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Final Report

Western Geelong Growth Area, Batesford, Fyansford, Hamlyn Heights, Moorabool and Bell Post Hill, Victoria: Phase 1 Aboriginal Heritage Assessment

Client

Golder Associates Pty Ltd and Ramsey Property Group

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- Wathaurung Aboriginal Corporation for cultural heritage information.
- Aboriginal Victoria for information regarding Aboriginal Places.

Cover Photo: Looking east over the Batesford Quarry pit towards the Geelong Cement silos at Fyansford (Photo by Ecology and Heritage Partners Pty Ltd)

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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
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 Golder Associates Pty Ltd (on behalf of Adelaide-Brighton Cement and the McCann Family) and Ramsey Property Group to prepare a Phase 1 (Desktop) Aboriginal Heritage Assessment (AHA) for the Western Geelong Growth Area (WGGA) in Batesford, Fyansford, Hamlyn Heights, Moorabool and Bell Post Hill, 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 Western Geelong Growth Area. It is approximately 3,240 ha in size and is bounded by the Geelong Ballarat Railway line to the north, the Geelong Ring Road to the east, the Barwon River to the south, and Merrawarp Road, Friend-in-Hand Road, Dog Rocks Road and the Moorabool River 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 112 Aboriginal Places previously recorded within a 1 km search buffer around the study area (Map 8). Of these, a total of 33 previously registered Aboriginal places were 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. To a lesser extent, freshwater shell middens may occur on the floodplains and even on the lip of the escarpments overlooking the rivers.

Field Inspection

The field inspection was undertaken on 18 August 2016 by Rick Bullers (Senior Archaeologist/Cultural Heritage Advisor).

Aboriginal Cultural Heritage

There are a total of 33 previously registered Aboriginal Places within the study area (Map 9). The site types in the study area are overwhelmingly made up of stone artefact sites (either artefacts scatters, isolated artefacts or Low Density Artefact Distributions [LDADs]), accounting for 32 Aboriginal places (94%) and 64 of the individual components (97%). 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. Refer to Section 4 for a full description of registered sites.

The majority of sites are located on floodplain and terraces associated with the Moorabool River north east and east of the Batesford Quarry. Six other sites were previously registered, but have now been merged into newly registered larger sites.

One site, an Aboriginal greenstone quarry is located immediately west of the Batesford Quarry in Dog Rocks Reserve. The site comprises six separate components, four of which have been covered by the quarry overburden. The PGC for this site (VAHR 7721-0001) is located well to the south of the Moorabool River Channel and appears to be taken at one of the smaller components of the site that have been covered by the quarry overburden. The site is also registered on the Heritage Overlay of the Greater Geelong Planning Scheme (HO370); although it has a relatively large curtilage, the HO boundary appears only to cover the main greenstone concentration. The other site type is an Aboriginal historical place located on the escarpment adjacent the Geelong Ring Road. The site card for the site states that the site is now destroyed.

A preliminary Aboriginal site sensitivity map was prepared (Map 10).

Sensitivity Mapping

Following the desktop assessment, a preliminary Aboriginal site sensitivity map was prepared as follows (Map 10):

High Potential

Three areas of high sensitivity was identified:

- Moorabool River Floodplain;
- Barwon Rover floodplain (northern side);
- The margins of Cowies Creek and its tributary.

Moderate Potential

A total of five areas are considered to have medium sensitivity:

- The Crest of the escarpment overlooking the Barwon River (northern side);
- The small hill crest north of the Barwon River overlooking the floodplain;

- The margins of two small waterways north of the Hamilton Highway and Fyansford-Gheringhap Road;
- The crests of the escarpment overlooking the Moorabool River; and
- A small hill/knoll between Batesford and the Moorabool River to the south.

Low Potential

All other areas in the study area are considered to have low sensitivity. It is important to note, however, that Aboriginal cultural heritage may occur anywhere in the landscape, and may be the result of transitory and/or ephemeral practices such as hunting activity and/or transiting between areas of higher resource availability. 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:

- The Batesford Quarry Pit and associated production areas;
- The two extensive Batesford Quarry overburden dumps;
- Artificial diversions of the Moorabool River;
- Farmhouses and farm complexes;
- Farm/stock management infrastructure, e.g. dams, sheds, etc.;
- Higher density residential blocks in Batesford and Bell Post Hill;
- Commercial infrastructure, e.g. the timber production yards south of the Hamilton Highway and the roadhouse on the Midland Highway;
- Recreation infrastructure, e.g. sporting fields at Bell Post Hill;
- Spiritual centres, e.g. the Greek Orthodox Monastery and the Macedonian centre at Bell Post Hill; and
- 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 11) 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 Significant Aboriginal Cultural Heritage

The results of this desktop assessment and the limited number of previous assessments indicate that the floodplain of the Moorabool and Barwon Rivers and the margins of Cowies Creek are highly sensitive for the presence of Aboriginal cultural heritage. Planning within the Framework Plan should aim to reserve the floodplain landform into open space networks, riparian corridors, conservation areas or biolinks as a means of minimising or avoiding impacts to Aboriginal cultural heritage, and to minimise the requirement for unnecessary complex assessment.

Pending the preparation of CHMP for activity areas that contain Aboriginal cultural heritage sites, it is an offence under the *Aboriginal Heritage Act 2006* to knowingly harm those sites.

Recommendation 2: Framework Planning – CHMPs Currently in Preparation

One area of land east of Batesford Quarry is currently the subject of a CHMP that has already been commissioned (CHMP #124999; Robb et al. 2016; see Map 11). However, the activity described for the CHMP is for a Quarry extension (extractive industry) and does not cover a residential subdivision type activity. 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. However, the land within the previous CHMP activity area has been comprehensively assessed for Aboriginal cultural heritage and therefore no further Aboriginal archaeological assessment of that area is required. 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.

Recommendation 3: Framework Planning – Previously Prepared CHMPs

One area of land east along Cowies Creek is the subject of a previous CHMP (#11980; MacCulloch 2012) that has already been approved (Map 11). The activity described for the CHMP is for a low density residential development consisting of nine allotments. 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 4: Requirement for Mandatory Cultural Heritage Management Plan

Many individual land parcels contain legislated areas of cultural heritage sensitivity defined under the *Aboriginal Heritage Act 2006*, either within 50 m of the boundary of a registered Aboriginal Place (Regulation [r.]22) and/or within 200 m of a named waterway (r.23). Due to the size of land parcels over much of the study area, many parcels include 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, etc.)(r.43).

An overview of existing land parcels that may be subject to mandatory CHMP is shown in Map 11.

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), a Notification of Intent to Prepare a CHMP must be provided prior to any CHMP works proceeding.

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 5: Aboriginal Places – Site Extent Testing

Notwithstanding the recommendation to avoid testing in reserved areas or areas that will not be disturbed (Recommendation 1), any complex assessment in an activity area that contains one or more of the Aboriginal Places 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 11), 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 11). Land parcels and road reserves in the study area that do not occur within an area of cultural heritage sensitivity under the Regulations do not require a mandatory CHMP.

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 Golder Associates Pty Ltd, on behalf of the Adelaide-Brighton Cement/McCann Family Joint Venture, and Ramsey Property Group (hereafter referred to as 'the Consortium') for a Phase 1 cultural heritage assessment of parcels of land at Batesford, Fyansford, Hamlyn Heights, Moorabool and Bell Post Hill, Victoria, for the proposed Western 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 WGGA. 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 will be 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 WGGA, is approximately 3,240 ha in size and is bounded by the Geelong Ballarat Railway line to the north, the Geelong Ring Road to the east, the Barwon River to the south, and Merrawarp Road, Friend-in-Hand Road, Dog Rocks Road and the Moorabool River to the west. The land parcels of the study area are shown in Map 2.

The study area is characterised primarily by the deeply incised valley of the Moorabool River, which cuts from north west to south east through the central section of the study area, and also by the Barwon River valley which passes along the southern boundary. The land is largely open, treeless pasture, primarily used for pastoral and cropping activities. Both the Moorabool and Barwon Rivers are recognised areas of cultural heritage sensitivity under the *Aboriginal Heritage Regulations 2007*.

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 Farming Zone (FZ), mostly in the southern and northern thirds of the study area and along the eastern boundary. The second largest area is Special Use Zone (SUZ) in the north eastern section (for Covenant College school) and the centre of the study area where the Batesford Quarry is located (excluding the course of the Moorabool River and its diversion channel, which is zoned Public Conservation and Recreation Zone [PCRZ]). Other zones include Rural Conservation Zone (RCZ) at the Dog Rocks Reserve, Town Zone (TZ) in the Batesford township, Rural Land Zone (RLZ) immediately east of Batesford and in the north eastern corner at Bell Post Hill, and Public Park and Recreation Zone (PPRZ) next to the Geelong Ring Road at Bell Post Hill.

1.3 Proposed Activity

The City of Greater Geelong is preparing a Framework Plan for the WGGA 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 Golder Associates Pty Ltd, on behalf of the Adelaide-Brighton Cement/McCann Family Joint Venture, and Ramsey Property Group.

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.

Table 1: Consultation in Relation to the Assessment

Date	Participants	Details and Outcomes of Consultation
24.08.2016	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 WGGA study area. In order to meet the timeframes for the project, the RAP was requested to provide any information by COB Friday 8 September 2016. As at finalisation of this report (21.11.2016) no response had been received 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 reserve road reserves.

1.8 Report Review and Distribution

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

- Golder Associates Pty Ltd (and Adelaide-Brighton Cement and McCann Family);
- Ramsey Property Group;
- 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

The study area lies in the Victorian Western Plains (Map 3). These plains are generally characterised as low-lying and undulating, formed on both volcanic and sedimentary lithology (Birch 2003). The volcanic landscapes were formed on some of the youngest rocks in Victoria, and therefore their soils reflect the underlying lithology. The youngest landscapes, the stony rises, consist of skeletal uniform or gradational soils, while the older landscapes, the earlier lava flows, have deeper soils ranging from friable gradational to strongly texture contrast soils (DEDJTR 2016). The Batesford Limestone is part of the Torquay Group laid down between the Miocene and Oligocene (Geoscience Australia 2016) with overlying soils varying from clay-rich (medium or heavy textured) gradational to strongly texture contrast soils and generally heavy (uniform) clays. This formation is currently being quarried at the Batesford Quarry. The sedimentary plains lie on unconsolidated deposits and mainly comprise marine sands deposited by the retreating Pliocene sea (DEDJTR 2016).

The basal Palaeozoic geology is the You Yangs Granite, known locally as Dog Rocks Granite. This is a formation of coarse-grained granites laid down during the late Devonian or early Carboniferous periods, between about 370 and 355 million years ago. It outcrops at Batesford as distinctive rounded pink granite exposures in the Dog Rocks Flora and Fauna Sanctuary west of the Moorabool River, northwest of the present quarry. The Dog Rocks outcrops also feature remnant boulders of hard, dense, Cambrian greenstone (lepidolite), which are among the few sources of greenstone in the region (Geoscience Australia 2016).

Overlying the You Yangs/Dog Rocks Granite is a succession of bedded marine, sedimentary and volcanic formations laid down during the greater part of the Cainozoic era, from 23 to 2 million years ago. At the base of this sequence are deep limestone beds, laid down in the warm Miocene seas from about 23 to 5 million years ago. At Batesford, the lower beds extend to a depth below 20 m and were formed at the beginning of the Miocene (Geoscience Australia 2016). These beds lie below the depth currently worked by the Batesford Quarry. The upper Batesford Limestone, which has higher calcium carbonate content, reaches to a height of 10 m, and is the formation which is excavated in the current quarry.

The limestone formations are overlain by a succession of clays, silts and sands known as the Fyansford Formation and the Moorabool Viaduct Sands. The Fyansford Formation (also known as Gellibrand Marl and Newport Silts) are grey marls, silts and clays laid down in muddy seas during the later Miocene (DEDJTR 2016).These are overlain by the Moorabool Viaduct Sands, which are sandy clays with quartz and lime, dating to the early Pliocene epoch at around 5 million years ago.

The Moorabool Viaduct Sands are overlain by Newer Volcanics basalt flows from eruptions during the upper Pliocene, around two million years ago. The wide ancestral Moorabool river floodplain, two or three times wider than its modern counterpart, was infilled with deep basalt flows to a depth of 10 m.

During the successive ice ages of the Pleistocene, the basalt was deeply incised along the eastern side of the old Moorabool valley. The valley floor became infilled with glacial sediments and windblown sands and clays which extend across the modern floodplain, creating terraces along the deeply incised river channels (Birch 2003). Since the end of the last full glaciation, the floodplain has been covered by Holocene alluvial silts and clays which form the modern surfaces across the river valley (DEDJTR 2016).

