stony Rises are considered an area of Aboriginal archaeological sensitivity as they are likely to contain stone artefact sites. Stony Rises are known to be the site of Aboriginal stone huts and stone circle arrangements, and can also contain hearth sites. Previous studies have shown a tendency for stone artefacts located in surface and/or subsurface contexts on stony rises. Artefact distribution patterns commonly comprise isolated stone artefacts and diffuse low density artefact scatters occurring across the volcanic plans, with moderate to higher densities of stone artefacts occurring on stony rises and that only occasional isolated stone artefacts may occur away from stony rises. The most significant sites are located on the stony sites near watercourses. Scarred trees may occur where mature native vegetation is located in proximity to former swamps.

Aboriginal Burials are considered unlikely to occur in the study area. Although Aboriginal burials are known to occur along waterways, these site types are extremely rare.

Aboriginal burials are normally found as clusters of human bones eroding from the ground, or exposed during ground disturbance. Aboriginal customs for honouring and disposing of the dead varied greatly across Victoria, but burial was common. Aboriginal burial sites normally contain the remains of one or two people, although cemeteries that contain the remains of hundreds of people buried over thousands of years have been found. Sometimes the dead person was buried with personal ornaments and artefacts. Charcoal and ochre are also often found in burial sites.

Although Aboriginal burials are quite rare in Victoria, they have been found in almost every kind of landscape, from coastal dunes to mountain valleys. They tend to be near water courses or in dunes surrounding old lake beds. Many burials have been found on high points, such as dune ridges, within

surrounding flat plains. They are often near or within Aboriginal occupation sites such as oven mounds, shell middens or artefact scatters.

5.4 Legislated Areas of Cultural Heritage Sensitivity

Areas of cultural heritage sensitivity (ACHS) are defined under rr.22-38 of the *Aboriginal Heritage Regulations 2007*. These are legislated areas of sensitivity used primarily to determine triggers for preparation of CHMPs under the *Aboriginal Heritage Act 2006*. There are currently a total of six mapped ACHS that affect the study area (Map 6):

- Land within 50 m of the two registered Aboriginal places located within the study area, as listed in Section 3; and
- Land in the study area within 50 m of any Aboriginal places located adjacent to the study area, these include:
    3. VAHR 7721-0582 (located on the Geelong Ring Road reserve at Corio);
    4. VAHR 7721-0583 (located on the Geelong Ring Road reserve at Corio);
    5. VAHR 7721-0584 (located on the Geelong Ring Road reserve at Corio); and
    6. VAHR 7721-0585 (located on the Geelong Ring Road reserve at Corio).

These ACHS determine the need for preparation of mandatory CHMPs, subject to the type of development proposed and whether the entire ACHS within each individual activity area (e.g. land parcel) has been subject to significant ground disturbance. See further discussion in Section 6 (Management Recommendations).

5.5 Sensitivity Mapping

5.5.1 Preliminary Archaeological Sensitivity Mapping

The predictive statement discussed above (Section 5.3) was analysed and used to prepare a preliminary archaeological sensitivity map (Map 9). This map is based on the results of previous assessments to show the likely sensitivity in relation to the topographic and environmental conditions of the study area (as opposed to the 'one size fits all' approach of the legislated ACHS discussed above).

The following discussion is based on a review of previous archaeological investigations, a review of landforms in the study area and a review of disturbance factors that may affect the potential for Aboriginal cultural heritage to be present.

A review of previous archaeological investigations indicates that the majority of Aboriginal archaeological sites in the local region are likely to be highly associated with reliable waterways, which would have provided a highly-utilised resource, both for human consumption and as a resource four prey animals. Most sites in the region occur within the floodplains and terraces associated with the waterways, particularly along the margins of larger creeks (or their related floodplains and terraces), or on lowland plains in relatively close proximity to the waterways. These areas, which are considered to be of High archaeological potential, do not occur within the study area.

Note: the sensitivity map is based only on interpretation of the known archaeological characteristics of the region and a desktop assessment of the likelihood of Aboriginal archaeological deposits being present in the study area. The sensitivity mapping does not include legislated areas of cultural heritage sensitivity under the *Aboriginal Heritage Act 2006*. The legislated areas are purely for the purposes of triggering the requirement for a CHMP; they are shown in Map 10.

5.5.2 High Archaeological Potential

A review of desktop sources did not identify any areas of High archaeological potential, except:

- In the vicinity of one of the registered Aboriginal place in the study area (7721-0424), located in the northern section of the study area on the elevated plain. This area is also a legislated area of cultural heritage sensitivity.

The second Aboriginal place in the study area is not listed as a high archaeological potential area because it consists of a single stone artefact that is located in a road reserve and has therefore likely been destroyed.

The high potential areas are outlined in red in the sensitivity map (Map 9).

5.5.3 Moderate Archaeological Potential

Several areas are considered to have Moderate potential:

- The crest of the low ridge crest on the top of the escarpment;
- The courses of the four drainage lines/valleys.

The elevated ridge is considered to be of Moderate sensitivity although this area is more likely to have LDADs than extensive artefact scatters. Lesser tributaries of creeks and rivers are considered to be of Moderate archaeological potential, because of their potential to have provided a freshwater resource. The streams in the study area are generally first- or second-order streams, with steep courses and limited catchments, with little potential for reliable water flow. However, the courses may have been used as convenient transit routes from the lowland plains to the elevated plateau/plains and/or used in times of high rainfall. For this reason the drainage lines are considered to be of low to moderate archaeological potential.

The moderate potential areas are outlined in orange in the sensitivity map (Map 9).

5.5.4 Low to Moderate Archaeological Potential

Two areas are considered to have Low to Moderate potential:

- The lowland plain landform, in areas where isolated disturbances have not occurred; and
- The outer lip at the crest of the escarpment. This area would have afforded Aboriginal people good 'outlook' across the lowland plains to the east.

Previous investigations show that the lowland plains may also be sensitive, where low density artefact scatters or isolated artefacts may be found. However, archaeological deposits are likely to be widely dispersed and in low concentrations of artefacts. For this reason, the landform is given a lower sensitivity rating.

The low to moderate potential areas are outlined in light green in the sensitivity map (Map 9).

5.5.5 Low Archaeological Potential

All other areas in the study area are considered to have Low sensitivity, and are outlined in light yellow in the sensitivity map (Map 9). These areas are defined with reference to the limited number of previous investigations. These areas include steep slope/escarpment landforms, as well as some elevated areas where post-contact disturbance or distance from water reduces the probability that the areas were used for sustained occupational activity.

However, even within this category, there are differing levels of sensitivity. For example the gentle, undulating plains across most of the study area are more likely to retain low density Aboriginal cultural heritage deposits, than the very steep slopes along the escarpment. It is considered highly unlikely that Aboriginal cultural heritage will be present on the steep escarpment slopes of the Lovely Banks Monocline; these steeper slopes are considered unlikely to have deposits due to the impracticality of either camping or even transiting when easier access routes are available between the low and high ground.

However, it is acknowledged that isolated artefacts (or LDADs) can be found anywhere in the landscape, particularly in relation to transit routes or opportunistic hunting activities. Therefore, the low sensitivity rating is based more on the lower balance of probability for Aboriginal cultural heritage to be present.

The low potential areas are outlined in purple in the sensitivity map (Map 9).

5.5.6 Discussion

The predictive sensitivity mapping is based on the results of both desktop research and a brief site inspection. No formal archaeological surveys or subsurface testing was carried out as part of this investigation, and previous surveys and testing have been limited to very small parts of the study area, such as the gas pipeline easement. Given the limited amount of archaeological investigation carried out over the last few years within the study area and its environs, the accuracy of the mapping (Map 9) is a preliminary assessment only and will require verification as part of formal archaeological surveys. However, the sensitivity mapping should be robust enough to inform high level Framework Plan design, particularly in regard to proposed configuration of open space networks, activity centre and key infrastructure such as main roads that need to be established early in the Framework planning and design process.

The predictive sensitivity mapping should be tested during future complex assessments as part of CHMPs, with preference given to using systematic landform-based test excavation specifically designed to test conclusions made in the predictive statement and sensitivity mapping. The predictive statement and sensitivity mapping should then be refined (if necessary) and used as the basis for making design decisions at an individual CHMP/ activity level in consultation with the RAP.

6 MANAGEMENT RECOMMENDATIONS

This section provides a summary of the recommendations made in relation to the Aboriginal heritage values of the study area. The recommendations explain whether a Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006* will or will not be required for individual (current) land parcels in the study area. In areas where it is considered that a CHMP is not required, this will be because that area was considered to have no Aboriginal cultural heritage likelihood (archaeological sensitivity) and/or because the study area has been subject to previous significant ground disturbance.

Recommendation 1: Framework Planning – Protection of Aboriginal Cultural Heritage

It is an offence under the *Aboriginal Heritage Act 2006* to harm[4] any Aboriginal cultural heritage in Victoria. It is recommended that further archaeological investigation is carried out in any areas that are considered to have Aboriginal archaeological potential, as discussed further in the recommendations below.

Recommendation 2: Requirement for Mandatory Cultural Heritage Management Plan

Due to the low number of previous investigations in and around the study area, with the result that only two Aboriginal places have been registered, together with a lack of relevant landforms defined under the *Aboriginal Heritage Act 2006*, there are only six areas of legislated cultural heritage sensitivity in the study area. All six areas of sensitivity involve land within 50 m of a registered Aboriginal place (Regulation [r.]22). Only two of these places is within the study area; the other four are located in the adjacent Geelong Ring Road reserve, but there is land in the study area within 50 m of the places.

Due to the size of land parcels over much of the study area, the parcel north of Elcho Road with a registered Aboriginal place includes large tracts of land that are remote from the area of sensitivity. If the footprint of an activity (i.e. the 'activity area') is remote from the area of cultural heritage sensitivity, then that activity will not require a mandatory CHMP (VCAT Red Dot: Big Hill Vineyard v Greater Bendigo CC, VCAT 397). However, if the 'activity area' contains an area of cultural heritage sensitivity as defined by the Regulations and if, following the preparation of the Framework Plan these parcels are subject to development that meets the definition of a high impact activity under the Regulations, a CHMP will need to be prepared and approved prior to issue of a Planning Permit. Such activities may include one or more of the following as examples: a subdivision of three lots or more (r.46); a road or bike/walking track with a length exceeding 100 m (r.44); buildings and works for specified uses (e.g. car parks, schools, offices, churches/halls, retail premises, utilities, etc.)(r.43).

An overview of existing land parcels that may be subject to mandatory CHMP is shown in Map 10.

The desktop assessment results in this report may be used to fulfil the requirements of the desktop assessment component of CHMPs in land parcels covered by this assessment. In that instance, a CHMP may proceed directly to complex assessment under s.58(2) of the *Aboriginal Heritage Act 2006*. However, if a CHMP is commissioned more than six months after the cover date of this report, then a new search of the

[4] The introduction of amendments to the *Aboriginal Heritage Act 2006* on 1 August 2016 removed the word 'knowingly' from the Act (regarding harming Aboriginal cultural heritage) and created a strict-liability offence.

Victorian Aboriginal Heritage Register should be carried out to ensure that the most current list/locations/extents of relevant Aboriginal Places is used.

As there is a RAP in place for the study area (Wathaurung Aboriginal Corporation), they must be involved in the CHMP process, and they will usually evaluate and approve the CHMP.

If, in the period between this investigation and commissioning of a CHMP, an individual Sponsor (developer) believes that significant ground disturbance has occurred in an area of cultural heritage sensitivity that may void the entire area of sensitivity in the activity area, then they may consider engaging a qualified cultural heritage advisor to assess the area of SGD and make a recommendation as to whether a CHMP is required.

In sections of an activity area where no ground disturbance or development is proposed, complex assessment is not required.

Recommendation 3: Framework Planning – CHMPs Currently in Preparation

When a CHMP is commissioned for a given activity area a Notice of Intent (NOI) is lodged with AV, Council and the RAP. However, the VAHR does not provide details of active NOIs and therefore it does not provide information on any CHMPs that are currently being prepared at the time of writing. It is important that any future archaeological investigations in the study area take into account any relevant CHMPs that are underway; a CHMP is a statutory document and the approved management recommendations/conditions are binding.