2.1.2 Geomorphology and Soils

Within the study area itself, there three geomorphological units present (Map 4; DEDJTR 2016):

- Sedimentary Plains, which mainly comprise the marine sands deposited by the retreating Pliocene sea and sometimes the older underlying Gellibrand Marl and Port Campbell Limestone is also exposed. These sand plains also appear in 'windows' within the area of the volcanic plains, where they have not been covered by lava flows. The study area contains two subunits:
    - GMU 6.2.5, which is associated with the Alluvium, alluvial terraces and floodplains of the Moorabool River, forming a band across the study area from north west to south east, and the alluvial floodplain and terraces of the Barwon River along the southern boundary. This unit tends to form brown Dermosol soils. Associated soil types include mottled sodic texture contrast soils (Sodosols), grey and black cracking clays (Vertosols) and some dark loams (Dermosols).
    - GMU 6.2.4 (Plains and Plains with Low Rises), derived from Aeolian (wind-born) deposition. This unit is located in the higher elevations in central-western section of the study area. The undissected sand plains form generally flat landscapes with very gentle low rises. Associated soil types include sodic and non-sodic mottled texture contrast soils (Sodosols, Kurosols) and pale or grey sandy soils with 'coffee rock' or clay at depth (Podosols).
- Volcanic Plains, built up by sporadic eruptions over a period of about 5 million years, of which there is one subunit in the study area:
    - GMU 6.1.3 (Plains with Poorly Developed Drainage and Shallow Regolith), 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. This unit is located across the remainder of the study area, including the entire north eastern section, a band either side of the Hamilton Highway and elevated areas along the western boundary.

2.2 Landforms and Hydrology

Topographically, the study area is defined by the course of three primary waterways (see below), which are separated by large expanses of flat to gently rolling landforms with occasion hills, knolls, and the valley escarpments and associated floodplains (Map 5). Excluding the Batesford Quarry pit, the study area has a topographic relief of over 70 m from its highest points (>80 m amsl) on the elevated granite rise in the Dog Rocks Reserve to the bottom of the Moorabool River valley and floodplain (<10 m amsl). The most rugged part of the study area is south of the Moorabool River at Dog Rocks where a number of steep valley and hills are present; many of the watercourses have been modified by the storage of overburden from the Batesford Quarry to the east.

There are two major river systems within the study area, the Moorabool and Barwon Rivers discussed below.

2.2.1 Moorabool River

The Moorabool River forms the north western boundary before turning eastwards cross the centre of the study area and then southwards near the eastern boundary to exit at Fyansford before draining into the Barwon River to the south east.

The Moorabool River valley is deeply incised with steep-sided escarpments. North of Batesford the valley is wide with steep valley sides (Plate 1). South of Batesford, north west of the Batesford Quarry, the valley becomes more pronounced (Plate 2). The first quarry (see Section 3.3 and Figure 1) was located in the escarpment face north west of the current pit. The original course of the river west of the quarry used to flow further to the south from its present course, but following the closure of the first quarry and the opening of the new quarry in the 1920s/30s, an overburden pile was established across the original course and the river was diverted to flow through the first quarry (Figure 1). This section of the river has been concrete-lined, and the escarpment along this section is near-vertical (Plates 3 and 4).

Plate 1: Looking east across the Moorabool valley north of Batesford

Plate 2: Looking north across the Moorabool towards Batesford from the top of the quarry overburden

Plate 3: Concrete-lined section of the Moorabool River north west of the Quarry showing almost vertical escarpment

Plate 4: Looking north east across the Moorabool River showing the high escarpment between the river and the Midland Highway

Plate 5: Concrete lined diversion channel north east of the Batesford Quarry pit

Plate 6: The original course of the Moorabool River east of the quarry, which was diverted

Plate 7: Flat floodplain south east of the quarry, looking south east towards Fyansford

Plate 8: The Moorabool River floodplain near the Geelong Ring Road crossing, loking north west

In c.1990 the original course of the river to the north and east of the pit was diverted on its floodplain to follow the northern edge of the valley escarpment to allow for the expansion of the current quarry pit. That channel is an artificial, concrete-lined channel approximately 2.5 km long (Plate 5; Figure 1). The original course is still extant (Plate 6), but all river flows follow the diversion channel. The original course picks up again near the Geelong Ring Road and continues to the south with wide floodplains to the west and steep sided escarpment between the river and the Geelong Ring Road to the east (Plates 7 and 8).

A number of ancient palaeochannels are evident on the floodplain east and south east of the quarry.

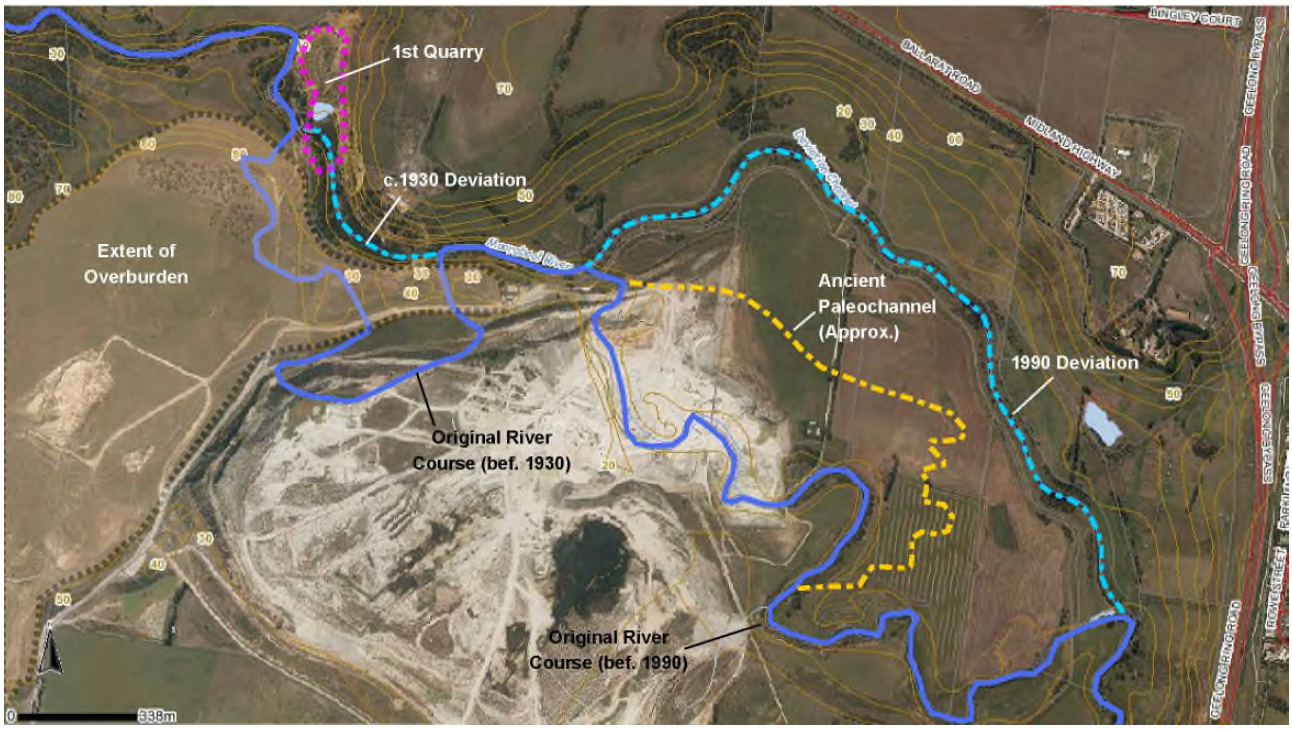


Figure 1: Quarries, Overburden, Palaeochannels and Moorabool River Diversions

2.2.2 Barwon River

To the south, the Barwon River flows from west to east along the southern boundary of the study area and includes a sweeping bend in the south east corner. The river has a wide floodplain in the south west corner of the study area (Plate 9) framed by steep escarpment walls to the north which converge on the river to leave only a narrow floodplain in the south east corner (Plate 10).

A number of small tributaries and oxbow lakes are present along the northern banks of the river, and one major tributary (apparently third-order stream on relevant mapping) flows from its headwaters along the western boundary, just north of the Fyansford-Gheringhap Road, into the study area south of the Hamilton Highway, and draining into the Barwon River (Map 5). However, this stream does not have a defined channel and skirts the northern edge of the Barwon River floodplain. The lack of a defined channel suggests only limited water flow during heavy rainfall events or, more probably, waterlogging of the soil profile with little surface flow.

A review of aerial images, indicates what appears to be an ancient palaeochannel crossing the floodplain. This channel is likely to be culturally sensitive.

Plate 9: The wide Barwon River floodplain in the south west corner of the study area, looking east from Merrawarp Road

Plate 10: The winding course of the Barwon River in the south east corner of the study area showing the narrow valley and the 'peninsula' of floodplain

2.2.3 Cowies Creek

In addition to the main rivers, the north eastern section of the study area is characterised by the Cowies Creek channel, which flows from its headwaters just to the north, across the north eastern boundary of the study area and drains into Corio Bay at North Geelong. The creek is also deeply incised with gently sloped hills and spurs on the southern side. There is also a short second-order stream that flows into the creek near the north eastern corner.

Plate 11: Looking south east down Cowies Creek from the rail line at Evans Road

Plate 12: The steep valley side adjacent Cowies Creek near the north eastern corner of the study area, looking west

2.2.4 Undulating Landscape

Apart from the quarry pit and the associated overburden area (Section 2.2.5), the remainder of the landscape in the study area comprises rolling hills and plains. The majority of the land north of the Midland

Highway, with the exception of Cowies Creek and its tributary, and the Moorabool Valley, is flat and topographically featureless (Plate 13).

South of the Midland Highway and west of the quarry pit, a ridge of granite traverses through the Dog Rocks Reserve, with large granitic boulders outcropping at the surface (Plate 14).

Plate 13: Flat to gently undulating landforms north of the Midland Highway

Plate 14: Granitic ridgeline in the central west of the study area along Dog Rocks Road, looking north

2.2.5 Anthropogenic Land Modifications

As a result of decades of quarrying at Batesford, the landscape within the quarry's Works Permit area has undergone a massive change. Excavation of the first quarry at Batesford resulted in a portion of the northern Moorabool escarpment to be excavated and an overburden dump to be deposited at the base of the escarpment north of the current river channel. However, this modification is relatively minor compared to the footprint of the current quarry. The main pit has been excavated to a depth of some 30 m below the original ground level. To reach the workable limestone deposits, the overburden of soil and rock was removed and stockpiled in two separate areas:

- The western overburden area extends form the western boundary of the pit to the elevated granite rise in the Dog Rocks Reserve to an elevation of some 50 m above the river channel. The overburden was deposited over the original course of the river, which was diverted through the first quarry (Figure 1). This overburden is extensive, measuring approximately 2 km from north to south and nearly 900 m from east to west. The overburden covers an area of approximately 1.1 sq km.
- The southern overburden dump was established after the western dump and is located directly south of the pit. This overburden is less extensive, but still measures approximately 1.5 m from north west to south east and nearly 800 m from north east to southwest. This overburden covers an area of approximately 70 ha.

Plate 15: Extensive overburden west of the Batesford Quarry pit, looking south over the River from the Midland Highway

Plate 16: Massive quarry pit at Batesford Quarry, looking east from the western overburden

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 woodland and grassland characteristics with considerable variation in structure and species depending on climate, elevation and soil parent material. According to the Department of Environment, Land, Water and Planning's (DELWP) mapping of vegetation prior to European arrival (Pre-1750 EVCs), the study area would have contained the following five vegetation communities (Map 7):

- Plains Grassland (EVC132), which covers the majority of the study area on the flatter to gently undulating landforms. 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 2004a).
- Plains Grassy Woodland (EVC55), which occurs in the elevated landforms in the central-west section of the study area. Within the Plains Grassy Woodland ecosystem, larger trees were sparse comprising less than 10% cover. These were predominantly River Red Gums (*Eucalyptus camaldulensis*). The predominant vegetation in these areas comprised largely tufted graminoid (grass) and herb species, representing some 80% cover. Common species included kangaroo grass (*Themeda triandra*), bristly wallaby grass (*Austrodanthonia setacea*), Common Rice-flower (*Pimelea humilis*). The remainder comprised small to large shrubs including golden wattle (*Acacia pycnantha*) and hedge wattle (*A. paradoxa*) (DSE 2004b).
- Grassy Woodland (EVC175), which occurs south of the Moorabool River, in the Dog Rocks area. This vegetation class would have consisted of variable open eucalypt woodland to 15 m tall or occasionally Sheoak/Acacia Woodland over a diverse ground layer of grasses and herbs. Dominant

trees occurring on ridges include Narrow-leaf Peppermint (*Eucalyptus radiata* s.l.), Swamp Gum (*E. ovata*) and Manna Gum (*E. viminalis*), with a lower canopy layer of Drooping Sheoak (*Allocasuarina verticillata*), Black Wattle (*Acacia mearnsii*) and Lightwood (*A. implexa*). The understorey is characterised by a medium shrub layer of moderate diversity that typically includes such species as Drooping Cassinia (*Cassinia arcuanta*), Tree Violet (*Hymenanthera dentata*), Sweet Bursaria (*Bursaria spinosa*), Drooping Sheoak (*Allocasuarina verticillata*) and Common Rice-flower (*Pimelea humilis*). Ground layer species include herbs and grasses such as Common Wallaby-grass (*Austrodanthonia caespitosa*), Kidney-weed (*Dichondra repens*), Wattle Mat-rush (*Lomandra filiformis*) and Black-anther Flax-lily (*Dianella revoluta* s.l.)(DSE 2004c).

- Floodplain Riparian Woodland (EVC56), which occurs in the upper reaches of the Moorabool River valley, around Batesford and to the north, and along the margins of the Barwon River. Floodplain Riparian Woodland vegetation class would have consisted of open eucalypt woodland to 20 m tall over a medium to large shrub layer with a ground layer consisting of amphibious and aquatic herbs and sedges. The open woodland would have been dominated by River Red Gum (*Eucalyptus camaldulensis*) and/or Swamp Gum (*E. ovata*) and Blackwood (*Acacia melanoxylon*) emergents, over a medium shrub layer of Golden Wattle (*Acacia pycnantha*). Other understorey shrubs would have included Sweet Bursaria (*Bursaria spinosa* ssp. *spinosa*) and Sticky Boobialla (*Myoporum* sp. 1). The ground layer would have featured Common Tussock-grass (*Poa labillardierei*), Slender Wallaby-grass (*Austrodanthonia penicillata*) and Black-anther Flax-lily (*Dianella revoluta* s.l.) on the drier elevated banks, with Spiny-headed Mat-rush (*Lomandra longifolia*), Rushes (*Juncus* spp.), Common Reed (*Phragmites australis*) and Shiny Bog-sedge (*Schoenus nitens*) occupying in the saturated soils at the water's edge (DSE 2004d).
- Streambank Shrubland (EVC851), along the lower reaches of the (original) Moorabool River. This vegetation class would have consisted of a tall shrubland to 8 m tall above a ground layer of sedges and herbs. A sparse eucalypt overstorey to 15 m tall may sometimes be present. This EVC occurs along rivers and major streams where the watercourse consists of either rocky banks, a flat rocky stream bed or broad gravel banks which are often dry but are also regularly flooded by fast flowing waters. The open woodland would have been dominated by River Red Gum (*Eucalyptus camaldulensis*), with Black Wattle (*Acacia mearnsii*) and Blackwood (*Acacia melanoxylon*) emergents, over a medium shrub layer of Woolly Tea-tree (*Leptospermum lanigerum*), Tree Violet (*Hymenanthera dentata* s.l.), Sweet Bursaria (*Bursaria spinosa* ssp. *spinosa*) and River Bottebrush (*Callistemon sieberi*). The ground layer would have featured Common Tussock-grass (*Poa labillardierei*) and Weeping Grass (*Microlaena stipoides* var. *stipoides*) on the drier elevated banks, with Spiny-headed Mat-rush (*Lomandra longifolia*), Common Reed (*Phragmites australis*), River Club-sedge (*Schoenoplectus tabernaemontani*), Water Ribbons (*Triglochin procerum* s.l.) and Knobby Club-sedge (*Ficinia nodosa*) occupying in the saturated soils at the water's edge (DSE 2004e).

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. In particular, species such as mat-rushes were used to make baskets, and to build fish-traps (Gott and Conran 1991: 58). 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). The starchy roots of Austral Bracken were eaten raw or roasted and prepared into a past (Flood 1980; Gott and Conran 1992: 25; Zola and Gott 1992: 37).

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 Barwon River area west of Geelong was occupied by the *Wada wurrung balug*, whose territory centred on the Barrabool Hills, but extended from the Werribee River to Indented Head and included the land along the Moorabool River and Barwon Rivers (Clark 1990: 330-331), see Figure 2 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 river and creek areas and nearby swamps.

The creek environs are home to significant migratory birds. Native vegetation along the creek including Red River Gum and reeds/sedges would have provided important timber and weaving resources, as well as eel habitat. Native reptiles, including the Tiger snake, Southern Blue-tongued Lizard, Long-necked turtle and Eastern brown snake have been recorded along the creeks and rivers. Numerous native birds have been recorded in the catchment. Those of economic value to Aboriginal hunter-gatherers would have included Pacific Black Duck, Australian Pelican, Australian Ibis, Great Egret and the Sulphur-crested Cockatoo.

Kangaroos and wallabies would also have been abundant in the level grassy plains of the area, koalas were probably nomadic using riparian corridors, and Brush-tailed and Ring-tailed possums would have been plentiful. Platypus may have been present in the larger river systems, and there are anecdotal records of platypus occurring around the Buckleys Falls area on the Barwon River (DCE 1991). As noted above the rich riparian habitat and vegetation of the Creek valley would have provided bountiful food and tool resources for Indigenous people. Native vegetation, fresh water, fish, shellfish, water birds and small mammals would have provided a ready resource within this landscape. Consequently, all of these plants and animals would have made the area an attractive location for Aboriginal communities to camp for extended periods.

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 Batesford area is characterised by cool summers and wet winters, with climatic factors influenced by the Otway Ranges to the west. Temperatures range between an average maximum of 24.1°C in summer and minimum of 4.0°C in winter. Rainfall varies between a maximum average of 68.2 mm in October and a minimum of 42.0 mm in January, with annual average rainfalls of 679.7 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

The archaeological record of the Geelong/Fyansford/Batesford 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 (J. Young, pers. comm. 7 May 2013).

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).

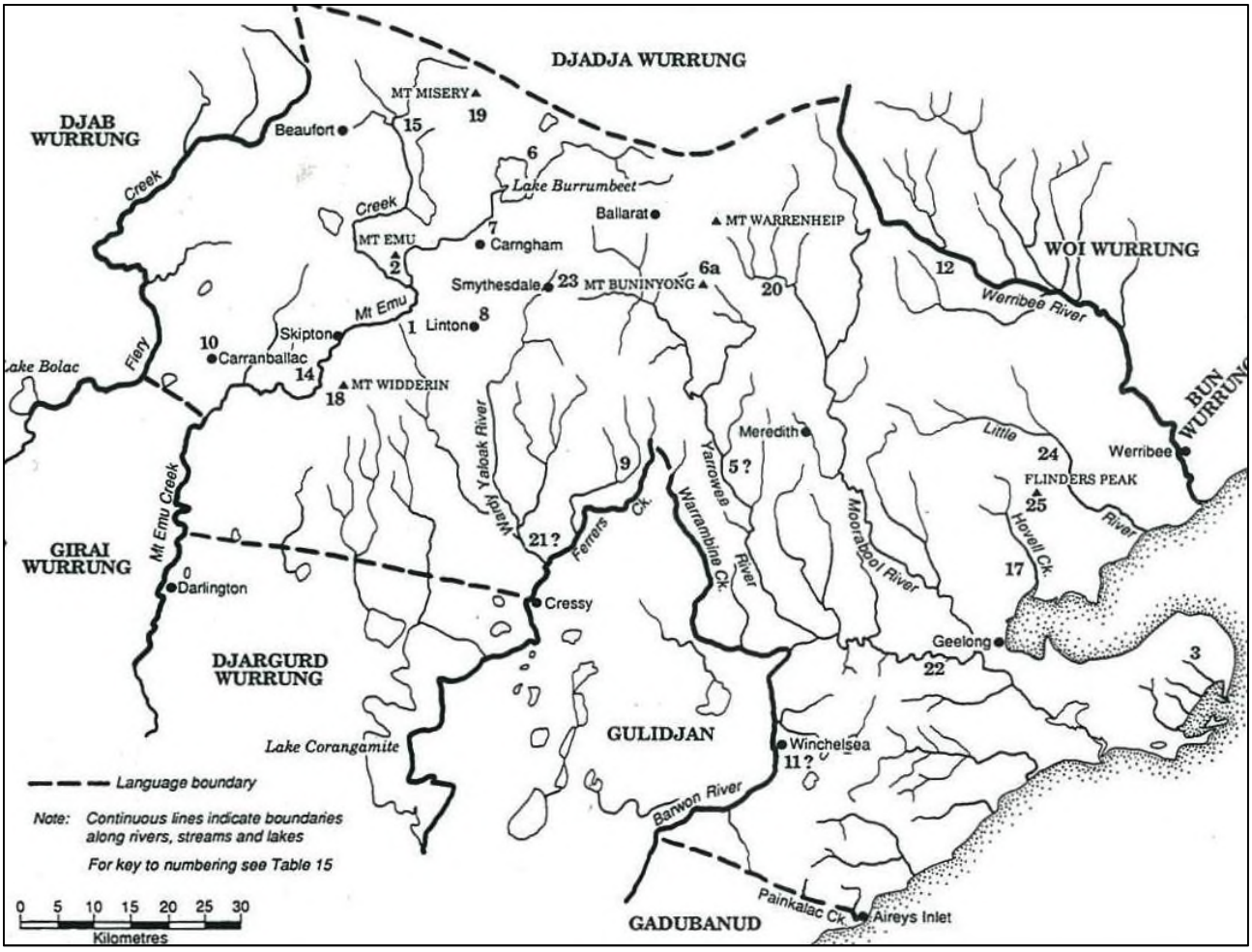


Figure 2: Language Group: Clan areas of the Wada wurrung Language group. No 22 signifies the *Wada wurrung balug* (Clarke 1990: 311)

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 *Wada wurrung* balug clan territory (Clarke 1990: 311), whose territory centred on the Barrabool Hills (Figure 2).

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).

By 1842 most of the available land within the then (then) Barrabool Shire was occupied, with squatters now moving further south to areas previously deemed unappealing, predominantly scrub land (Pescott 1985: 28). Much of the land within the area was bought by speculators and subsequently sold or leased to settlers and pastoralists. This created an area between the Barwon River and Waurn Ponds chain of ponds that was predominantly agricultural.

The Barwon River was named in 1835 by surveyor John Wedge and was originally spelt Barwourne. The name is derived from the Aboriginal word meaning "great, wide or deep water", although some other sources claim it was the Wandouro word for magpie or perhaps after "Kondak Barrwon", one of the Wathaurung chiefs (Dedman et al. 1987: 12). Wedge also named Buckleys Falls after William Buckley, the escaped convict, who took Wedge to see the Wathaurung people in 1834. According to Buckley, the spot was called "Woorongo" (Dedman et al. 1987: 45). Buckley is reputed to have lived in a cave in the area but the location has not been identified (DCE 1990).

Batesford

Batesford is named after Alfred and John Bates who settled in the area in 1837 at a place where the river could be forded. The township was surveyed in 1854 and was originally named Hopeton after George Hope who owned the land on which it was established. The ford was replaced in 1859 by a substantial bluestone bridge which now forms part of the service road past the Dog Rocks Hotel (formerly the Derwent or Batesford Hotel). The Post Office opened on 18 August 1856 and closed in 1949.

Fyansford

The first settlement in the area was Fyansford, which grew around the Moorabool River bridge. The town was first proclaimed in 1861. One of the reasons for the settlement location was the fact that the river above Buckley Falls was the nearest fresh water source available until Captain Foster Fyans had the breakwater built (DCE 1990). Fyan's Breakwater was constructed using convict labour between 1839 and 1841 (Roberts 1993: 7). By 1855 a mill had been constructed on the right (south) bank of the Barwon above Buckleys Falls. The mill was known as Highett's Mill (more properly the Barrabool Water Mill). The mill ceased operation in 1922 and the machinery and buildings were sold in 1929 (Dedman et al. 1987: 19-20).

Bell Post Hill

Amongst the first Europeans to permanently settle Geelong were John Cowie and David Stead. They landed their sheep in 1836 and camped on a flat adjacent to the Moorabool River, west of Bell Post Hill. They occupied the Bungeeltap Run, which had an area of approximately 30,000 acres. The run was first gazetted on 23 February 1849, and in May 1850, was subdivided into Bungeeltap East and West (Wynd 1981: 18; Spreadborough and Anderson 1983: 90). Bell Post Hill was a popular location for settlers due to its close proximity to the Moorabool River and its elevated position. A number of Aborigines still frequented the area in 1836 and a large bell was erected on Bell Post Hill so that the watchman could alarm others of their approach, allowing time for stock to be herded and men to be assembled in case of attack. The same bell is located within the grounds of the Kardinia International College (Wynd 1981: 22).

3.5.2 Land Use History

The study area is located across the boundary of two historical parishes, with the Moorabool River forming the boundary: the Parish of Moorpanyal is located to the north and east of the river and the Parish Gherighap is located to the west and south. Moorpanyal Parish plans show that the study area was originally subdivided into a range of smaller landholdings following the disbanding of the large runs to allow closer settlement. North of the Midland Highway, large parcels of around 430 acres were established between Ballan Road and the Moorabool River and were granted to John Highett, who had two parcels totalling some 860 acres and George Hope. Hope's parcel of 468 acres straddled the Midland Highway where present-day Batesford is located; he also had the 266 acre parcel to the south. East of Ballan Road, the parcels were much smaller, between 80 and 90 acres, and were granted to a range of small landholders such as J. and P. Manifold, Niel McLean, and J.P Fawkner, amongst others.

South of the Midland Highway, parcels of various sizes were granted to landholders such as J.M.C. Airey, Joseph Griffin, D. Coghill (who had three larger parcels east of the Moorabool River, now straddled by the Geelong Ring Road) and additional parcels granted to Manifold and McLean. Between the river, Fyansford

township, McCurdys Road and Church Street, the land parcels were much smaller (34 to 47 acres) and these straddle the steep river escarpment.