It is recommended that the registrar at AV is contacted for information on any active CHMP/NOIs in the study area prior to commencing any future activities in the study area to ensure that no activities conflict with the CHMP's management recommendations. However, if a new activity includes land that was previously assessed as part of a prior CHMP, then that overlapping land will not require further archaeological investigation and this should be incorporated into the proposed methodology for the new CHMP. It is recommended that further discussion between Council, the Sponsor and the RAP takes place to ensure consistency between the agreed provisions of the CHMP/s and the Framework Plan

If the proposed activity within the land parcel/s covered by the previous CHMP activity area includes a high impact activity listed within the *Aboriginal Heritage Regulations 2007* (e.g. subdivision, roads, utilities, etc.), then a mandatory CHMP for that/those activities will be triggered.

Recommendation 4: Framework Planning – Previously Prepared CHMPs

One area of land east along Cowies Creek is the subject of a previous CHMP (#11340; Feldman et al. 2010) that has already been approved (Map 10). The activity described for the CHMP is for a water pipeline. If the activity is *for the same general purpose* as described in the previous CHMP, then no further assessments or CHMPs will be required for the previous activity area. However, if the proposed activity does form a material change of use then, in accordance with VCAT red dot decision (Three Pillars Property Group v Brimbank CC; VCAT 368), a new CHMP would be required for that area. However, subject to negotiation with the RAP for the area (Wathaurung Aboriginal Corporation), no further field investigation would be required and the CHMP need only be a desktop CHMP.

Recommendation 5: Aboriginal Places – Site Extent Testing

Except where Aboriginal places are located in reserved areas or areas that will not be disturbed, or if they are located in areas that have been significantly disturbed *after* the site has been registered, any complex assessment in an activity area that contains one or more of the Aboriginal places (or legislated areas of cultural heritage sensitivity) identified in this report should make provision for conducting site extent testing to fully record the extent, nature and significance of the sites *if no previous site extent testing has occurred*.

Recommendation 6: Areas where the requirement for a CHMP is not clear

In land parcels and road reserves that are within legislated areas of sensitivity but have been subject to significant ground disturbance (SGD) as defined by the Regulations, the legislated areas of sensitivity in the disturbance footprint are voided. However, assessments of SGD are often problematic and difficult to prove. Where it is unclear as to whether a mandatory CHMP is required (due, for example, to perceived SGD), then it is recommended that a Preliminary Aboriginal Heritage Test (PAHT) is conducted for those land parcels. The PAHT would be assessed by Aboriginal Victoria. If the assessment concurs with a finding of SGD across the whole area of sensitivity within an activity area, then the PAHT will be certified and a CHMP would not be required.

Recommendation 7: Voluntary CHMP

Parts of the study area are not located in a legislated area of cultural heritage sensitivity (Map 10), but are located in areas that have high or moderate archaeological potential based on the desktop assessment in this report. Although a mandatory CHMP is not required, it is recommended that the relevant developer considers preparing a voluntary CHMP as a risk mitigation strategy. The preparation of a voluntary CHMP has the following advantages:

- *No requirement for Cultural Heritage Permits at a later stage*: there are no cultural heritage permit requirements in relation to a CHMP as long as you are acting in accordance with the CHMP. There is no requirement for an excavation permit or a permit to harm, or any of the other permit requirements. In effect, the approved CHMP is a permit. If Aboriginal cultural heritage is unexpectedly discovered during the activity, there is therefore no permit requirement if a CHMP has in place. Any unexpected Aboriginal cultural heritage is dealt with through contingency plans in the CHMP, already signed off and agreed to by RAP in the CHMP process;
- *Increased certainty for your project*: as there are no Cultural Heritage Permit requirements at a later stage, there is more certainty for the project. This certainty is provided during the planning phase, allowing the activity to remain unimpeded by cultural heritage legislation. A CHMP removes the activity from the harm provisions of the Aboriginal Heritage Act 2006, as long as the proponent acts in accordance with the CHMP; and
- *Good Risk Management*: rises and elevated areas and the margins of water courses are well documented as areas that retain Aboriginal cultural heritage sites in the general region. A voluntary CHMP could effectively investigate the area for any evidence of Aboriginal sites and minimise the risk that any significant Aboriginal sites would be impacted by the activity, which would cause delays and added expense to the construction process.

In the event that the developer elects to pursue a voluntary CHMP, this must be undertaken by a qualified Cultural Heritage Advisor in association with the RAP for the local area, the Wathaurung Aboriginal Corporation. Any voluntary CHMP undertaken for the study area may be able to utilise the results of this report for the desktop assessment component of the CHMP.

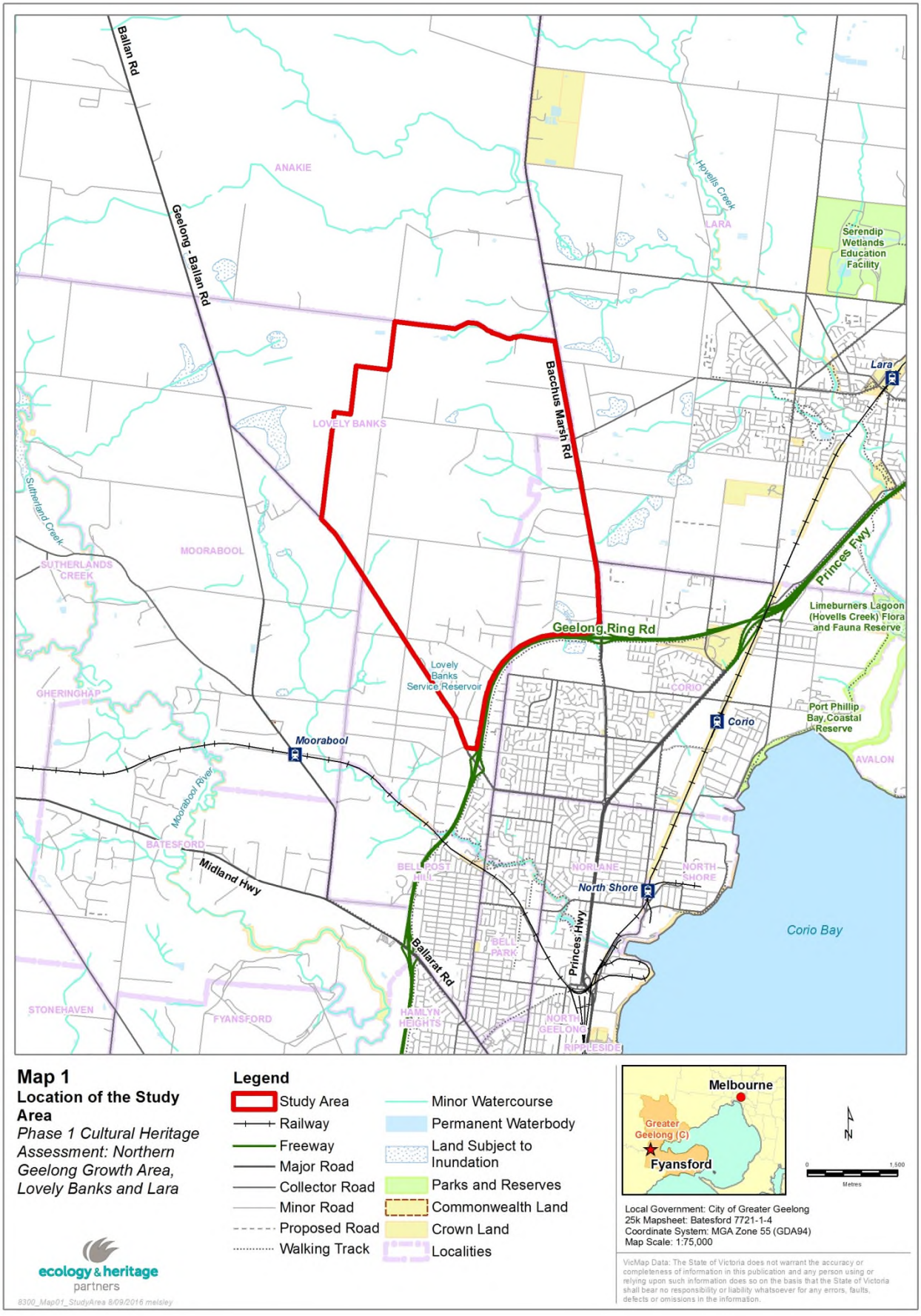
Recommendation 8: No Further Assessment Required

Large parts of the study area are not located in a legislated area of cultural heritage sensitivity (Map 10) or areas that are considered to be of low-moderate archaeological potential or higher. Land parcels and road reserves in the study area that do not occur within a legislated area of cultural heritage sensitivity under the Regulations do not require a mandatory CHMP.

No further archaeological investigation is considered necessary in areas that are considered to be of low archaeological potential; this is predominantly the western half of the study area.

However, it should be noted that all Aboriginal cultural heritage in Victoria is protected. If any Aboriginal cultural heritage issues are encountered during the course of any subsequent construction activities, then works should cease within 20 m of the area of concern and a qualified Heritage Advisor (or AV), in conjunction with the RAP, should be contacted to investigate.