Early Gheringhap parish maps (1882) show that much of the land between the Moorabool River and Hamilton Highway was originally owned by the Port Phillip Association, but in 1888 Peter McCann and his sons purchased that land, and other land around Batesford (totalling around 1200 acres [486 ha]) seeking to exploit the limestone deposit there, with clay from the flood plains of the Moorabool River, for the manufacture of Portland cement. He registered the Australian Portland Cement Co. Ltd in 1889 with Geelong and Melbourne builders as shareholders; Richard Taylor, an English-trained cement maker, was appointed company secretary and a works was established at Fyansford (McKay 1986). Thus began the long history of the McCann family with the study area and the establishment of the Batesford Quarry.

In the late 1920s, the old quarry at Batesford became problematic due to the depth of overburden requiring removal. By 1929 a new quarry was established on the old Dryden Estate owned by the McCann family. Plans to extent the quarry eastwards saw a 4 km stretch of the Moorabool River diverted from its original course to follow the base of the northern escarpment and skirt the floodplain.

Apart from the extensive quarry, and the smaller land parcels in the Batesford township, the remainder of the study area has largely been occupied by either pastoral (grazing) or farming (cropping) activities.

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 112 registered Aboriginal places within the search area (Map 8). These sites consist of a total of 247 site components comprising seven site component types (Table 2). The difference between the number of sites and number of site components is because several sites contain two or more site components or component types or comprise low density artefact distributions (LDADs) where every artefact is recorded as a component.

Table 2: Summary of Previously Identified Aboriginal Site Place and Component Types within the 1km Search Area

Site Type	Quantity			
	Places	Percentage (%)	Components	Percentage (%)
Artefact Scatters	100	90	104	42
LDADs	8	8	129	52
Quarry	1	0.5	1	0.5
Scarred Tree	1	0.5	1	0.5

Site Type	Quantity			
	Places	Percentage (%)	Components	Percentage (%)
Shell Midden	1	0.5	1	0.5
Aboriginal Historical Place	1	0.5	1	0.5
Object Collection	-	-	10	4
Total	**112**	**100**	**247**	**100**

Table 2 shows that stone artefact sites (either artefacts scatters, isolated artefacts or Low Density Artefact Distributions [LDADs]) are by far the most common site type in the broader search area, accounting for 108 Aboriginal places (96%) and 233 of the individual components (94%). Only one culturally scarred tree, one Aboriginal quarry, one shell midden is represented forming about 6% of the total number of sites. Earth features (mounds), Aboriginal ancestral remains (burials), stone arrangements or stony rises have been recorded in the search area. There are also 10 object collection components, but these are associated with salvaged artefacts from existing sites and are not analysed separately.

Table 3: Summary of Previously Identified Aboriginal Site Place and Component Types within the Study Area

Site Type	Quantity			
	Places	Percentage (%)	Components	Percentage (%)
Artefact Scatters	26	79	31	47
LDADs	5	15	33	50
Quarry	1	3	1	1.5
Aboriginal Historical Place	1	3	1	1.5
Total	**33**	**100**	**66**	**100**

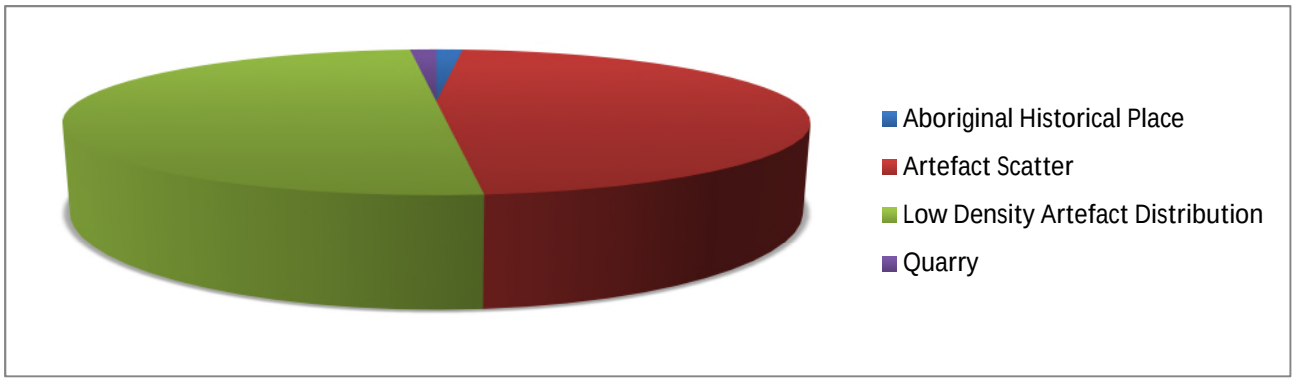


Figure 3: Summary of Aboriginal site components in the study area

Of the 112 Aboriginal places in the search area, 33 are located in the study area itself (Table 3; Figure 3; Map 9). These places comprise a total of 66 site components made up of four site component types. One

Aboriginal Historical Reference was identified within the study area. A full list and discussion of Aboriginal places in the study area is provided in Section 4.

Table 3 shows that site types in the study area are still overwhelmingly made up of stone artefact sites (either artefacts scatters, isolated artefacts or Low Density Artefact Distributions [LDADs]), accounting for 32 Aboriginal places (94%) and 64 of the individual components (97%). 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. Refer to Section 4 for a full description of registered sites.

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). One Aboriginal heritage place is listed on the Heritage Overlay within the study area. This place is the Aboriginal greenstone quarry at Dog Rocks Reserve (HO370)

3.6.2 Previous Aboriginal Archaeological Investigations

3.6.2.1 Archaeological Investigations the Study Area

Several archaeological investigations have been carried out in and around 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, relatively few have been carried out specifically within the study area. Those that have, have been concentrated largely in the confined area of Moorabool River floodplain east of the Batesford Quarry. All of those reports were related to proposals to divert the Moorabool River channel and/or expand the quarry footprint. Also, the majority of detailed investigations were carried out in 1980s and 1990s, providing a lower level of archaeological detail that is carried out since the introduction of the *Aboriginal Heritage Act 2006*. Two CHMPs have been commenced within the study area, one of which was completed, but one these has not yet been completed.

A summary of archaeological reports relevant to the geographical region of the study area appears below (Table 4).

Table 4: Archaeological Reports Relevant to the Study Area

Author, Date, Report #	Description and Location	Results
La Trobe University Archaeological Consultants 1982 #16	An archaeological survey on the north eastern side of Batesford Quarry, Fyansford, for a proposed quarry extension and a diversion of the Moorabool River.	The survey divided paddocks into separate survey areas. A total of 10 surface sites were identified (VAHR 7721-0023, -0024, -0025,-0028, -0029, -0030, -0031, -0032, -0033, -0034,), comprising a total of 144 stone artefacts and one hearth. Artefacts were collected from six of the sites. All sites had been disturbed by ploughing. The study found that all sites are located close to the present, or older, river channel. Isolated artefacts were identified on the floodplain away from the river, but no artefacts were found in the lower river terraces, in the alluvial fans, or at the foot of the escarpment.

Author, Date, Report #	Description and Location	Results
du Cros 1990a #278	A subsurface testing program for the proposed diversion of the Moorabool River at Batesford Quarry, Baresford.	A subsurface testing program, using a backhoe, involving the excavation of 30 test pits within eight transects. Six sites were identified: VAHR 7721-0130, -0131, -0133, -0134 and -0135). The largest and oldest site (VAHR 7721-0134) contained a microblade workshop where backed blades were manufactured. Site ages could not be determined but it was considered that the assemblage across the sites were <2,000 years old, although one surface site (VAHR 7721-0030) contained Contact-period artefacts. All sites were considered to be of insufficient significance to warrant retention, although it was recommended an open-area salvage excavation at VAHR 7721-0134 and -0135 be conducted due to the higher research potential of those sites. Further surface collection was also recommended at VAHR 7721-0028 and -0030 in search of additional Post-Contact artefacts.
du Cros 1990b #323	An archaeological surface salvage of artefacts from two Aboriginal places at Batesford Quarry, Batesford.	The salvage involved the collection of artefacts from VAHR 7721-0028 (site combined with -0135) and VAHR 7721-0030 (site combined with -0130). A total of 56 artefacts were collected.
Story, A. and Russel, L. 1991 #467	An archaeological survey to re-located and mark the extents of nine Aboriginal places: VAHR 7721-0023 to -0025, -0029, and -0031 to -0034.	All sites except VAHR 7721-0024 and -0034 we re-located and marked. VAHR 7721-0033 had been allocated a new site number (VAHR 7721-0140). The work also identified a previously unrecorded site VAHR 7721-0141 near -0034.
Richards, T. and Jordan, J. 1999 #856	An investigation of the Barwon River Basin's written archaeological record; further surveys demonstrated low/insufficient records from previous investigations.	All parts of the Barwon Basin must be considered archaeological sensitive. The areas of highest sensitivity are the coast, the vicinity of freshwater sources and the foothills of the Otway Range. Site damage is high due to human disturbance, intact or nearly intact sites noted as high priority for protection.
Lane, S. 1999 #1521	Broad scale assessment for the South West gas pipeline, extending from Lara to Colac, and Colac to Iona.	A 1996 field survey of the Lara to Colac section of the pipeline route identified the need for subsurface testing. Five areas of Aboriginal cultural heritage sensitivity were identified along major river and creek crossing. In some of these instances, surface artefact scatters scarred trees and an isolated artefact was recorded. During the subsurface testing program Aboriginal artefacts were found at 37 previously unrecorded locations (26 artefact scatters, 11 isolated artefacts) along the Lara-Colac pipeline route. The sites were found at the Moorabool River, Barwon River, Birregurra Creek and Barongarook Creek crossings, and within the Victorian Volcanic Plains. Within the Colac-Iona section, one artefact scatter and one isolated artefact were identified in close proximity to Cooriemungle and Little Cooriemungle Creeks.
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).

Author, Date, Report #	Description and Location	Results
Collins et al. 2004 #2841	An archaeological survey of Section 2 of the Geelong Bypass (Midland Highway to the Hamilton Highway).	The desktop assessment identified three previously registered Aboriginal places (VAHR 7721-0601, -0602, and Historical Ref 5.4-40) in the activity area. The field survey identified an additional 10 new Aboriginal places (VAHR 7721-0594 to -0598 and -0636 to -00640).
Marshall, B. 2004 #2903	An archaeological investigation of land between the Barwon River and Barrabool Road, near Ceres. The study area is bounded by a horseshoe bend of the Barwon River in the north. This study area encompasses the entirety of the current CHMP activity area.	The riverbank of the Barwon River and escarpment are very steep and contain sandstone outcrops. Six previously unrecorded Aboriginal sites were identified during the survey: VAHR 7721-0681 to -0686. The sites comprise four isolated artefacts (VAHR 7721-0683/0686) and two scatters of two artefacts each (VAHR 7721-0681 to -0682). All six sites were located near the drainage lines and major gully, and along the steep Barwon River escarpment. None of these sites are believed to have been found *in situ*. The results of this survey demonstrate that the areas along and adjacent to the gullies and southern bank of the Barwon River are sensitive for Aboriginal stone artefact sites. It is considered likely that further stone artefacts are present in the study are but were not visible due to grass cover.
Marshall, B. & Webb, C. 2005 #3265	Standard survey for the Geelong Bypass between the Princess Freeway Corio Interchange and the Princess Freeway at Waurn Ponds, approximately 11 km and five separate alignment options.	Previous archaeological investigations are noted as limited in this report. A total of 34 previously registered Aboriginal places and two new sites were within or in close proximity to the alignments. Subsurface testing of any known sites or sensitive areas was recommended prior to development.
TerraCulture 2005 #3426	An archaeological assessment for a quarry at Fyansford.	A single quartzite stone artefact (VAHR 7721-0771) was identified on the top of overburden on a sandy gravel surface at the quarry. A second isolated artefact (VAHR 7721-0770) was identified on the same overburden pile. The second artefact was made from silcrete. Both sites were found in a disturbed context.
Webb, C., Butcher, L. & Cooper, S. 2007 #10097	Aboriginal archaeological assessments for Section 3 of the Geelong Ring Road were conducted prior to the introduction of the Aboriginal Heritage Act 2006. However Webb et al (2007) prepared this CHMP combining previously separate reports.	During the desktop assessment, one Aboriginal archaeological site (VAHR 7721-0504) was found to be located on the alignment, and two additional archaeological sites likely to be affected by construction of the road (VAHR 7721-0605 and 7721-0606) during the standard assessment. Twelve additional archaeological sites were located on the alignment during subsurface testing: VAHR 7721-0801, -0804, -0805, -0844, -0845, -0846, -0858, -0859, -0860, -0861, -0862 and -0863. Most of these sites were located on or near the tops of hills and ridges.
Collins, S. and Ford, A. 2009 #10853	A complex CHMP for a proposed residential subdivision at Hills Road, Batesford.	The study area is located within 200 m of the Moorabool River. Three Aboriginal cultural heritage sites were identified during the standard assessment, including two stone artefact surface scatters (VAHR 7922-0960 and -0961) and one scarred tree (VAHR 7922-0959) along the Moorabool River. Four Aboriginal stone artefact sites, VAHR 7922-0962 to -0965, were identified during the complex assessment, occurring across the hills slopes extending east from Hills Road and the floodplain. These sites are low density (1 to 6 artefacts) shallow deposits disturbed by former land use practices, and therefore not *in situ.*

Author, Date, Report #	Description and Location	Results
Kaskadanis, C. and Reid, R. 2010 #11027	A complex CHMP for a track duplication project between North Geelong and Gheringhap.	Kaskadanis and Reid (2010) completed a complex CHMP for a track duplication project between North Geelong and Gheringhap. During the survey four isolated stone artefacts (VAHR 7721-0978 Cowies Creek 4, VAHR 7721-0979 Cowies Creek 5, VAHR 7721-0980 Cowies Creek 6and VAHR 7721-0981 Cowies Creek 7) were detected on the exposed ground adjacent to Cowies Creek and two medium- to-high density stone artefact scatters (VAHR 7721-0982 Moorabool River 7 and VAHR 7721- 0983 Moorabool River 8) were recorded. The presence of these Aboriginal Places indicates archaeologically sensitive landforms that may contain sub-surface Aboriginal cultural heritage. These landforms include: The western outcropping escarpment overlooking the Moorabool River Valley and the existing access track which dissects approximately 2km of the modified lower slopes and terraces adjacent to the meandering Cowies Creek. Additional subsurface artefacts were identified. The assemblage contains a relatively high proportion of silcrete, indicating that this material was commonly utilised and possibly imported into the area from sources elsewhere. It may also indicate that silcrete was available from a nearby source or sources; however, the availability of silcrete is not well documented for the area and the location of local quarries has yet to be determined. Artefacts on average were relatively small in size. This supports a final stage reduction sequence; and, the number of artefacts with cortical surfaces was very low, supporting an early stage reduction sequence (larger flakes with cortex were either transported off-site, or, re-sharpened on-site).
MacCulloch, J. 2012 #11980	A CHMP for a residential subdivision and includes a section of Cowies Creek.	MacCulloch (2012) prepared a CHMP for a residential subdivision and includes a section of Cowies Creek. One Aboriginal Place Cowies Creek 4 (VAHR 7721-0978) had previously been recorded from within the activity area. The standard assessment led to the identification of 181 surface artefacts located across four landforms. These were recorded as Cowies Creek 8 (VAHR 7721-1210) and Cowies Creek 10 (VAHR 7721-1211). Clusters of artefacts within VAHR 7721-0211 were recorded as separate components. During the complex assessment one new artefacts scatter was identified; Cowies Creek 9 (VAHR 7721-1199). Previously recorded Cowies Creek 4 (VAHR 7721-0978) was not re-identified during the assessment. All four Aboriginal Places were assessed as having low archaeological significance due to disturbance by ploughing.
Robb, K., Lawler, M. and Vick, S. 2016 #12499	A (draft) complex CHMP for the proposed extension of the Batesford Quarry, Batesford.	The desktop assessment identified a total of 10 previously registered Aboriginal places within the activity area. The standard assessment identified a large number of surface artefacts with he highest densities occurring within 10 m of the top of the escarpment near the former Moorabool River channel. Following the complex assessment, a total of 12 Aboriginal places were identified in their activity area, including two previously registered places (VAHR 7721-0053 and –0055), and 10 new sites (VAHR 7721-1256, -1265, -1279, and -1330 to -1337). At the time of writing this report was still in draft form and no specific management recommendations had been prepared.

Author, Date, Report #	Description and Location	Results
Golder Associates 2010 No Report No.	An archaeological review of Batesford South	A review of Aboriginal and historical heritage values for a 2,000 ha study area (representing the whole of the WGGA south of the Midland Highway). The desktop assessment identified 26 registered Aboriginal places and 11 historical places. The report also identified four areas of geomorphological significance. The report recommended that harm to the registered extents of Aboriginal places should be avoided by accommodating sites within zones or public open space. The report also assessed the (then) Batesford South Master Plan (dated 28 September 2010) and found that most of the registered places had been included in an open space network, except the greenstone quarry. Those site sin the open space would require appropriate management programs, preferably under one or more CHMPs.

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

A total of 33 previously registered Aboriginal Places are located within the study area (Map 9). The majority of these places are associated with the Moorabool River floodplain north east and east of the Batesford Quarry, and demonstrate a sequence of discovery and registration over a period of 34 years since the first sites were identified in 1982. The first discoveries were the result of initial archaeological investigations for the (then) proposed diversion of the Moorabool River, and included subsequent test excavations and salvage works prior to the diversion works proceeding. A more recent investigation for the expansion of the quarry included subsurface testing as part of a CHMP (Robb et al. 2016); this assessment identified several new sites, expanded the extant of previously registered places and/or subsumed previously registered places into new ones.

A list of active Aboriginal places in the study area is provided in Table 5 (below), and a list of retired or merged places is provided in Table 6. A discussion on the types of sites in the study area and across a broader region is provided in Section 3.6.1.

Up until recently, the VAHR only contained the Primary Grid Coordinate (PGC) for each site (or site component). Site extents for sites registered before about 2012 require analysis of the individual site cards, which assign an area (e.g. 50 x 50 m) and provide maps of the site extents as observed by the archaeologists at that time. For older sites, say in the 1970s to 1990s, the maps are very crude, usually being hand-drawn mud maps that are often difficult to subsequently relate to the landscape in later decades. (*An attempt has been made in this project to georeference the site card extent maps to provide a more reliable indication of a site extent than the single PGC suggests; see Map 9*). Sites based solely on a PGC are only relevant to single point sites, such as isolated stone artefacts, the individual components of LDADs, or sites such as individual art/engraving sites. Most artefact scatters have broader site extents that need to be taken into account when planning future developments.

One of the places, an Aboriginal greenstone quarry (VAHR 7721-0001), is located immediately west of the Batesford Quarry in Dog Rocks Reserve. The site comprises six separate component outcrops, four of which have been covered by the quarry overburden. The PGC for the site is located well to the south of the Moorabool River Channel and appears to be taken at one of the smaller components of the site under the quarry overburden (Map 9). There are two components that are still uncovered. The main concentration is located just to the south of the river on a hill slope, which is also registered on the Heritage Overlay of the Greater Geelong Planning Scheme (HO370). The other extant component is located to the south west on the northern side of small (previously dammed) tributary. This component is not covered by the HO curtilage.

The other main concentration of registered Aboriginal places is located in the north eastern corner of the study area on the southern slopes of Cowies Creek, including VAHR 7721-0978, 7721-1199 and 7721-1210 and -1211. The first two sites are isolated artefacts, one of which was salvaged under CHMP #11027 (Kaskadanis and Reid 2010), the other was collected as part of the complex assessment for CHMP #11980

(MacCulloch 2012). Therefore the cultural material from these sites is no longer present. The two other sites are much more extensive artefact scatters locates on various landforms including flat volcanic plain, steep creek terraces and near-creek flood plain. It appears from these sites that specific landform shape is not the primary driver for site location, rather proximity to Cowies Creek is, regardless of landform type.

Table 5: List of Previously Identified Aboriginal Places within the Study Area (Active Sites)

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
7721-0001	1	Dog Rocks	Quarry	This site is located on a slope immediately south of the Moorabool River at Dog Rocks, and consists of two surviving greenstone outcrops with scattered fragments (flakes?). There is no clear evidence of quarrying but ethnographic/petrological evidence exists. Four other outcrops are now buried by quarry spoil. *Note: the PGC for this place (Map 9) appears to be incorrect; mapping the PGC places the site much further south of where the site card indicates. A more reliable site extent is provided in the CoGG Heritage Overlay (HO320), which places it on the southern slopes of the Moorabool River Valley in the Dog Rocks Reserve.*
7721-0023	1	Moorabool River 1	Artefact Scatter	This site is located east of the Batesford Quarry on the northern bank of the original Moorabool River course. The site measures 50 x 50 m on a flat, lower river terrace landform. It comprises a variety of worked flakes made from quartz, course silcrete and fine silcrete. One worked glass tool was identified. (Report #467 recalculated site area to be 70 x 50 m).
7721-0026	1	Moorabool 4	Artefact Scatter	This site was identified in 1980 in a flat lowland plain landform in a paddock 100 m east of 'Retreat' on the southern side of the Moorabool River diversion. The site apparently consists of an isolated silcrete flake. *An attempt to relocate the site in 2013 (Robb et al. 2016) was unsuccessful as the artefact had been collected in 1982.*
7721-0028	1	Hill Site	Artefact Scatter	This site was identified in 1982 on a flat, floodplain landform east of the Batesford Quarry. The site consists of a surface scatter of quartz, quartzite, basalt, flint and silcrete artefacts, including ground axes, hammer stones, worked flakes, worked cores and microliths. The site card states that the site was destroyed by the Moorabool River diversion in 1990/91 but was re-recorded as 7721-0135 and excavated by du Cros in 1990.
7721-0029	1	Terrace Site	Artefact Scatter	This site was identified in 1982 on a flat, floodplain landform east of the Batesford Quarry. The site consists of a surface scatter of quartz, quartzite, basalt, flint and silcrete artefacts, including ground axes, hammer stones, worked flakes, worked cores and microliths.

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
7721-0030	1	Saturday Site	Artefact Scatter	This site was identified in 1982 on a flat, floodplain landform east of the Batesford Quarry. The site consists of a surface scatter of quartz, quartzite, basalt, flint and silcrete artefacts, including worked flakes, worked cores and microliths. The site card states that the site was destroyed by the Moorabool River diversion in 1990/91 but was re-recorded as 7721-0130 and excavated by du Cros in 1990.
7721-0034	1	Paddock A	Artefact Scatter	This site was identified in 1982 on a flat, floodplain (valley bottom) landform east of the Batesford Quarry. The site consists of a total of 17 isolated artefacts.
7721-0049	1	Paddock B	Artefact Scatter	This site was identified in 1982 on a flat, floodplain (valley bottom) landform east of the Batesford Quarry. The site consists of a total of two isolated stone flakes.
7721-0050	1	Paddock C	Artefact Scatter	This site was identified in 1982 on a flat, floodplain landform east of the Batesford Quarry. The site consists of a total of three isolated stone flakes.
7721-0051	1	Paddock D	Artefact Scatter	This site was identified in 1990 on the southern side of the Moorabool River diversion, on a flat, floodplain landform north east of Batesford Quarry. The site comprises a surface and subsurface scatter of worked flakes, worked cores, microliths and other artefact types, made from quartz, quartzite and silcrete. The site includes artefacts previously recorded as 7721-0132 to -0134 (see 7721-0028 and -0030 above).
7721-0052	1	Paddock G	Artefact Scatter	This site was identified in 1982 on a flat, floodplain (valley bottom) landform east of the Batesford Quarry. The site consists of one quartz waste flake. *An attempt to relocate the site in 2013 (Robb et al. 2016) was unsuccessful as the artefact had been collected in 1982.*
7721-0053	1	Paddock I	Artefact Scatter	This site was identified in 1982 on a flat, floodplain landform east of the Batesford Quarry. The site consists of a total of two isolated stone flakes. *An attempt to relocate the site in 2013 (Robb et al. 2016) was unsuccessful as the artefacts had been collected in 1982.*
7721-0054	1	Paddock K	Artefact Scatter	This site was identified in 1982 on a flat, floodplain (valley bottom) landform east of the Batesford Quarry. The site consists of isolated stone artefacts.

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
7721-0055	1	Paddock P	Artefact Scatter	This site was identified in 1982 on a flat, floodplain (valley bottom) landform east of the Batesford Quarry. The site original site consists of a total of 28 isolated stone artefacts near site 7721-0028 (La Trobe 1982), and three were collected. An anomaly appears in the draft CHMP (Robb et al. 2016). In Section 3.3.3, which discusses the survey results, it states that an attempt was made to relocate the site but was unsuccessful as the artefacts had been collected in 1982 (the site card says there were 28 artefacts but only three were collected). However, the site description for the site in Section 5.7.2 (2016: 181) states that "…subsurface artefacts were recorded during the current CHMP. {The site] is located on the plains and probably represents a background scatter of Aboriginal cultural heritage material. The artefacts in the assemblage had been disturbed by land use practices including grazing and ploughing."
7721-0056	1	Paddock Z	Artefact Scatter	This site was identified in 1982 on a flat, floodplain (valley bottom) landform east of the Batesford Quarry. The site consists of a total of 65 isolated stone artefacts.
7721-0131	1	Moorabool River 6	Artefact Scatter	This site was identified in 1990 on the western side of the Moorabool River diversion, on a flat, floodplain landform east of Batesford Quarry. The site comprises a an isolated subsurface quartzite waste flake. The artefact is held by the Wathaurong Co-op, and the site was destroyed by the Moorabool River diversion in 1990/1991..
7721-0563	1	Geelong Protectorate	Aboriginal Historical Place	Located approximately 250 m west of the end of Glengate Street, Bell Post Hill, this site is also registered on the VAHR as 5.1-5. The site is a Historical Aboriginal Reference and is the site of C.W. Sievwright's Protectorate Station, which he set up at Foster Fyan's old hut.
7721-0843	1	Jindalee 1	Artefact Scatter	This site was identified in 2007. Located in the intersection of the Moorabool River and Ballarat-Geelong Railway, this site is located on a flat plain landform in an area that has been highly disturbed by previous grape vine cultivation. The site measures approximately 60 x 40 m adjacent to the river embankment (a line of fill material follows the edge of the embankment). It comprises a small low density scatter of quartz and silcrete tools and flakes (n=9).
7721-0978	1	Cowies Creek 4	Artefact Scatter (Isolate)	This site was identified in 2009 during an assessment for upgrades to the ARTC rail tracks (Kaskadanis and Reid 2010). It comprises an isolated artefact that was deemed not to be in situ as it was in an area of significant ground disturbance and according to the site card this artefact was to be collected prior to works (already completed). A subsequent investigation by MacCulloch (2012) could not re-locate the artefacts suggesting that salvage has been completed, but considered that additional stone artefacts are likely be present.