MAPS

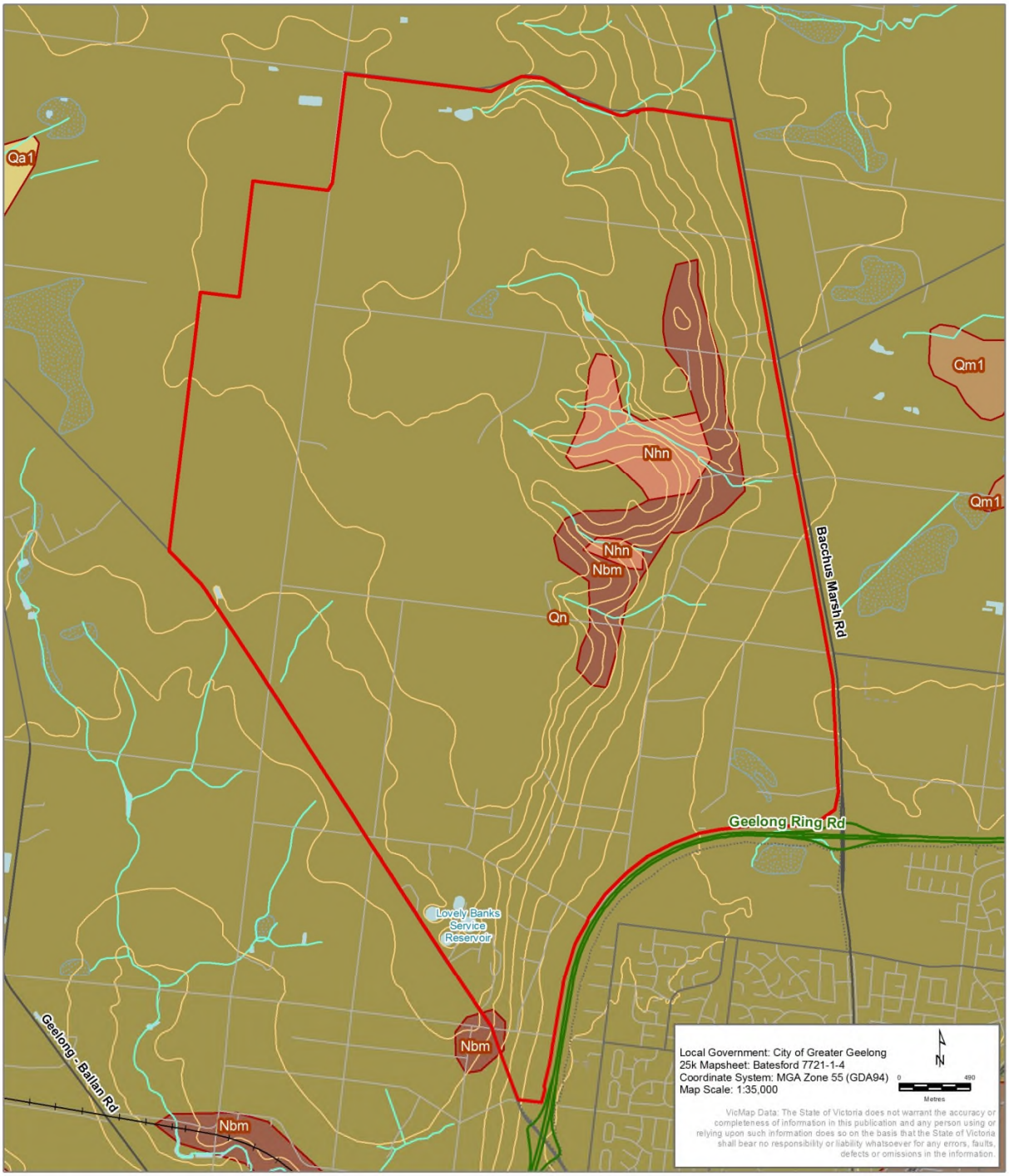

Ballan Rd
Geelong - Ballan Rd
Bacchus Marsh Rd
Hovells Creek
ANAKIE
LARA
Serendip Wetlands Education Facility
LOVELY BANKS
Lara
Sutherland Creek
MOORABOOL
SUTHERLANDS CREEK
Princes Fwy
Limeburners Lagoon (Hovells Creek) Flora and Fauna Reserve
Geelong Ring Rd
Lovely Banks Service Reservoir
GHERINGHAP
CORIO
Corio
Port Phillip Bay Coastal Reserve
Moorabool
AVALON
Moorabool River
BATESFORD
Midland Hwy
BELL POST HILL
NORLANE
NORTH SHORE
North Shore
Corio Bay
Princes Hwy
BELL PARK
Ballarat Rd
STONEHAVEN
FYANSFORD
HAMLYN HEIGHTS
NORTH GEELONG
RIPPLESIDE
Map 1
Location of the Study Area
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
Legend
Study Area
Railway
Freeway
Major Road
Collector Road
Minor Road
Proposed Road
Walking Track
Minor Watercourse
Permanent Waterbody
Land Subject to Inundation
Parks and Reserves
Commonwealth Land
Crown Land
Localities
Melbourne
Greater Geelong (C)
Fyansford
N
0
1,500
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:75,000
VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.
ecology & heritage partners
8300_Map01_StudyArea 8/09/2016 melsley

Map 2
Extent of the Study Area
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara

Legend
- Study Area
- Contour (10m)
- Minor Watercourse
- Permanent Waterbody
- Land Subject to Inundation

Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:33,000

ecology & heritage partners
8350_Map02_Extent 8/09/2016 melsley



Map 3
Relevant Geology
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara

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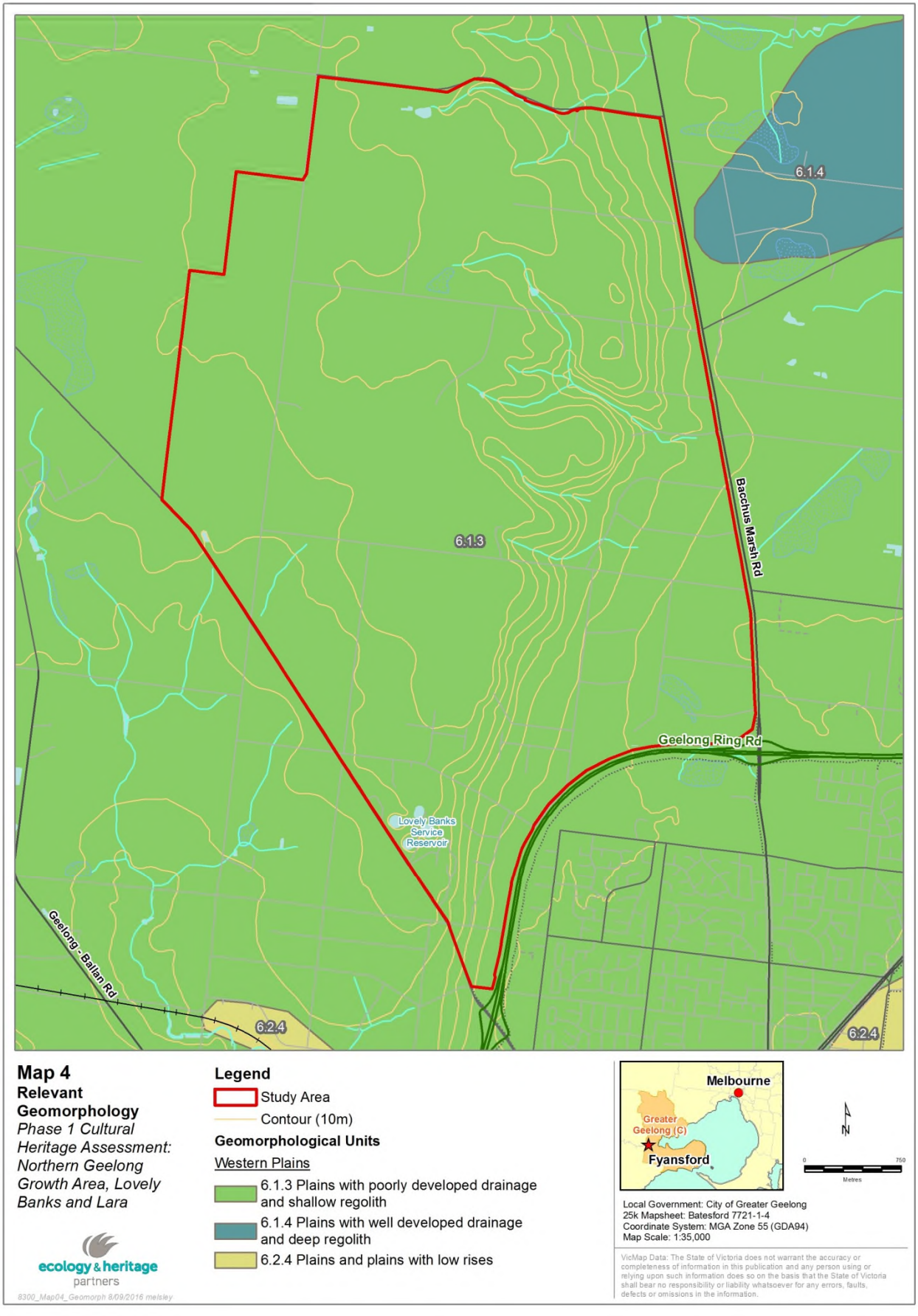
8300_Map03_Geology 8/09/2016 melsley

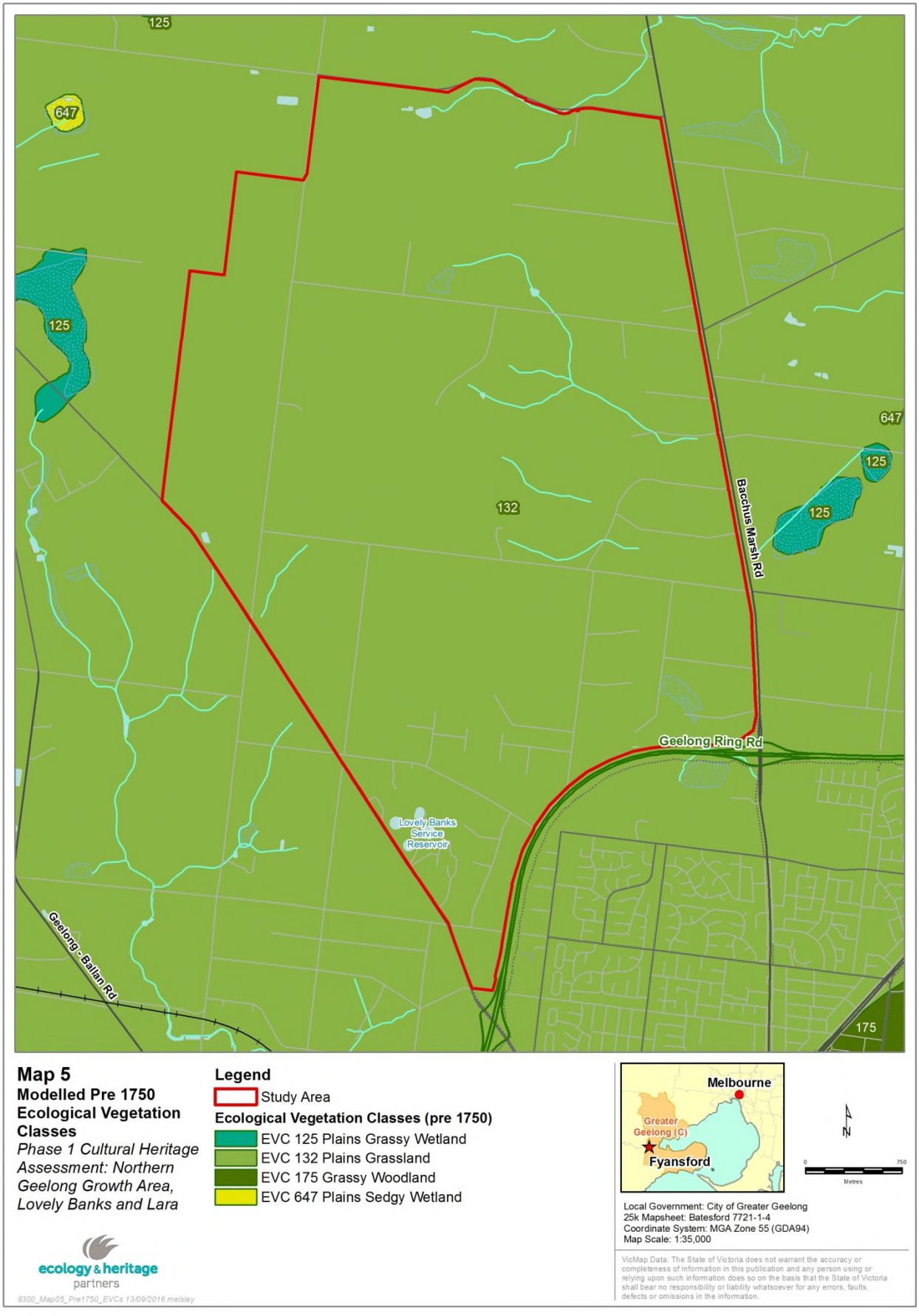
Legend

Study Area
Contour (10m)

Geology

Nbm - Moorabool Viaduct Sand, Gravel, sand, silt (Neogene (Miocene) to Neogene (Pliocene) in age)
Nhn - Newport Silt, Marine: glauconitic silt, marl, minor limestone (Neogene (Miocene) to Neogene (Miocene) in age)
Qa1 - Unnamed alluvium, Fluvial: alluvium, gravel, sand, silt (Quaternary (Holocene) to Quaternary (Holocene) in age)
Qd2 - Unnamed dune deposits, Aeolian: dune deposits: sand, clay, calcareous sand (Quaternary (Pleistocene) to Quaternary (Pleistocene) in age)
Qm1 - Unnamed swamp and lake deposits, Paludal: lagoon and swamp deposits: silt, clay (Quaternary (Holocene) to Quaternary (Holocene) in age)
Qn - Newer Volcanic Group, Extrusive: tholeiitic to alkaline basalts, minor scoria and ash (Neogene (Pliocene) to Quaternary (Holocene) in age)


6.1.4
6.1.3
Bacchus Marsh Rd
Geelong Ring Rd
Lovely Banks Service Reservoir
Geelong - Ballan Rd
6.2.4
6.2.4
Map 4
Relevant Geomorphology
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
ecology & heritage partners
8300_Map04_Geomorph 8/09/2016 melsley
Legend
Study Area
Contour (10m)
Geomorphological Units
Western Plains
6.1.3 Plains with poorly developed drainage and shallow regolith
6.1.4 Plains with well developed drainage and deep regolith
6.2.4 Plains and plains with low rises
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:35,000
VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.