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
7721-1011	2	Geelong Lime AS 1	Artefact Scatter	This site was identified in 2010. It comprises a surface artefact scatter located on a spoil heap of topsoil removed from the Batesford quarry and is therefore in a secondary context (primary context probably adjacent to the original Moorabool River course). The site is on top of a very steep escarpment overlooking the Moorabool River (material likely to be found down the escarpment face).
7721-1199	2	Cowies Creek 9	Artefact Scatter (Isolate)	This site was identified on a small rise/terrace approximately 40 m north of Cowies Creek. The site consists of a single silcrete blade at 120 mm depth contained within a 1 x 1m test pit.
7721-1210	1	Cowies Creek 8	Artefact Scatter	This site consists of 54 recorded surface artefacts and 11 subsurface artefacts to 160 mm depth and is also likely to contain additional unrecorded artefacts within its site extent. The site is a low to medium density scatter located between Cowies Creek and an unnamed creek spanning from the peak of a hill, hill flanks and the near creek flood plain. This artefact scatter also has high potential to extend to the west. This place is associated with long term and repeated visitation by Aboriginal peoples in this area, most probably associated the area's proximity to Cowies Creek.
7721-1211	2-4	Cowies Creek 10	Artefact Scatter	This site consists of a total of 138 recorded artefacts (127 surface and 11 subsurface artefacts) to 160 mm depth spanning several landforms: flat volcanic plain, steep creek terraces and near creek flood plain south of the intersection of an unnamed creek and Cowies Creek. This site is a low to medium density scatter which has been affected by ploughing and agricultural use resulting in the lateral dispersal of artefacts across the landscape. Within the site extent however, there appears to be artefact clustering in two distinct areas and these higher density clusters have been distinguished as separate artefact components (see Component 2 and 3) within the greater lower density site extent (Component 1).This Place also has high potential to contain additional artefacts within the current extent and also extend to the east and south.
7721-1256	1	Moorabool 5	LDAD	This site is a single artefact recovered during the CHMP survey. It was located on the plains and probably represents a background scatter of Aboriginal cultural heritage material. The site is considered to be closely associated with VAHR 7721-1330. This site comprises an isolated basalt anvil with evidence of grinding. *This site was recorded in 2013 (Robb et al. 2016: 182) in the vicinity of VAHR 7721-0026, -0052 and -0053 which were not relocated as the artefacts had been collected in 1982 (CHMP Section 3.3.1).*
7721-1265	1	Moorabool 6	LDAD	This site is a single artefact recovered during the CHMP survey. It was located on the margins of the Moorabool River and likely reflects a focus on the river for exploitation. The site is considered to be closely associated with VAHR 7721-1331 (Robb et al. 2016: 182).

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
7721-1277	1	Moorabool 7	LDAD	This site comprises two quartzite artefacts (complete flakes), one of which is a scraper, located on the Moorabool River floodplain east of the Batesford Quarry during the CHMP. Little is known about this site: there is no descriptive information provided on the VAHR and it is not discussed in the draft CHMP (Robb et al. 2016).
	2			
7721-1279	1	Moorabool 8	LDAD	This site is a single surface artefact that was recovered during the survey. It was located on the alluvial terraces associated with the Moorabool River and likely reflects a focus on the river for exploitation. The site is considered to be closely associated with VAHR 7721-1333 (Robb et al. 2016: 182).
7721-1330	1	Moorabool 9	Artefact Scatter	This site is a surface and subsurface artefact scatter. It is located on the plains and probably represents occupation around a natural depression in the landscape that may have held water. The 48 artefacts in the assemblage (largely recovered in 1982) had been disturbed by land use practices including grazing and ploughing. Note within immediate proximity to the place location are lounge mounds of spoil, these have been dumped in the activity area subsequent to the 1982 registration (Robb et al. 2016: 182). *The site extent includes retired site VAHR 7721-0024*.
7721-1331	1	Moorabool 10	Artefact Scatter	The site is a surface and subsurface artefact scatter. It is located on the margins of the Moorabool River and likely reflects a focus on the river for exploitation. The 439 artefacts in the assemblage (some recovered in 1982) have had been disturbed by land use practices including grazing and ploughing. The shallow silts along the escarpment are of Holocene origin. *The site extent includes retired sites VAHR 7721-0025, -0140 and -0141*.
7721-1332	1	Moorabool 11	Artefact Scatter	This site is a multi component Aboriginal place. Component 1 is a surface and subsurface artefact scatter. It is located on the margins of the Moorabool River and likely reflects a focus on the river for exploitation. The 211 artefacts in the assemblage have had been disturbed by land use practices including grazing and ploughing. The shallow silts on the edge of the terrace are of Holocene origin and are not associated with the deeper terrace sediments of VAHR 7721-1333. Component 2 is a subsurface low density artefact distribution. The single artefact is part of a stratified deposit in terraced sediments dated to the Holocene (7.19+0.29 ka). The location on a meander bend of the Moorabool River, suggests this artefact is not in situ and has been washed in with accumulating sediments (Robb et al. 2016: 184).
	3		Artefact Scatter	

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
7721-1333	1	Moorabool 15	Artefact Scatter	The site is a surface and subsurface artefact scatter. It is located on the alluvial terraces associated with the Moorabool River and likely reflects a focus on the river for exploitation. The terrace is deeply stratified, in excess of 10 m, and is of late Pleistocene (27.2 ka to 17.4 ka OSL 2) and Holocene origin (3.54 ka to 0.98 ka). The 903 artefacts in the assemblage have all been recorded in the Holocene deposits while the surface artefacts and upper layers of the subsurface deposits have been disturbed by land use practices including grazing and ploughing (Robb et al. 2016: 185). *The site extent includes retired site VAHR 7721-0032.*
7721-1334	1	Moorabool 17	Artefact Scatter	This site is a surface (n=6) and subsurface (n=73) artefact scatter along a high basalt plateau to the west of the Moorabool River floodplain. The subsurface artefacts were found at depths between 100 and 400 mm. The deposits are coarse silts and sand thought to have been deposited in the LGM (Pleistocene); however the types of artefacts suggest a Holocene age. The place was interpreted as part of a series of specialised activities including flake reduction along the basalt ridge overlooking the floodplain (Robb et al. 2016: 187).
7721-1335	2-29	Moorabool 12	LDAD	This site is a surface and subsurface LDAD located in a former avulsion channel of the Moorabool River, to west of the river. The 13 artefacts in the assemblage have had been disturbed by land use practices including grazing and ploughing. This section of the terrace also has shallow silts of Holocene origin. East of the river, the site is a surface and subsurface low density artefact distribution. It was located on the plains and probably represents a background scatter of Aboriginal cultural heritage material. The 17 artefacts in the assemblage have had been disturbed by land use practices including grazing and ploughing (Robb et al. 2016: 184).
7721-1337	1	Moorabool 16	Artefact Scatter	This site consists of two components. Component 1 is a subsurface artefact scatter and Component 2 is a surface low density artefact distribution. While these components are in proximity to each other they are not considered to be related, this is because the 49 subsurface artefacts are part of a stratified deposits in terraced sediments dated to the late Holocene (3.77 ka) while it is likely the surface artefacts have been ploughed down from the escarpment above where VAHR 7721-1331 is located. The five surface artefacts in the assemblage have been disturbed by land use practices

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)
	2		LDAD	including grazing and ploughing. Due to the large numbers of artefacts being recorded in both Test Pit 5 and Transect 6, ME1 and the comparable stratigraphy between the two subsurface testing locations it is probable that additional Aboriginal cultural heritage material is located in the larger avulsion channel. OSL dating suggested that a metre of sediment accumulated over a period of almost 4,000 years. This rapid deposition is consistent with flooding events and the realignment of the Moorabool River through time and confirms the potential for subsurface Aboriginal cultural heritage material to be present (Robb et al. 2016: 186). *The site extent includes retired site VAHR 7721-0031.*

A further six Aboriginal places were previously registered on the VAHR from the surveys and excavation/salvages east of Batesford Quarry in the 1980s and 90s for the diversion of the Moorabool River. These sites have since been retired from the VAHR as the site extents have been merged with new sites identified during the CHMP (Robb et al. 2016). As they have been merged, they are not included in the overall statistics of site numbers/types discussed above and in Section 3.6.1, and do not appear as separate sites in Maps 6 and 7.

Table 6: List of Previously Identified Aboriginal Places within the Study Area (Retired or Merged)

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)	Status
7721-0024	1	Moorabool River 2	Artefact Scatter	This site was registered in 1980 in a paddock east of the Batesford Quarry on the eastern side of an old paleochannel. The assemblage includes large flaked tools and utilised cores (no evidence of blade technology). The site is given as being 50 x 40 m in extent and a site map indicates a rough location but states that the site boundaries were not determined; however the report (La Trobe 1982) gives the site dimensions as 300 x 300 m. The assemblage comprised a total of 68 silcrete, quartz and quartzite artefacts.	Retired (Merged with 7721-1330)
7721-0025	1	Moorabool 3	Artefact Scatter	This site was registered in 1980 in a paddock east of the Batesford Quarry. The site has no specific boundaries in the site card, but the report (La Trobe 1982) gives the site dimensions as 50 x 50 m. The assemblage comprised 63 stone artefacts made from quartz, quartzite and silcrete, and included retouched scrapers, blades with usewear, cores and microlithics. *The site extent was fenced in 1991 (Storey and Russell 1991), and was relocated in 2013/14 (Robb et al. 2016).*	Retired (Merged with 7721-1331)

VAHR Site Number	Component Number	Site Name	Component Type	Description (from Site Card)	Status
7721-0031	1	Billabong Site	Artefact Scatter	This site was recorded in 1982 in paddocks east of Batesford Quarry. The site card gives its dimensions as 2 x 2 m, but the report (La Trobe 1982) gives the site dimensions as 20 x 10 m. The assemblage included a total of 63 silcrete artefacts. *The site extent was fenced in 1991 (Storey and Russell 1991), and was relocated in 2013/14 (Robb et al. 2016).*	Retired (Merged with 7721-1337
7721-0032	1	River Bend Site	Artefact Scatter	This site was recorded in 1982 on the Moorabool River floodplain and levee bank east of Batesford Quarry. The site area was given as 300 x 100 m and comprised a surface scatter of quartz, quartzite, flint and silcrete stone tools. *The site extent was re-located in 2013 (Robb et al. 2016).*	Retired (Merged with 7721-1333
7721-0140		Retreat 1	Artefact Scatter	*The site extent was fenced in 1991 (Storey and Russell 1991), and was relocated in 2013/14 (Robb et al. 2016).*	Retired (Merged with 7721-1331
7721-0141	1	Retreat 2	Artefact Scatter	This site was registered c.1990/91 near a former oxbow lake, east of the Batesford Quarry. The site measured 12 x 10 m. The assemblage comprised approximately 24 stone artefacts, made from silcrete, quartz and quartzite and comprising cores, flakes (untouched and retouched), as well as a small number of flaking debris.	Retired (Merged with 7721-1331)

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.

Moorabool River Sites

Robb et al. (2016: 189) provides a discussion on the geochronology of Aboriginal places identified east of the Batesford Quarry. They consider that the cultural heritage in that location relates to a sequence of Holocene occupations of the Moorabool River and surrounding plains. They found no traces of early (i.e. Pleistocene to early-Holocene) human presence in their activity area, i.e. on the older river terraces which were established in the cold and arid conditions of the LGM. They conclude that Aboriginal occupation became concentrated on the Moorabool River terraces and floodplain during the mid-Holocene, perhaps from about 4,000 years ago. The patterning of artefact distribution both on the floodplain and along the river terraces is strongly

associated with wetlands and stream courses. The evidence suggests that the mid-Holocene river valley was a mosaic of wetland resources, with marshlands and back swamps along the floodplain within the bowl of the surrounding basalt rises. The lower-lying marshlands on the floodplain probably follow the lines of an older Pleistocene river channel along the eastern side of the floodplain, in-filled with late Pleistocene aeolian and alluvial sediments. Within the river terraces themselves there were cut-offs and abandoned meander channels which would have provided further resources.