125
647
125
132
125
647
125
Bacchus Marsh Rd
Geelong Ring Rd
Lovely Banks Service Reservoir
Geelong - Ballan Rd
175
Map 5
Modelled Pre 1750 Ecological Vegetation Classes
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
Legend
Study Area
Ecological Vegetation Classes (pre 1750)
EVC 125 Plains Grassy Wetland
EVC 132 Plains Grassland
EVC 175 Grassy Woodland
EVC 647 Plains Sedgy Wetland
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:35,000
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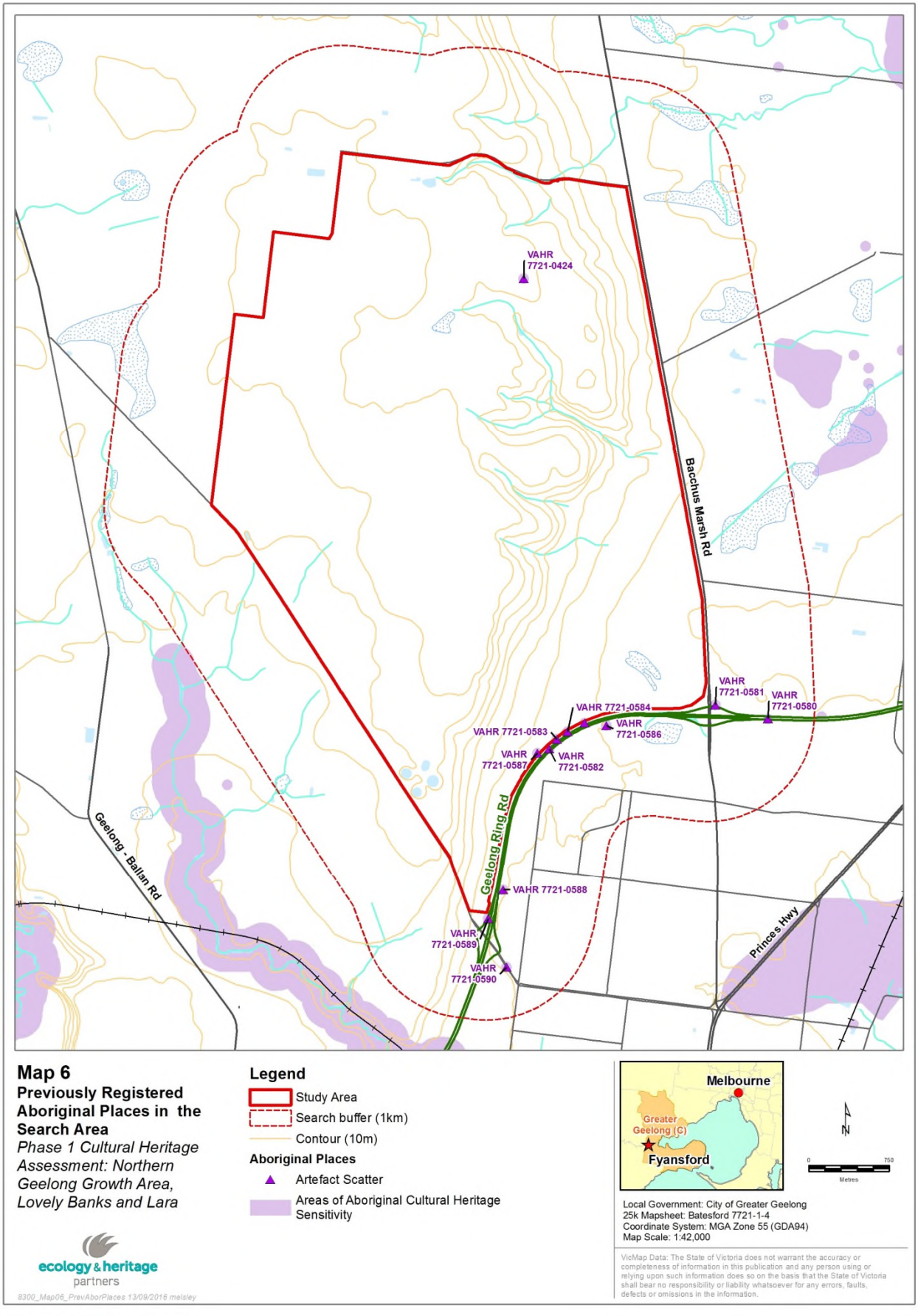
8300_Map05_Pre1750_EVCs 13/09/2016 melsley


VAHR 7721-0424
Bacchus Marsh Rd
VAHR 7721-0581
VAHR 7721-0580
VAHR 7721-0584
VAHR 7721-0586
VAHR 7721-0583
VAHR 7721-0587
VAHR 7721-0582
Geelong Ring Rd
Geelong - Ballan Rd
VAHR 7721-0588
VAHR 7721-0589
VAHR 7721-0590
Princes Hwy
Map 6
Previously Registered Aboriginal Places in the Search Area
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
Legend
Study Area
Search buffer (1km)
Contour (10m)
Aboriginal Places
Artefact Scatter
Areas of Aboriginal Cultural Heritage Sensitivity
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
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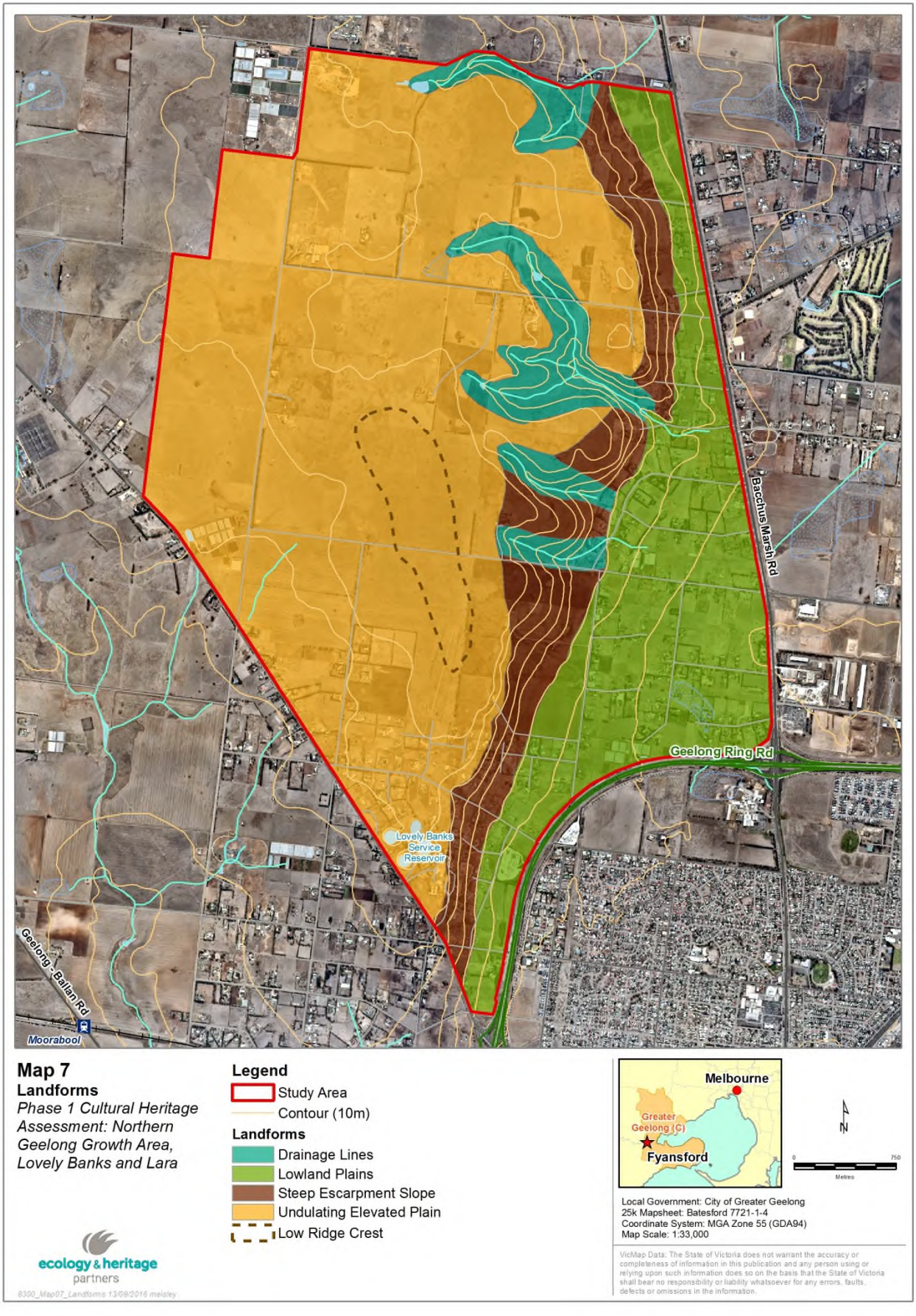
8300_Map06_PrevAborPlaces 13/09/2016 melsley


Bacchus Marsh Rd
Geelong Ring Rd
Lovely Banks Service Reservoir
Geelong - Ballan Rd
Moorabool
Map 7
Landforms
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
Legend
Study Area
Contour (10m)
Landforms
Drainage Lines
Lowland Plains
Steep Escarpment Slope
Undulating Elevated Plain
Low Ridge Crest
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:33,000
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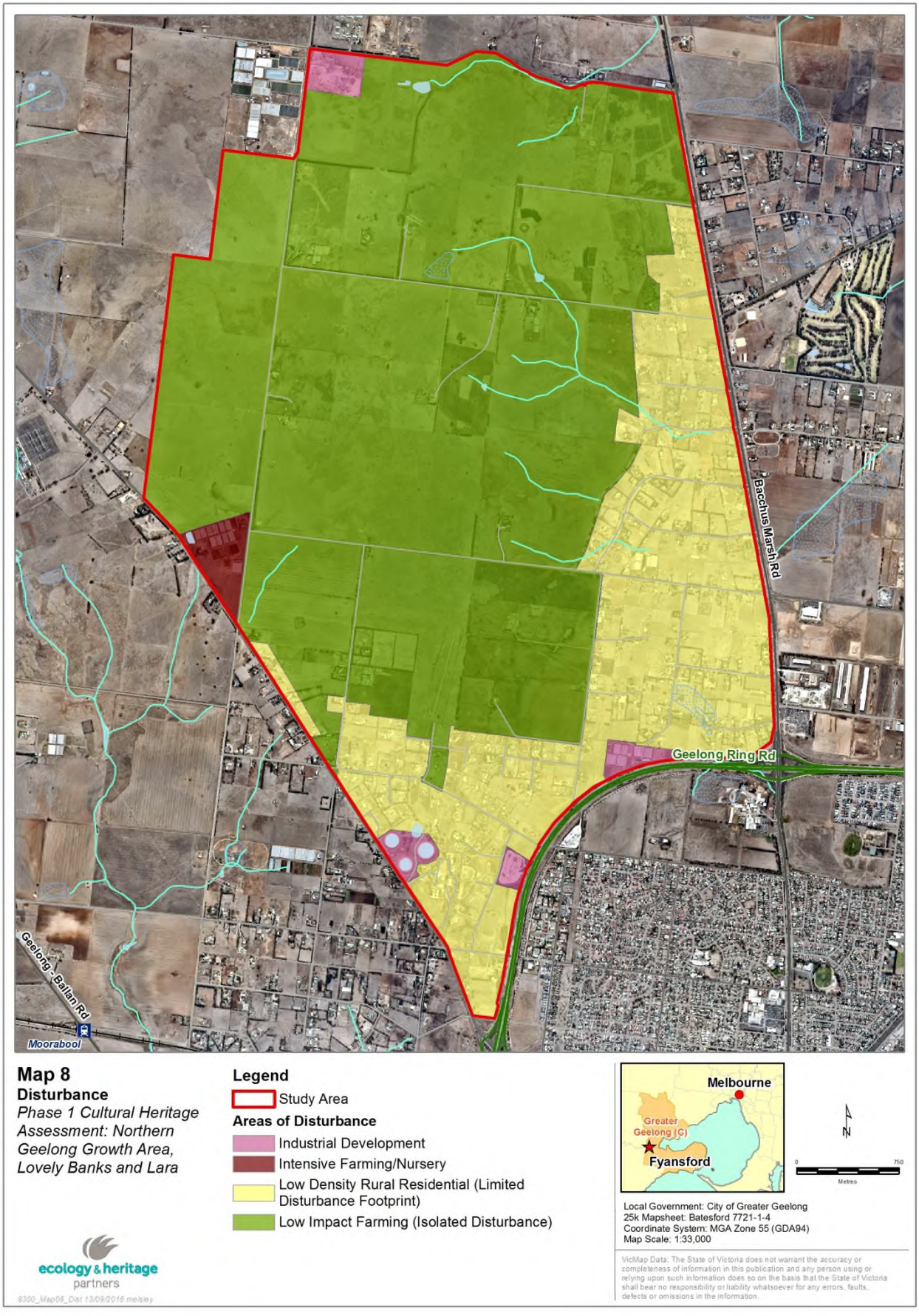
8350_Map07_Landforms 13/09/2016 melsley


Bacchus Marsh Rd
Geelong Ring Rd
Geelong - Ballan Rd
Moorabool
Map 8
Disturbance
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
Legend
Study Area
Areas of Disturbance
Industrial Development
Intensive Farming/Nursery
Low Density Rural Residential (Limited Disturbance Footprint)
Low Impact Farming (Isolated Disturbance)
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:33,000
VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.
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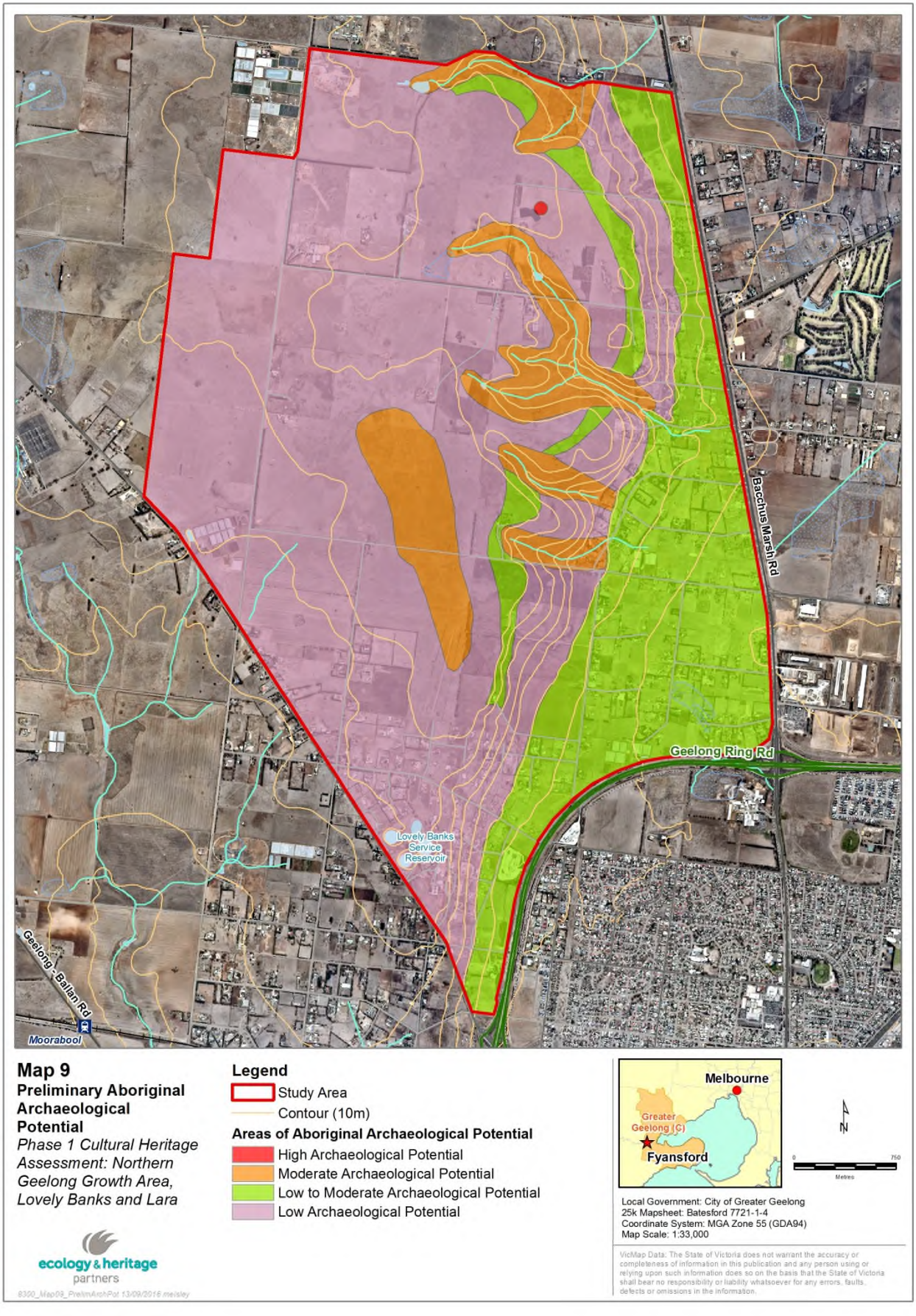
8350_Map08_Dist 13/09/2016 melsley


Bacchus Marsh Rd
Geelong Ring Rd
Lovely Banks Service Reservoir
Geelong - Ballan Rd
Moorabool
Map 9
Preliminary Aboriginal Archaeological Potential
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
Legend
Study Area
Contour (10m)
Areas of Aboriginal Archaeological Potential
High Archaeological Potential
Moderate Archaeological Potential
Low to Moderate Archaeological Potential
Low Archaeological Potential
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:33,000
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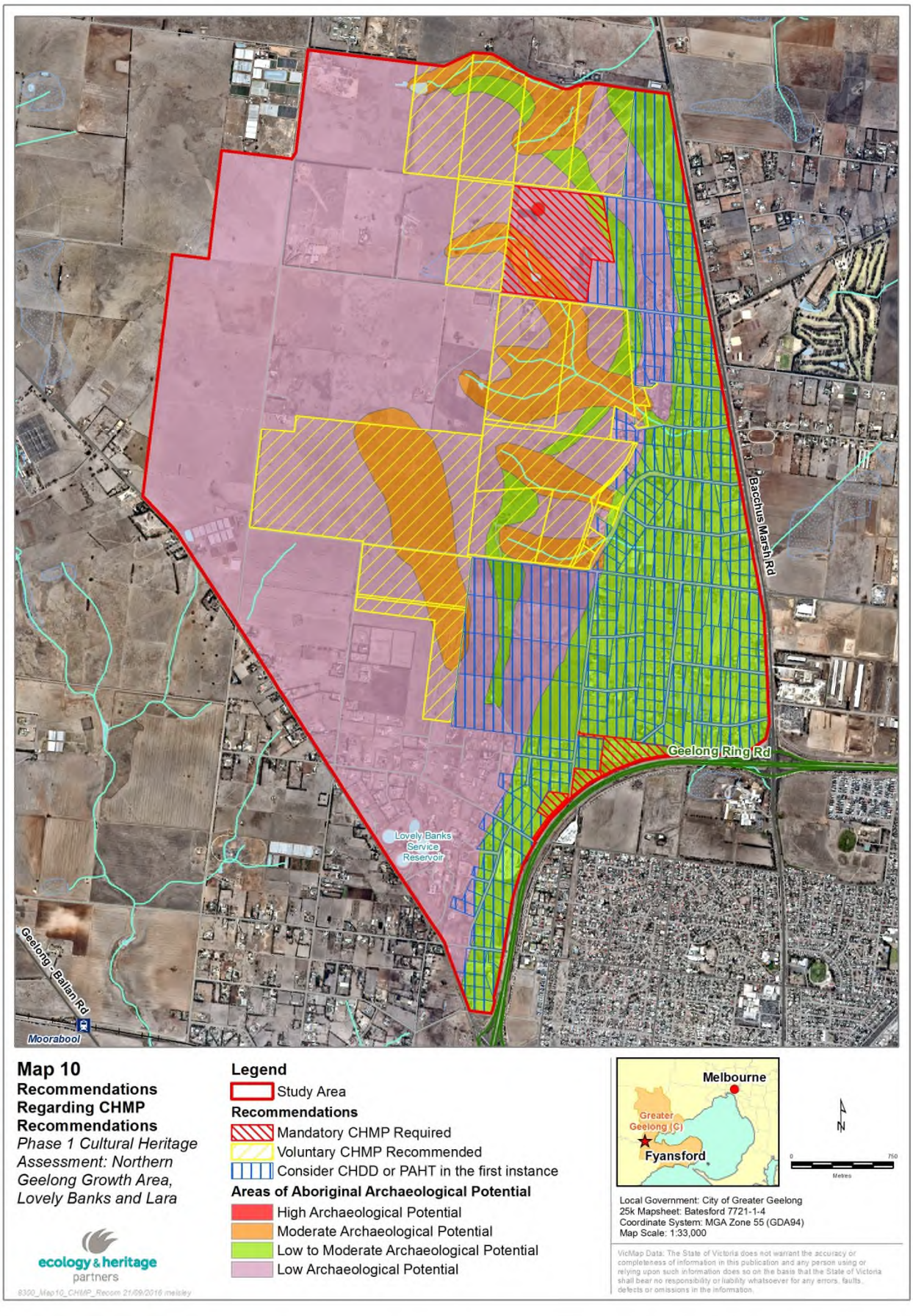
ecology & heritage partners
8350_Map09_PrelimArchPot 13/09/2016 meisley


Bacchus Marsh Rd
Geelong Ring Rd
Lovely Banks Service Reservoir
Geelong - Ballan Rd
Moorabool
Map 10
Recommendations Regarding CHMP Recommendations
Phase 1 Cultural Heritage Assessment: Northern Geelong Growth Area, Lovely Banks and Lara
ecology & heritage partners
8300_Map10_CHMP_Recom 21/09/2016 melsley
Legend
Study Area
Recommendations
Mandatory CHMP Required
Voluntary CHMP Recommended
Consider CHDD or PAHT in the first instance
Areas of Aboriginal Archaeological Potential
High Archaeological Potential
Moderate Archaeological Potential
Low to Moderate Archaeological Potential
Low Archaeological Potential
Melbourne
Greater Geelong (C)
Fyansford
N
0
750
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:33,000
VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

APPENDICES

Appendix 1: Heritage Legislation

A1.1 *Aboriginal Heritage Act 2006* (State)

The *Aboriginal Heritage Act 2006* protects Aboriginal cultural heritage in Victoria. A key part of the legislation is that Cultural Heritage Management Plans (CHMPs) are required to be prepared by Sponsors (the developer) and qualified Cultural Heritage Advisors in accordance with the Aboriginal Heritage Act 2006 and the accompanying *Aboriginal Heritage Regulations 2007*. A CHMP is the assessment of an area (known as an 'activity area') for Aboriginal cultural heritage values, the results of which form a report (the CHMP) which details the methodology of the assessment and sets out management recommendations and contingency measures to be undertaken before, during and after an activity (development) to manage and protect any Aboriginal cultural heritage present within the area examined.

The preparation of a CHMP is mandatory under the following circumstances:

- If the *Aboriginal Heritage Regulations 2007* require a CHMP to be prepared (s. 47);
- If the Minister of Aboriginal Affairs Victoria requires a CHMP to be prepared (s. 48); or
- If an Environmental Impact Statement (EIS) is required by the *Environment Effects Act 1978* (s. 49).

The *Aboriginal Heritage Regulations 2007* require a CHMP to be prepared:

- If all or part of the proposed activity is a 'high impact activity'; and
- If all or part of the activity area is an area of 'cultural heritage sensitivity'; and
- If all or part of the activity area has not been subject to 'significant ground disturbance'.

The preparation of a CHMP can also be undertaken voluntarily. Having an approved CHMP in place can reduce risk for a project during the construction phase by ensuring there are no substantial delays if sites happen to be found. Monitoring construction works is also rarely required if an approved CHMP is in place.