Cowies Creek Sites

MacCulloch (2012: 42) briefly discusses the site formation processes of sites identified in the various landforms south of Cowies Creek. He concluded that it is likely that his activity area was part of a larger cultural landscape used by Aboriginal people to gain access to Cowies Creek for water supply, food and other resources, i.e. proximity to that water source is the primary driver for spatial location of sites; however, he equates spatial distribution of artefacts at. both VAHR 7721-1210 and VAHR 7721-1211 to the effects of modern disturbances such as ploughing and agricultural use resulting in a loss of archaeological integrity and the lateral dispersal of artefacts across the landscape. As no dating was obtained, temporal associations across the area were not discussed.

Kaskadanis and Reid (2010) did not provide any conclusions for site formation processes for sites they found in their assessment of the rail corridor immediately north of the study area. One of the places they identified is within the current study area (VAHR 7721-0978). However this was an isolated artefact found on the surface of a vehicle track with no archaeological integrity. Therefore no conclusions on site formation process, other than disturbance during the construction of the railway, can be drawn.

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 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 WGGA 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
7721-0001	Dog Rocks	Quarry	High
7721-0023	Moorabool River 1	Artefact Scatter	Not Assessed
7721-0026	Moorabool 4	Artefact Scatter	Not Assessed
7721-0028	Hill Site	Artefact Scatter	Not Assessed
7721-0029	Terrace Site	Artefact Scatter	Not Assessed
7721-0030	Saturday Site	Artefact Scatter	Not Assessed
7721-0034	Paddock A	Artefact Scatter	Not Assessed
7721-0049	Paddock B	Artefact Scatter	Not Assessed
7721-0050	Paddock C	Artefact Scatter	Not Assessed
7721-0051	Paddock D	Artefact Scatter	Not Assessed
7721-0052	Paddock G	Artefact Scatter	Not Assessed
7721-0053	Paddock I	Artefact Scatter	Low
7721-0054	Paddock K	Artefact Scatter	Not Assessed
7721-0055	Paddock P	Artefact Scatter	Moderate
7721-0056	Paddock Z	Artefact Scatter	Not Assessed
7721-0131	Moorabool River 6	Artefact Scatter	Not Assessed
7721-0563	Geelong Protectorate	Aboriginal Historical Place	Not Assessed
7721-0843	Jindalee 1	Artefact Scatter	Not Assessed
7721-0978	Cowies Creek 4	Artefact Scatter (Isolate)	Low
7721-1011	Geelong Lime AS 1	Artefact Scatter	Not Assessed

VAHR Site Number	Site Name	Component Type	Significance
7721-1199	Cowies Creek 9	Artefact Scatter (Isolate)	Low
7721-1210	Cowies Creek 8	Artefact Scatter	Low
7721-1211	Cowies Creek 10	Artefact Scatter	Low
7721-1256	Moorabool 5	LDAD	Low
7721-1265	Moorabool 6	LDAD	High
7721-1277	Moorabool 7	LDAD	Unknown
7721-1279	Moorabool 8	LDAD	High
7721-1330	Moorabool 9	Artefact Scatter	Low
7721-1331	Moorabool 10	Artefact Scatter	High
7721-1332	Moorabool 11	Artefact Scatter	Moderate
7721-1333	Moorabool 15	Artefact Scatter	High
7721-1334	Moorabool 17	Artefact Scatter	High
7721-1335	Moorabool 12	LDAD	Moderate
7721-1337	Moorabool 16	Artefact Scatter	High

4.3 Conclusions

The results of the desktop assessment indicate there are a total of 33 previously registered Aboriginal places within the study area, but a total of 112 are registered in close proximity (within 1 km). The majority of these sites are stone artefact scatters, some of which are extensive and cover large areas. However, the places are mostly confined to two discrete areas: Moorabool Floodplain east of the Batesford Quarry and along Cowies Creek in the north eastern section. A small number of other sites are also present. 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:

- The presence of low to moderate density artefact scatters along the Moorabool River floodplain and terraces suggests this landform is highly sensitive and should be retained during future development, where possible;

- Disturbed areas of the Moorabool River floodplain are less likely to be culturally sensitive. These include the two river diversions and where river crossings have been developed such as on the Midland Highway;
- Areas of high, moderate and low sensitivity 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 Aboriginal Archaeological Site Prediction Statement

The following site prediction statement[1] 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[2] 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 10.

Stone Artefact Scatters are considered likely to occur in the activity area. Previous investigations in and around the study area have identified extensive artefact scatters, particularly along the margins of high-resource waterways, primarily the Moorabool and Barwon Rivers and Cowies Creek, which are considered to be of **High** sensitivity.

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

[1] 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.
[2] **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.

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 known to occur in the study area and additional, unknown sites, are considered likely to occur.

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. One registered scarred tree (VAHR 7721-0959) is located adjacent to the study area, on the western bank of the Moorabool River (Collins 45); however none have been previously recorded in the study area itself. Other scarred trees may be present in areas where mature native vegetation occurs. These are most likely to be in the Dog Rocks Reserve, along riparian courses 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 may occur in the study area. Only one recorded midden is located in the search area. This is located on the lip of the Moorabool River escarpment, between Graylea Avenue and Hyland Street, Hamlyn Heights. Its location high above the floodplain is relatively unusual and suggests that shell fish were removed from the river margins for consumption at higher elevations. Therefore there is potential that freshwater shell midden material is present.

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.

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 known to occur in the study area. There is one registered Aboriginal greenstone quarry located in the Dog Rocks Reserve. Outcrops of suitable raw material for stone tool production are unlikely to occur.

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.

5.2 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 49 mapped ACHS that affect the study area (Map 8):

- Land located within 200 m of a named watercourse, including:
    1. Moorabool River;
    2. Barwon River; and
    3. Cowies Creek;
- Land within 50 m of the actual extents of all 33 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:
    37. VAHR 7721-0591 (located on Geelong Ring Road reserve at Bell Post Hill);
    38. VAHR 7721-0636 (located on Geelong Ring Road reserve at Hamlyn Heights);
    39. VAHR 7721-0637 (located on Geelong Ring Road reserve at Hamlyn Heights);
    40. VAHR 7721-0638 (located on Geelong Ring Road reserve at Hamlyn Heights);
    41. VAHR 7721-0639 (located on Geelong Ring Road reserve at Hamlyn Heights);
    42. VAHR 7721-0802 (located on Geelong Ring Road reserve at Herne Hill);
    43. VAHR 7721-0601 (located on Geelong Ring Road reserve at Herne Hill);
    44. VAHR 7721-0803 (located on Geelong Ring Road reserve at Herne Hill);
    45. VAHR 7721-0602 (located on Geelong Ring Road reserve at Herne Hill);
    46. VAHR 7721-0959 (located on the west bank of the Moorabool River at Batesford);
    47. VAHR 7721-0979 (Located in the rail reserve at Lovely Banks);
    48. VAHR 7721-0980 (Located in the rail reserve at Moorabool); and
    49. VAHR 7721-0981 (Located in the rail reserve at Moorabool).

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).

5.3 Sensitivity Mapping

5.3.1 Preliminary Archaeological Sensitivity Mapping

The predictive statement discussed above (Section 5.1) was analysed and used to prepare a preliminary archaeological sensitivity map (Map 10). 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).

A review of previous archaeological investigations indicates that the majority of Aboriginal archaeological sites in the geographic area 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 occur within the floodplains and terraces associated with the waterways, particularly along the margins of larger rivers and creeks (or their related floodplains and terraces), which are considered to be of **High** archaeological potential, and lesser tributaries which are considered to be of **Moderate** archaeological potential. They may also occur in elevated areas overlooking the creeks. These areas have also been built on, and archaeological deposits will only be present in areas that have not been disturbed. The elevated areas are considered to be of **Moderate** sensitivity although these areas are more likely to have LDADs than extensive artefact scatters. Although slopes are generally considered to be of **Low** sensitivity, 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; however it is highly unlikely that Aboriginal cultural heritage will be present on the steep escarpment slopes of the Moorabool River.

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 11.

5.3.2 High Archaeological Potential

Three areas of high sensitivity were identified:

- Moorabool River floodplain;
- Barwon Rover floodplain (northern side);
- The margins of Cowies Creek and its tributary.

The high sensitivity areas generally follow the edges of the floodplains (as per contour mapping), but includes the very lowest part of the adjacent slopes. The high sensitivity area is outlined in dark green in the sensitivity map (Map 10). The results of previous investigations, together with this assessment has shown this landform to have high potential to retain high density archaeological deposits that may be rare and may have archaeological research values, as well as important cultural values to Aboriginal traditional owners.

5.3.3 Moderate Archaeological Potential

Several areas are considered to have moderate potential:

- The crest of the escarpment overlooking the Barwon River (northern side);
- The small hill crest north of the Barwon River overlooking the floodplain;
- The margins of two small waterways north of the Hamilton Highway and Fyansford-Gheringhap Road;
- The crests of the escarpment overlooking the Moorabool River; and
- A small hill/knoll between Batesford and the Moorabool River to the south.

The moderate potential areas are outlined in light green in the sensitivity map (Map 10).

5.3.4 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 10). 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.

It is important to note, however, that Aboriginal cultural heritage may occur anywhere in the landscape, and may be the result of transitory and/or ephemeral practices such as hunting activity and/or transiting between areas of higher resource availability. Therefore, the low sensitivity rating is based more on the lower balance of probability for Aboriginal cultural heritage to be present.

However, even within this category, there are differing levels of sensitivity. For example the plains and gentle, undulating slopes across most of the study area are more likely to retain low density Aboriginal cultural heritage deposits, than the very steep slopes along the river escarpments; 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.

5.3.5 Disturbance Areas

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

- *Quarry Pits and associated production areas*. There are two quarry pits in the study area. One, the Batesford Quarry is a massive open pit that covers a large portion of the centre of the study area. Another much smaller quarry pit is located due west of the Moorabool River/Geelong Ring Road bridge. All culturally sensitive topsoils have been removed from these areas;
- *The two extensive Batesford Quarry overburden dumps*. These are massive areas of soil dumps. Disturbance to the original, underlying topsoils is unknown, but it is understood that the overburden will be left in situ and form part of the new development. Therefore the underlying original topsoils are unlikely to be disturbed;
- A*rtificial diversions of the Moorabool River*. This comprises an artificial channel to the north and west of the Batesford Quarry pit, and a concrete-lined diversion through the former quarry pit to the north of the current pit;
- *Farmhouses and farm complexes*. There are numerous rural properties spread across the study area, although the highest concentration is north of the Midland Highway. These include both standing structures such as houses and outbuildings/sheds, and potentially historical archaeological remnants.;
- *Farm/stock management infrastructure*, e.g. dams, sheds, etc. These often comprise complete removal of the original (culturally sensitive) topsoil;
- *Higher density residential blocks in Batesford and Bell Post Hill*. These usually include smaller land parcels with house and usually with landscaping across the land parcel;

- *Commercial infrastructure*, e.g. the timber production yards south of the Hamilton Highway and the roadhouse on the Midland Highway. These usually include levelled areas, with concrete foundations for buildings, sheds, carparks and other infrastructure;
- *Recreation infrastructure*, e.g. sporting fields at Bell Post Hill. The construction of ovals for sporting usually involves levelling of the ground surface;
- *Spiritual centres*, e.g. the Greek Orthodox Monastery and the Macedonian centre at Bell Post Hill. These usually include levelled areas, with concrete foundations for buildings, sheds, carparks and other infrastructure; and
- *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, together with the provision of causeways and bridges over the Moorabool and Barwon Rivers and Cowies Creek have caused extensive disturbance throughout the road reserve sections of the study area.

The disturbance areas identified in this assessment are outlined in light red in the sensitivity map (Map 10). 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 11) they void that part of the area of sensitivity.

5.3.6 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 proposed quarry extension area east of the quarry and along road reserves for previous utility installations. Given the limited amount of archaeological investigation carried out over the last few years within the study area and its environs, including the results of extensive subsurface testing carried out in large parts of the study area, the accuracy of the mapping (Map 10) 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 Significant Aboriginal Cultural Heritage

The results of this desktop assessment and the limited number of previous assessments indicate that the floodplain of the Moorabool and Barwon Rivers and the margins of Cowies Creek are highly sensitive for the presence of Aboriginal cultural heritage. Planning within the Framework Plan should aim to reserve the floodplain landform into open space networks, riparian corridors, conservation areas or biolinks as a means of minimising or avoiding impacts to Aboriginal cultural heritage, and to minimise the requirement for unnecessary complex assessment.

Pending the preparation of CHMP for activity areas that contain Aboriginal cultural heritage sites, it is an offence under the *Aboriginal Heritage Act 2006* to knowingly harm those sites.

Recommendation 2: Framework Planning – CHMPs Currently in Preparation

One area of land east of Batesford Quarry is currently the subject of a CHMP that has already been commissioned (CHMP #124999; Robb et al. 2016; see Map 11). However, the activity described for the CHMP is for a Quarry extension (extractive industry) and does not cover a residential subdivision type activity. 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. However, the land within the previous CHMP activity area has been comprehensively assessed for Aboriginal cultural heritage and therefore no further Aboriginal archaeological assessment of that area is required. 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.