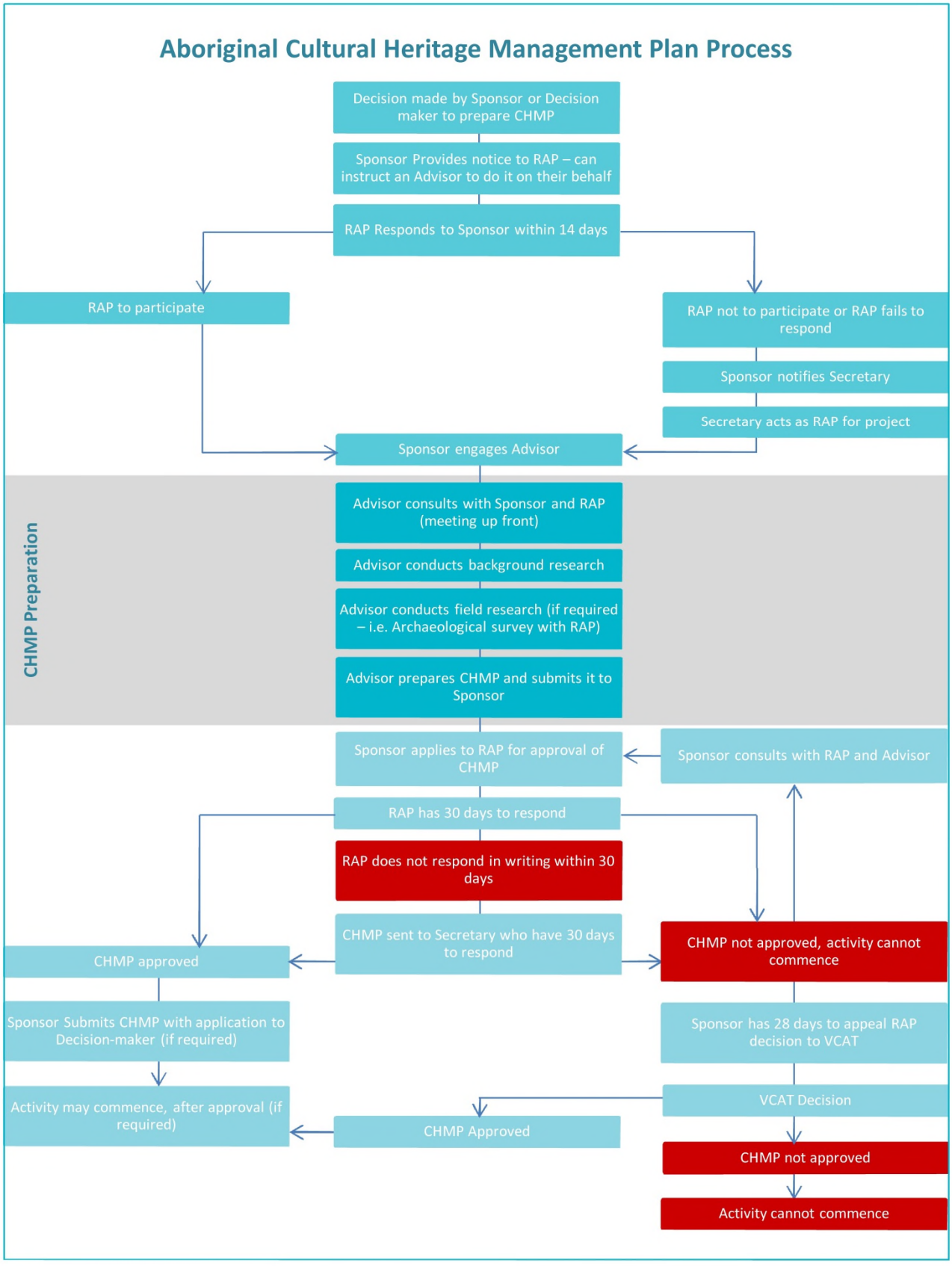
Approval of a CHMP is the responsibility of the Registered Aboriginal Party who evaluates the CHMP and then it is lodged with the Secretary of the Department of Planning and Community Development (DPCD) to take affect or, the Secretary of the DPCD (OAAV)[5]. They will be examining the CHMPs in detail with key points including:

- Addressing whether harm to heritage can be avoided or minimised;
- All assessments (including test excavations) must be completed before management decisions are formulated; and
- Survey and excavation must be in accordance with proper archaeological practice and supervised by a person appropriately qualified in archaeology.

There are three types of CHMPs that may be prepared (*The Guide to Preparing a CHMP* 2010). These are:

- Desktop; Standard; and Complex.

[5] In 2013, The DPCD was abolished and OAAV was transferred to the Department of the Premier and Cabinet (DPC). However the wording within the Act still retains reference to the Secretary of DPCD.


Aboriginal Cultural Heritage Management Plan Process
Decision made by Sponsor or Decision maker to prepare CHMP
Sponsor Provides notice to RAP – can instruct an Advisor to do it on their behalf
RAP Responds to Sponsor within 14 days
RAP to participate
RAP not to participate or RAP fails to respond
Sponsor notifies Secretary
Secretary acts as RAP for project
Sponsor engages Advisor
CHMP Preparation
Advisor consults with Sponsor and RAP (meeting up front)
Advisor conducts background research
Advisor conducts field research (if required – i.e. Archaeological survey with RAP)
Advisor prepares CHMP and submits it to Sponsor
Sponsor applies to RAP for approval of CHMP
Sponsor consults with RAP and Advisor
RAP has 30 days to respond
RAP does not respond in writing within 30 days
CHMP sent to Secretary who have 30 days to respond
CHMP approved
CHMP not approved, activity cannot commence
Sponsor Submits CHMP with application to Decision-maker (if required)
Sponsor has 28 days to appeal RAP decision to VCAT
Activity may commence, after approval (if required)
CHMP Approved
VCAT Decision
CHMP not approved
Activity cannot commence

A desktop CHMP is a literature review. If the results of the desktop show it is reasonably possible that Aboriginal cultural heritage could be present in the activity area, a standard assessment will be required.

A standard assessment involves a literature review and a ground survey of the activity area. Where the results of ground survey undertaken during a standard assessment have identified Aboriginal cultural heritage within the activity area, soil and sediment testing, using an auger no larger than 12 cm in diameter, may be used to assist in defining the nature and extent of the identified Aboriginal cultural heritage (Regulation 59[4]).

Where the results of ground survey undertaken during a standard assessment have identified Aboriginal cultural heritage within the activity area or areas which have the potential to contain Aboriginal cultural heritage subsurface, a complex assessment will be required. A complex assessment involves a literature review, a ground survey, and subsurface testing. Subsurface testing is the disturbance of all or part of the activity area or excavation of all or part of the activity area to uncover or discover evidence of Aboriginal cultural heritage (Regulation 62[1]).

It is strongly advised that for further information relating to heritage management (e.g. audits, stop orders, inspectors, forms, evaluation fees, status of RAPs and penalties for breaching the Act) Sponsors should access the OAAV website (http://www.aboriginalaffairs.vic.gov.au/).

The flow chart above also assists in explaining the process relating to CHMPs.

A1.2 *Native Title Act 1993* (Commonwealth)

Native Title describes the rights and interests of Aboriginal and Torres Strait Islander people in land and waters, according to their traditional laws and customs. In Australia, Aboriginal and Torres Strait Islander people's rights and interests in land were recognised in 1992 when the High Court delivered its historic judgment in the case of Mabo v the State of Queensland. This decision overturned the legal fiction that Australia upon colonisation was terra nullius (land belonging to no-one). It recognised for the first time that Indigenous Australians may continue to hold native title.

Native Title rights may include the possession, use and occupation of traditional country. In some areas, native title may be a right of access to the area. It can also be the right for native title holders to participate in decisions about how others use their traditional land and waters. Although the content of native title is to be determined according to the traditional laws and customs of the title holders, there are some common characteristics. It may be possessed by a community, group, or individual depending on the content of the traditional laws and customs. It is inalienable (that is, it cannot be sold or transferred) other than by surrender to the Crown or pursuant to traditional laws and customs. Native Title is a legal right that can be protected, where appropriate, by legal action.

Native Title may exist in areas where it has not been extinguished (removed) by an act of government. It will apply to Crown land but not to freehold land. It may exist in areas such as:

- Vacant (or unallocated) Crown land;
- Forests and beaches;
- National parks and public reserves;

- Some types of pastoral leases;
- Land held by government agencies;
- Land held for Aboriginal communities;
- Any other public or Crown lands; and/or
- Oceans, seas, reefs, lakes, rivers, creeks, swamps and other waters that are not privately owned.

Native Title cannot take away anyone else's valid rights, including owning a home, holding a pastoral lease or having a mining lease. Where native title rights and the rights of another person conflict the rights of the other person always prevail. When the public has the right to access places such as parks, recreation reserves and beaches, this right cannot be taken away by Native Title. Native Title does not give Indigenous Australians the right to veto any project. It does mean, however, that everyone's rights and interests in land and waters have to be taken into account.

Indigenous people can apply to have their native title rights recognised by Australian law by filing a native title application (native title claim) with the Federal Court. Applications are required to pass a test to gain certain rights over the area covered in the application. The Native Title Tribunal (NNTT) was established to administer application processes. Once applications are registered, the NNTT will notify other people about the application and will invite them to become involved so all parties can try to reach an agreement that respects everyone's rights and interests. If the parties cannot agree, the NNTT refers the application to the Federal Court and the parties argue their cases before the Court.

As a common law right, native title may exist over areas of Crown land or waters, irrespective of whether there are any native title claims or determinations in the area. Native Title will therefore be a necessary consideration when Government is proposing or permitting any activity on or relating to Crown land that may affect native title[6].

A1.3 *Planning and Environment Act 1987* (State)

All municipalities in Victoria are covered by land use planning controls which are prepared and administered by State and local government authorities. The legislation governing such controls is the *Planning and Environment Act 1987*. Places of significance to a locality can be listed on a local planning scheme and protected by a Heritage Overlay (or other overlay where appropriate). Places of Aboriginal cultural heritage significance are not often included on local government planning schemes.

A1.4 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a national framework for the protection of heritage and the environment and the conservation of biodiversity. The EPBC Act is administered by the Australian Government Department of the Environment and Energy (DoEE). The Australian Heritage Council assesses whether or not a nominated place is appropriate for listing on either the National or Commonwealth Heritage Lists and makes a recommendation to the Minister on that basis.

[6] The information in this section was taken from the Department of Sustainability and Environment, Fact Sheet on Native Title, 2008

The Minister for the Environment and Energy makes the final decision on listing. DoEE also administers the Register of the National Estate, although this register no longer has statutory force.

The objectives of the EPBC Act are:

- To provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;
- To promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;
- To promote the conservation of biodiversity;
- To provide for the protection and conservation of heritage;
- To promote a cooperative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples;
- To assist in the cooperative implementation of Australia's international environmental responsibilities;
- To recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and
- To promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

A1.5 *Coroners Act 2008* (State)

The Victorian *Coroners Act 2008* requires the reporting of certain deaths and the investigation of certain deaths and fires in Victoria by coroners to contribute to the reduction of preventable deaths. Of most relevance to heritage is the requirement for any “reportable death” to be reported to the police (s. 12[1]). The *Coroners Act 2008* requires that the discovery of human remains in Victoria (s. 4[1]) of a person whose identity is unknown (s. 4[g]) must be reported to the police.

Appendix 2: Glossary

Items highlighted in ***bold italics*** in the definition are defined elsewhere in the glossary.

Acronym	Description
Aboriginal Cultural Heritage Likelihood	An area assessed by a Cultural Heritage Advisor as having potential for containing either surface or subsurface Aboriginal archaeological deposits. This term is used in this report to differentiate between *legislated* ***areas of cultural heritage sensitivity*** and areas considered by an archaeologist to be sensitive.
Aboriginal Place	An Aboriginal cultural heritage site registered on the ***VAHR***, cf. ***Aboriginal Site***.
Aboriginal Site	A location containing Aboriginal cultural heritage, e.g. ***Artefact scatter***, ***isolated artefact***, ***scarred tree***, ***shell midden***, whether or not the site is registered in the ***VAHR***, cf. ***Aboriginal Place***.
Angular Fragment	An artefact which has technologically diagnostic features but has no discernible ventral or dorsal surface and hence is unidentifiable as either a flake or a core
Area Of Cultural Heritage Sensitivity	An area specified as an area of cultural heritage sensitivity in Division 3 or Division 4 of Part 2 of the *Aboriginal Heritage Regulations 2007*.
Artefact Scatter	Stone artefact scatters consist of more than one stone artefact. Activities associated with this site type include stone tool production, hunting and gathering or domestic sites associated with campsites. Stone artefacts may be flakes of stone, cores (flakes are removed from the stone cores) or tools. Some scatters may also contain other material such as charcoal, bone, shell and ochre.
Assemblage	The name given to encompass the entire collection of artefacts recovered by archaeologists, invariably classified into diagnostic items used to describe the material culture.
Backed	When one margin of a flake is retouched at a steep angle, and that margin is opposite a sharp edge. The steep margin is formed by bi-polar or hammer and anvil knapping. Also used to describe artefacts with backing, e.g. Backed artefact.
Backed Artefact	A class of artefact employed by archaeologists to describe artefacts which are backed. Sometimes divided into elouera, bondi point, microlith and geometric.
Bipolar	A flaking technique where the object to be reduced is rested on an anvil and struck. This process is identified by flakes with platform angles close to 90 degrees as well as apparent initiation from both ends. Some crushing may also be visible.
Burials	Aboriginal communities strongly associate burial sites with a connection to country and are opposed to disturbance of burials or their associated sites. General considerations for the presence of burial sites are the suitability of Subsurface deposits for digging purposes; with soft soil and sand being the most likely. They are more likely near water courses or in dunes near old lake beds or near the coast. Burials are often located near other sites such as oven mounds, ***shell middens*** or ***artefact scatters***.
Chert	A cryptocrystalline siliceous sedimentary stone.
CHMP	Cultural Heritage Management Plan. A plan prepared under the *Aboriginal Heritage Act 2006*.
Core	An artefact which has technologically diagnostic features. Generally this class of artefact has only negative scars from flake removal, and thus no ventral surface, however, for the purposes of this research core has been employed to encompass those artefacts which were technically flakes but served the function of a core (ie. The provider of flakes).
Cortex	The weathered outer portion of a stone, often somewhat discoloured and coarser compared with the unweathered raw material.
Decortications	The process of removing cortex from a stone (generally by flaking).

Acronym	Description
Deep Ripping	The ploughing of soil using a ripper or subsoil cultivation tool to a depth of 60 cm or more (see ***significant ground disturbance***).
DEPI	**Department of Environment and Primary Industries.** The Victorian State Government department responsible for management of natural heritage in Victoria.
DoE	**Department of the Environment**. The Commonwealth Government department responsible for management of heritage sites on the World, National or Commonwealth Heritage lists.
DPC	**Department of the Premier and Cabinet**. The Victorian State Government department, of which ***OAAV*** is a part, responsible for management of Aboriginal cultural heritage in Victoria.
DTPLI	**Department of Transport, Planning and Local Infrastructure**. The Victorian State Government department, of which ***HV*** is a part, responsible for management of historical heritage in Victoria.
EPBC Act	**Environment Protection and Biodiversity Conservation Act 1999** (Commonwealth)
Fabric (Heritage)	Any physical element, feature, material or finish that is associated with the heritage values in all or part of a structure, place, object, feature or site. The original heritage fabric is any such physical element that was an integral part of the original heritage site.
Feature (Archaeological)	A collection of one or more contexts representing some human non-portable activity that generally has a vertical characteristic to it in relation to site stratigraphy.
Flake	An artefact which has technologically diagnostic features and a ventral surface.
High Impact Activity	An activity specified as a high impact activity in Division 5 of Part 2 of the *Aboriginal Heritage Regulations 2007*.
Heritage Place	A *registered* historical site listed on a heritage planning instrument that affords statutory protection to the site.
Heritage Values	The values of a heritage site that relate to its historical, social, cultural, spiritual, architectural, archaeological or technological significance.
Historical Heritage Likelihood	An area assessed by a Heritage Advisor as having potential for containing either surface or subsurface historical archaeological deposits or fabric.
Historical Site	An historical site, whether or not recorded in the ***VHR***, ***VHI*** or other historical site database (cf. ***Heritage Place***).
HHA	**Historical Heritage Assessment**. An assessment of the historical heritage values of a defined study area by a qualified heritage consultant.
HO	**Heritage Overlay**. A list of Heritage Places of local significance with statutory protection under a local government planning scheme.
HV	**Heritage Victoria**. A division of ***DTPLI*** responsible for management of historical heritage in Victoria.
Isolated Finds Or Artefacts	Isolated finds refer to a single artefact. These artefacts may have been dropped or discarded by its owner once it was of no use. This site type can also be indicative of further subsurface archaeological deposits. These site types can be found anywhere within the landscape, however, they are more likely to occur within contexts with the same favourable characteristics for stone artefact scatter sites.
LDAD	**Low Density Artefact Distribution**. A category of ***Aboriginal Place*** type in the ***VAHR*** comprising single stone artefacts and/or distributions of multiple stone artefacts at concentrations of less than 10 artefacts in a 10 x 10 m area.
Manuport	An object which has been carried by humans to the site.

Acronym	Description
MPA	**Metropolitan Planning Authority**. Agency responsible for planning and coordinating infrastructure development in Melbourne's growth areas: Casey, Cardinia, Hume, Melton, Mitchell, Whittlesea and Wyndham.
NHL	**National Heritage List**. A register of heritage places, under the EPBC Act, of heritage places of national significance.
OAAV	**Office of Aboriginal Affairs Victoria**. A division of ***DPC*** responsible for management of Aboriginal cultural heritage in Victoria.
Oriented Length	Dimension measured according to the following criteria: The length of the flake from the platform, at 90˚ to force indicators such as ring-crack, bulb of percussion, force ripples and striations, to the opposing end. Where there were an insufficient number of features present to take this measurement, such as when the flake was broken, this variable was not recorded (sometimes referred to as percussion length).
Oriented Thickness	Dimension measured at 90˚and bisecting the oriented width dimension. This was done from the ventral surface to the dorsal surface (sometimes referred to as percussion thickness).
Oriented Width	Dimension measured at 90˚ and bisecting the oriented length dimension. This was done from one margin to the other. As this measurement and oriented thickness, both rely on oriented length, these were not recorded where the oriented length was not recorded (sometimes referred to as percussion width).
Procurement	The process of obtaining raw material for reduction.
PSP	**Precinct Structure Plan**. A master plan to guide development in a specified section of one of Melbourne's growth areas (cf. ***MPA***).
Quarries	Stone quarries were used to procure the raw material for making stone tools. Quarries are rocky outcrops that usually have evidence of scars from flaking, crushing and battering the rock. There may be identifiable artefacts near or within the site such as unfinished tools, hammer stones, anvils and grinding stones.
Quartz	A crystalline form of silica.
RAP	**Registered Aboriginal Party**. An Aboriginal organisation with responsibilities relating to the management of Aboriginal cultural heritage for a specified area of Victoria under the *Aboriginal Heritage Act 2006*.
Raw Material	The kind of stone the artefacts were manufactured from.
Reduction	The process of removing stone flakes from another piece of stone. Generally this is performed by striking (hard hammer percussion) one rock with another to remove a flake.
Registered Cultural Heritage Place	An Aboriginal site recorded in the ***VAHR***, cf. ***Aboriginal site***.
Retouch	Retouch is when a ***flake*** is removed after the manufacture of the original flake. This sequence can be observed when a flake scar is present and encroaches over the ventral surface and thus must have been made after the initial flake removal. Recorded whether retouch was absent or present on the artefact.
RNE	**Register of the National Estate**. A commonwealth-managed register of heritage assets; as of 2012 the RNE no longer provides statutory protection to heritage places.
Rock Shelter	A concave area in a cliff where the cliff overhangs; or a concave area in a tor where the tor overhangs; or a shallow cave, where the height of the concave area is generally greater than its depth.

Acronym	Description
Scarred Trees	It is known that the wood and bark of trees have been used for a variety of purposes, such as carrying implements, shield or canoes. The removal of this raw material from a tree produces a 'scar'. The identification of a scar associated with aboriginal custom as opposed to natural scarring can be difficult. The scar should be of a certain size and shape to be identifiable with its product; the tree should also be mature in age, from a time that aboriginal people were still active in the area.
Significant Ground Disturbance	Disturbance of 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 other than ***deep ripping***.
Silcrete	A silicified sedimentary stone, often with fine inclusions or grains in a cryptocrystalline matrix. Because of the nature of the grains in silcrete (a hindrance in knapping/flaking predictability) the stone is sometimes heat treated. This exposure to heat can be identified by the presence of pot-lidding as well as a 'lustre' to the stone which is otherwise absent in the stones' natural state. Exposure to sufficient heat homogenises the stone matrix and improves the knapping (flake path) predictive potential (Crabtree & Butler 1964; Mandeville and Flenniken 1974; Purdy 1974; Domanski and Webb 1992; Hiscock 1993; Domanski *et al*. 1994). Similar to indurated mudstone, it has also been demonstrated that silcrete from the hunter valley often turns a red colour after being exposed to heat (Rowney 1992; Mercieca 2000).
Stone Arrangements	Stone arrangements are places where Aboriginal people have deliberately positioned stones to form shapes or patterns. They are often known to have ceremonial significance. They can be found where there are many boulders, such as volcanic areas and are often large in size, measuring over five metres in width.
Taphonomy	The study of the processes (both natural and cultural) which affect the deposition and preservation of both the artefacts and the site itself.
Technology	A form of artefact analysis which is based upon the knapping/ manufacturing process, commonly used to subsequently infer behaviour patterns, cultural-selection and responses to raw material or the environment.
Thumbnail scraper	A conceptual class of artefact employed to describe small rounded retouched flakes with steep margins (based on the classification by Mulvaney and Kamminga 1999).
VAHR	**Victorian Aboriginal Heritage Register**. A register of Aboriginal cultural heritage places maintained by ***OAAV***.
VHI	**Victorian Heritage Inventory**. A register of places and objects in Victoria identified as historical archaeological sites, areas or relics, and all private collections of artefacts, maintained by ***HV***. Sites listed on the VHI are not of State significance but are usually of regional or local significance. Listing on the ***VHR*** provides statutory protection for that a site, except in the case where a site has been "D-listed".
VHR	**Victorian Heritage Register**. A register of the State's most significant heritage places and objects, maintained by ***HV***. Listing on the VHR provides statutory protection for that a site.
WHL	**World Heritage List**. A register of heritage places, under the EPBC Act, of heritage places of international significance.

REFERENCES

Australia International Council of Monuments and Sites (ICOMOS), 2013a. The Burra Charter. The Australia ICOMOS Charter for Places of Cultural Significance. Australia ICOMOS.

Australia ICOMOS 2013b. The Burra Charter and Archaeological Practice. http://australia.icomos.org/wp-content/uploads/Practice-Note_The-Burra-Charter-and-Archaeological-Practice.pdf.

Amorosi, L., 1998. W.L. Koenig Collection; Documentation of Stone Artefacts from a private Collection. Unpublished report for Aboriginal Affairs Victoria.

AV, 2016a. *Aboriginal Cultural Heritage Register and Information Services* (ACHRIS). Office of Aboriginal Affairs Victoria online Aboriginal Heritage Register, accessed 15 August 2016.

AV, 2016b. http://www.dpcd.vic.gov.au/indigenous/publications-and-research/aboriginal-cultural-heritage-mini-posters, accessed 15 August 2016.

Arkley, L., 2000. *The Hated Protector: the Story of Charles Wightman Sievwright, Protector of Aborigines 1839-42*. Orbit Press, Mentone.

Barwick, D. E., 1984. Mapping the Past: An Atlas of Victorian Clans 1835-1904. *Aboriginal History* 8: 100-131.

Barwick, D.E., 1998. *Rebellion in Coranderrk*. Capital Printing, Canberra.

Barwon Bluff Marine Sanctuary, 2012. http://www.barwonbluff.com.au/koorie/Game.htm, accessed on 9 May 2012.

Black, C. F. 1984. Melbourne Area- District 1. Review of the history of the Aboriginal people in district 1. Unpublished report to the Land Conservation Council.

Bonwick, J. (ed. Anderson, H.), 1983. *Port Phillip Settlement*. North Melbourne, Red Rooster Press.

Bowdler, S., 1981. Unconsidered trifles? Cultural resource management, environmental impact statements and archaeological research in New South Wales. *Australian Archaeology* 12: 123-133.

Bowdler, S., 1984. Archaeological significance as a mutable quality. In S. Sullivan and S. Bowdler (eds.) *Site Surveys and Significance Assessment in Australian Archaeology: Proceedings of the 1981 Springwood Conference on Australian Prehistory*, pp. 1-9. Department of Prehistory, Research School of Pacific Studies, ANU, Canberra.

Brown, S., 2008. Mute or Mutable? Archaeological Significance, Research and Cultural Heritage Management in Australia. *Australian Archaeology* 67: 19-30.

Brownhill, W.R., 1955. *The History of Geelong and Corio Bay*. Geelong Advertiser, Geelong.

Broome, R., 2005. *Aboriginal Victorians: A History since 1800*. Allen and Unwin, NSW.

Bullers, R., 2016. Northern Geelong Growth Area, Lovely Banks and Lara, Victoria: Phase 1 Post-Contact Heritage Assessment. Unpublished report to the Lovely Banks Landowner Consortium.

Bureau of Meteorology (BOM), 2016. http://www.bom.gov.au, accessed 15 August 2016.

Burke, H. and Smith, C., 2004. *The Archaeologists Field Handbook*. Allen & Unwin, Crows Nest, New South Wales.

Byrne, D., Brayshaw H. and Ireland, T., 2001. *Social Significance: a discussion paper*. National Parks and Wildlife Services NSW, Research Unit, Cultural Heritage Division, Hurstville.

Caldere, D. and Goff, D., 1991. *Aboriginal Reserves and Missions in Victoria*. Department of Conservation and Environment, Melbourne.

Cannon, M. (ed.), 1982. *Historical records of Victoria, foundation series, Vol .2A, The Aborigines of Port Phillip 1835-1839*. Victorian Government Printing Office, Melbourne.

Clark, I. D., 1990. *Aboriginal languages and Clans: An Historical Atlas of Western and Central Victoria, 1800-1900, Number 37*. Department of Geography and Environmental Science, Monash University, Melbourne, Victoria.

Crabtree, D. E. and Butler, B. R. 1964. Notes on experiments in flint knapping: 1. Heat treatment of silica minerals. *Tebiwa* **7**: 1–6.

Culvenor, C., 1992. *The Boundaries of the Mount Franklin Aboriginal Reserve, Daylesford*. Jim Crow Press, Melbourne.

Curr, E.M., 1965 (1883), Recollections of squatting in Victoria, then called the Port Phillip District (from 1841 to 1851). Melbourne University Press, London.

Dawson, J., 1881. *Australian Aborigines: the language and customs of several tribes of Aborigines in the Western District of Victoria, Australia*, facsimile edn., 1981, Australian Institute of Aboriginal Studies, Canberra.

DEDJTR, 2016. *Geomorphological Framework*. http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/landform_geomorphological framework, accessed 15 August 2016.

DELWP, 2016a. *Biodiversity Interactive Maps* (*Bioregions)*. http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim, accessed 15 August 2016.

DELWP, 2016b. *Planning Schemes*. http://www.dse.vic.gov.au/planningschemes, accessed 15 August 2016.

Domanski, M. and Webb, J. A., 1992. Effect of heat treatment on siliceous rocks used in prehistoric lithic technology. *Journal of Archaeological Science*, **19**: 601–614.

Domanski, M., Webb, J. A. and Boland, J., 1994. Mechanical properties of stone artefact materials and the effect of heat treatment, *Archaeometry*, **36:** 177–208.

DSE, 2004. EVC/Bioregion Benchmark for Vegetation Quality Assessment: Victorian Volcanic Plain Bioregion: EVC 132_62: Lighter-soils Plains Grassland. Department of Sustainability and Environment, Melbourne, Victoria.

du Cros, H and Rhodes, D., 1998. Aboriginal Archaeological Sensitivities Study of the Waterways and Floodplains of Greater Melbourne. Unpublished report for Melbourne Water Corporation.

Feldman, R., Matthews, D., Albrecht, M. and Chandler, J., 2010. Melbourne Geelong Interconnection Project Parts: Cultural Heritage Management Plan #11340. Unpublished report for Barwon Region Water Corporation.

Flood, J., 1980. *The Moth Hunters: Aboriginal prehistory of the Australian Alps*. Australian Institute of Aboriginal Studies, Canberra.

Gott, J. and Conran, B., 1991. *Victorian Koorie Plants: some plants used by Victorian Koories for food, fibre, medicines and implements*. Yangennanock Women's Group.

Hewitt, G. and Allen, J., 2010. Site Disturbance and Archaeological Integrity: the Case of Bend Road, an Open Site in Melbourne Spanning Pre-LGM Pleistocene and Late Holocene Periods. *Australian Archaeology*, 70: 1-16.

Hewitt, G. and De Lange, J., 2007. Bend Road 2 Phases 1 to 4; Report on Bend Road Archaeological Investigations. Unpublished report for Thiess John Holland by Archaeology Program La Trobe University, Bundoora, Victoria.

Hiscock, P., 1993, Bondaian technology in the Hunter Valley, New South Wales, *Archaeology in Oceania* 28: 65–76.

Howitt, A.W., 2001. *The Native Tribes of South-East Australia*. Aboriginal Studies Press, Canberra, Australian Capital Territory.

Lambeck, K. and Chappell, J., 2001. Sea Level Change Through the Last Glacial Cycle. Science 292: 679-686.

Mandeville, M. D. and Flenniken, J. J., 1974. A comparison of the flaking qualities of Nehawka chert before and after thermal pretreatment. *Plains Anthropologist* 19: 146–148.

Markgraf V., J.R. Dodson, A.P. Kershaw, M. S. McGlone and Nichols, N.. 1992. Evolution of late Pleistocene and Holocene climates in the circum-south Pacific land areas. *Climate Dynamics* 6: 193-211.

Marshall, B., 2002. The Geelong Ring Road Strategic Study. Unpublished report to VicRoads.

Marshall, B., 2006. An Archaeological Survey at Plantation Road, Corio. Unpublished report for TGM Group Pty Ltd.

Marshall, B. and Schell, P., 1998. Coast Action/Coast Care 1998/99 Aboriginal Archaeological Desktop Study, Victoria. Unpublished report prepared for DNRE Coast Division.

Marshall, B., Paynter, N. and Webb, C., 2004. Geelong Bypass Cultural Heritage Investigation Section 1 – Corio Interchange to the Midland Highway. Unpublished report to VicRoads by TerraCulture.

Massola, A. 1971. *The Aborigines of South-east Australia as They Were*. William Heinemann Australia Pty. Ltd., Melbourne.

McBryde, I., 1979. Petrology and prehistory: Lithic evidence for exploitation of stone resources and exchange systems in Australia, with an Appendix on the petrology of the greenstone quarries and their products by Alan Watchman. In T. Clough and W. Cummins (eds), *Stone Axe Studies: Archaeological, Petrological, Experimental and Ethnographic*, pp.113-126.Council for British Archaeology, London.

Mercieca, A., 2000. Burnt and broken: an experimental study of heat fracturing in silcrete. *Australian Archaeology* 51, 40–47.

Mills, K., Gell, P., Hesse, P., Jones, R., Kershaw, P., Drysdale, R. and McDonald, J., 2013. Paleoclimate studies and natural-resource management in the Murray-Darling Basin I: past, present and future climates. *Australian Journal of Earth Sciences* (2013): 1-14.

Mulvaney, D.J., 1964. Prehistory of the Basalt Plain. *Royal Society of Victoria* 77 (2): 427-432.

Mulvaney, J. and Kamminga, J., 1999. *The Prehistory of Australia*. Sydney, Allen and Unwin.

Nash, D., 2004. *Aboriginal Plant Use in south-eastern Australia*. Australian National Botanic Gardens, Canberra.

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

Peel, L.J., 1974. *Rural Industry in the Port Phillip Region 1835-1880*. Melbourne University Press, Melbourne.

Pescott, J., 1985. *South Barwon 1857-1985*. City of South Barwon, Victoria.

Pickett, E. J., Harrison, S.P., Hope, G., Harle, K., Dodson, J.R., Kershaw, A.P., Prentice, I.C., Backhouse, J., Colhoun, E.A., D'Costa, D., Flenley, J., Grindrod, J., Haberle, S., Hassell, C., Kenyon, C., Macphail, M., Martin, H., Martin, A.H., McKenzie, M., Newsome, J.C., Penny, D., Powell, J., Raine, J.I., Southern, W., Stevenson, J., Sutra, J-P., Thomas, I., van der Kaars, S., and Ward, J., 2004. Pollen-based reconstructions of biome distributions for Australia, Southeast Asia and the Pacific (SEAPAC region) at 0, 6000 and 18,000 14C yr BP. *Journal of Biogeography* 31: 1381-1444.

Presland, G. (ed.), 1977. Journals of George Augustus Robinson March – May 1841. *Records of the Victorian Archaeological Survey* 6.

Presland, G., (ed.), 1980. Journals of G. A. Robinson May to August 1841. *Records of the Victorian Archaeological Survey* 11.

Presland, G., 1981. An Archaeological Survey of the Route of the Sydenham to Portland Transmission Line. Unpublished report to the State Electricity Commission of Victoria by Victoria Archaeological Survey.

Presland, G., 2010. *First People: The Eastern Kulin of Melbourne, Port Phillip and Central Victo*ria. Museum Victoria, Melbourne.

Purdy, B. A., 1974. Investigations concerning the thermal alteration of silica minerals: an archaeological approach. *Tebiwa* 17: 37–66.

Robinson, G.A., 1846. Letterbook of the Port Phillip Protectorate. A7046-8 MLS.

Rowe, D. & L. Huddle, 1998-2000. City of Greater Geelong Outer Areas Heritage Study Stage 2. The Report. Vol. 1. Unpublished report to the City Of Greater Geelong by Authentic Heritage Services.

Rowney, M., 1992. Heat treatment on the rocks: A study of heat treatment detection methods. Unpublished B.A. (Hons) thesis, Department of Prehistoric and Historical Archaeology. University of Sydney, Sydney.

Shaw, A.G.L., 1996. *A history of the Port Phillip District. Victoria before separation*. Miegunyah Press, Melbourne University Press, Carlton South.

Spreadborough, R. and Anderson, H., 1983. *Victorian Squatters*. Red Rooster Press, Ascot Vale, Vic.

Story, A., 1991. Preliminary Archaeological Assessment of Potential Solid Waste Disposal Sites. Unpublished report to the Shire of Corio.

Strahler, A.N., 1957. Quantitative Analysis of Watershed Geomorphology. *American Geophysical union Transactions* 38(6): 913-920.

Thom, B., Hesp, B. and Bryant, E., 1994. Last glacial 'coastal' dunes in Eastern Australia and implications for landscape stability during the Last Glacial Maximum. *Palaeogeography, Palaeoclimatology, Palaeoecology* 111: 229-248.

Thompson, K., 1985. *A History of the Aboriginal People of East Gippsland*. Land Conservation Council, Victoria.

Woolmington, J. 1973. *Aborigines in Colonial Society, 1788-1850: From "Noble Savage" To "Rural Pest"*. University of New England, Armidale, NSW.

Wynd, I. 1992. *Barabool: Land of the Magpie*. Barabool Shire, Torquay.

Zola, N. and Gott, B., 1992. *Koorie Plants, Koorie People: traditional Aboriginal food, fibre and healing plants of Victoria*. Koorie Heritage Trust, Melbourne.

Maps and Images

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