Recommendation 3: Framework Planning – Previously Prepared CHMPs

One area of land east along Cowies Creek is the subject of a previous CHMP (#11980; MacCulloch 2012) that has already been approved (Map 11). The activity described for the CHMP is for a low density residential development consisting of nine allotments. 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 4: Requirement for Mandatory Cultural Heritage Management Plan

Many individual land parcels contain legislated areas of cultural heritage sensitivity defined under the *Aboriginal Heritage Act 2006*, either within 50 m of the boundary of a registered Aboriginal Place (Regulation [r.]22) and/or within 200 m of a named waterway (r.23). Due to the size of land parcels over much of the study area, many parcels include 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, etc.)(r.43).

An overview of existing land parcels that may be subject to mandatory CHMP is shown in Map 11.

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), a Notification of Intent to Prepare a CHMP must be provided prior to any CHMP works proceeding.

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 5: Aboriginal Places – Site Extent Testing

Notwithstanding the recommendation to avoid testing in reserved areas or areas that will not be disturbed (Recommendation 1), any complex assessment in an activity area that contains one or more of the Aboriginal Places 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 11), 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.

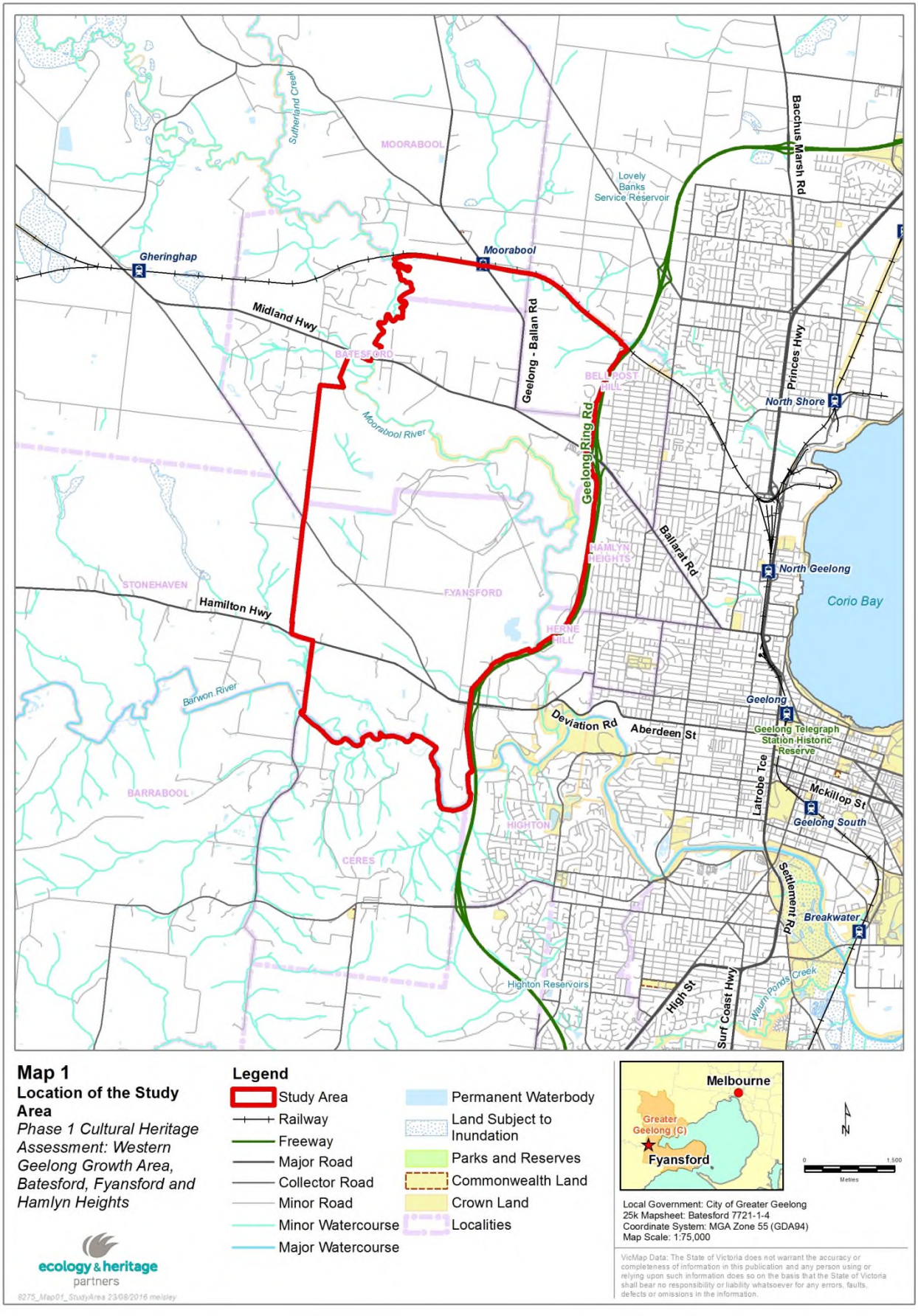
Recommendation 8: No Further Assessment Required

Large parts of the study area are not located in a legislated area of cultural heritage sensitivity (Map 11). Land parcels and road reserves in the study area that do not occur within an area of cultural heritage sensitivity under the Regulations do not require a mandatory CHMP.

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



Map 1
Location of the Study Area
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

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6275_Map01_StudyArea 23/08/2016 melsley

Legend

- Study Area
- Railway
- Freeway
- Major Road
- Collector Road
- Minor Road
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Parks and Reserves
- Commonwealth Land
- Crown Land
- Localities

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

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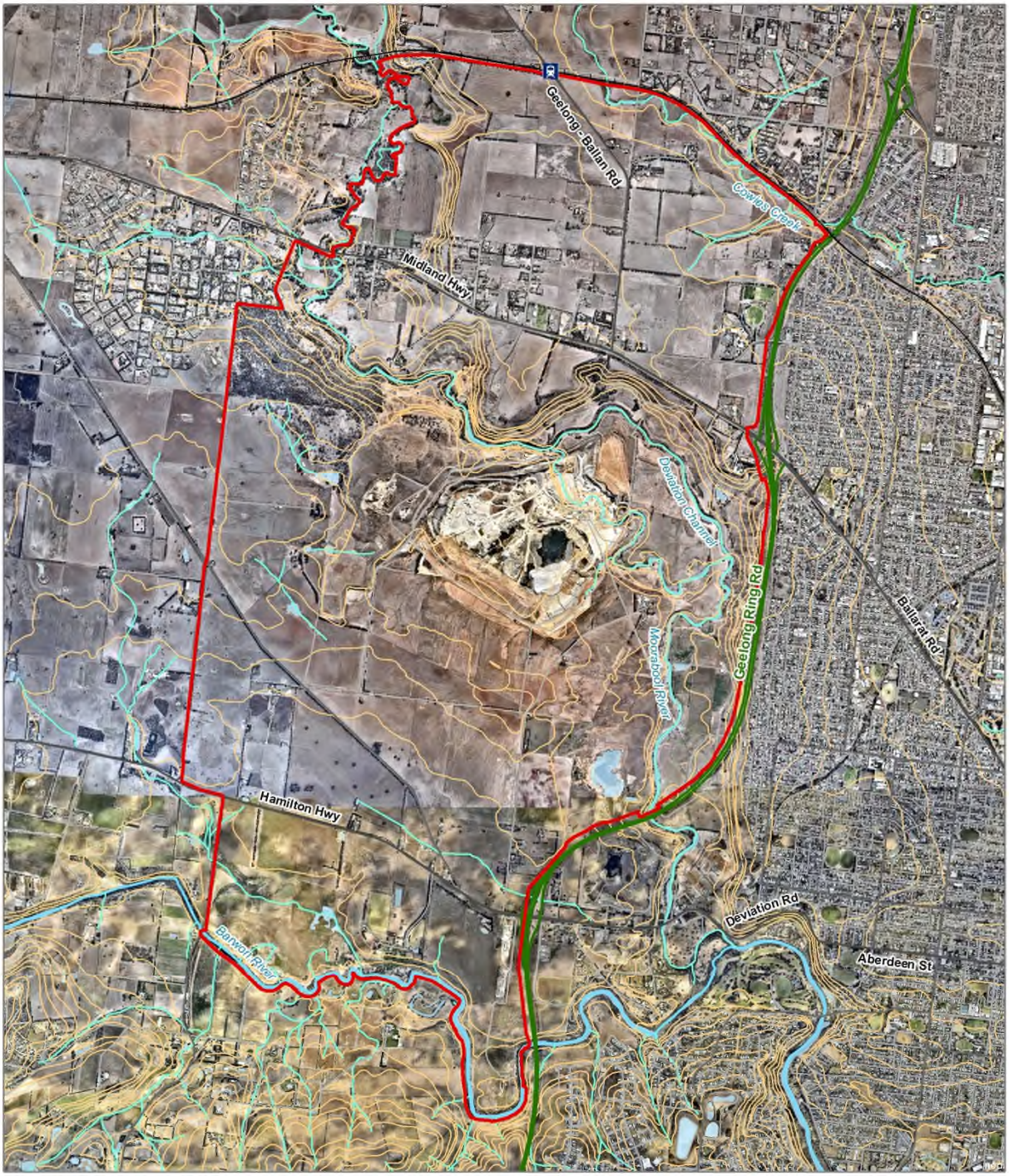

Map 2
Extent of the Study Area
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

Legend
- Study Area
- Contour (10m)
- Minor Watercourse
- Major 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: 1:44,000

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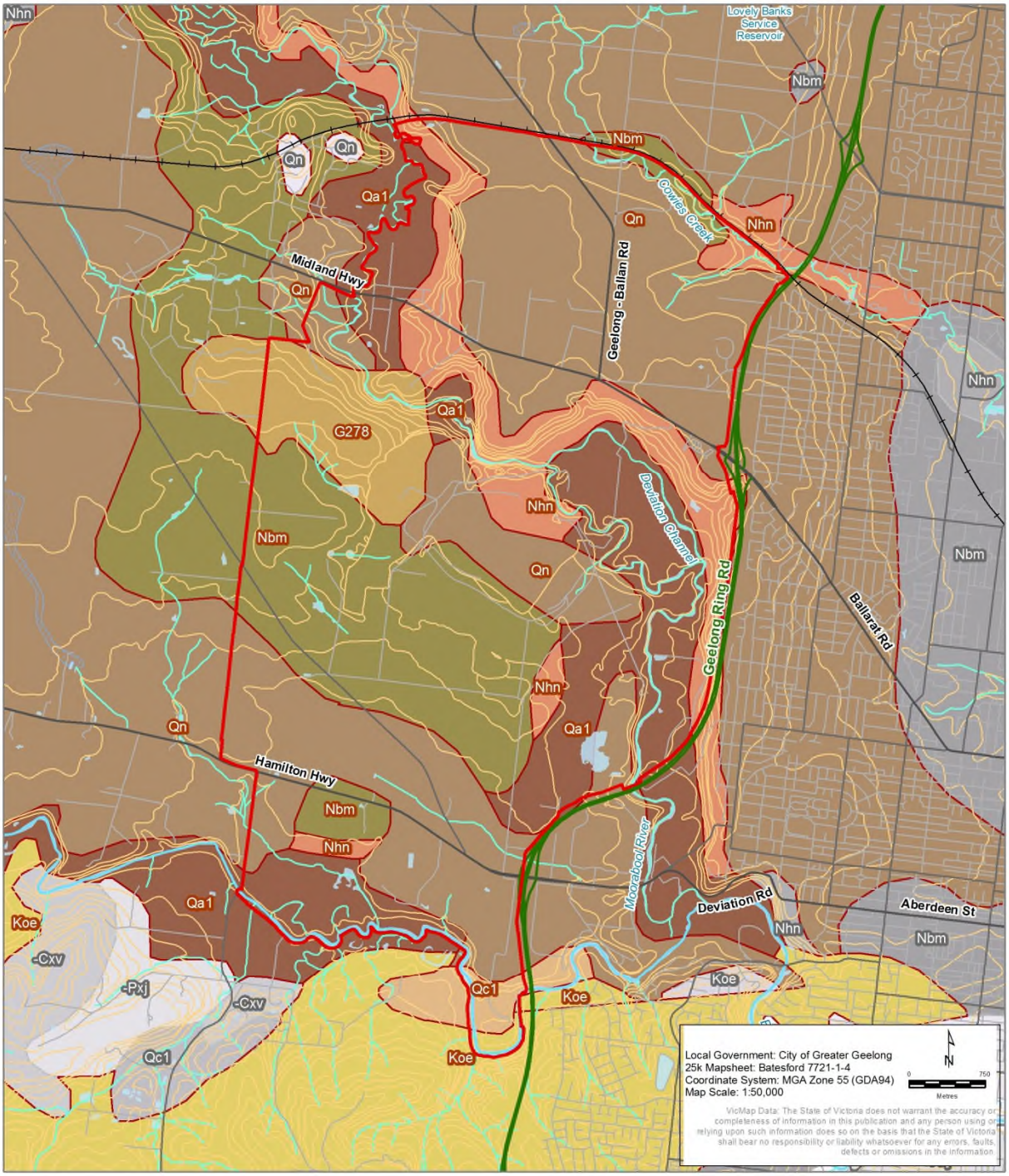
6275_Map02_Extent 23/08/2016 meikley



Map 3
Relevant Geology
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

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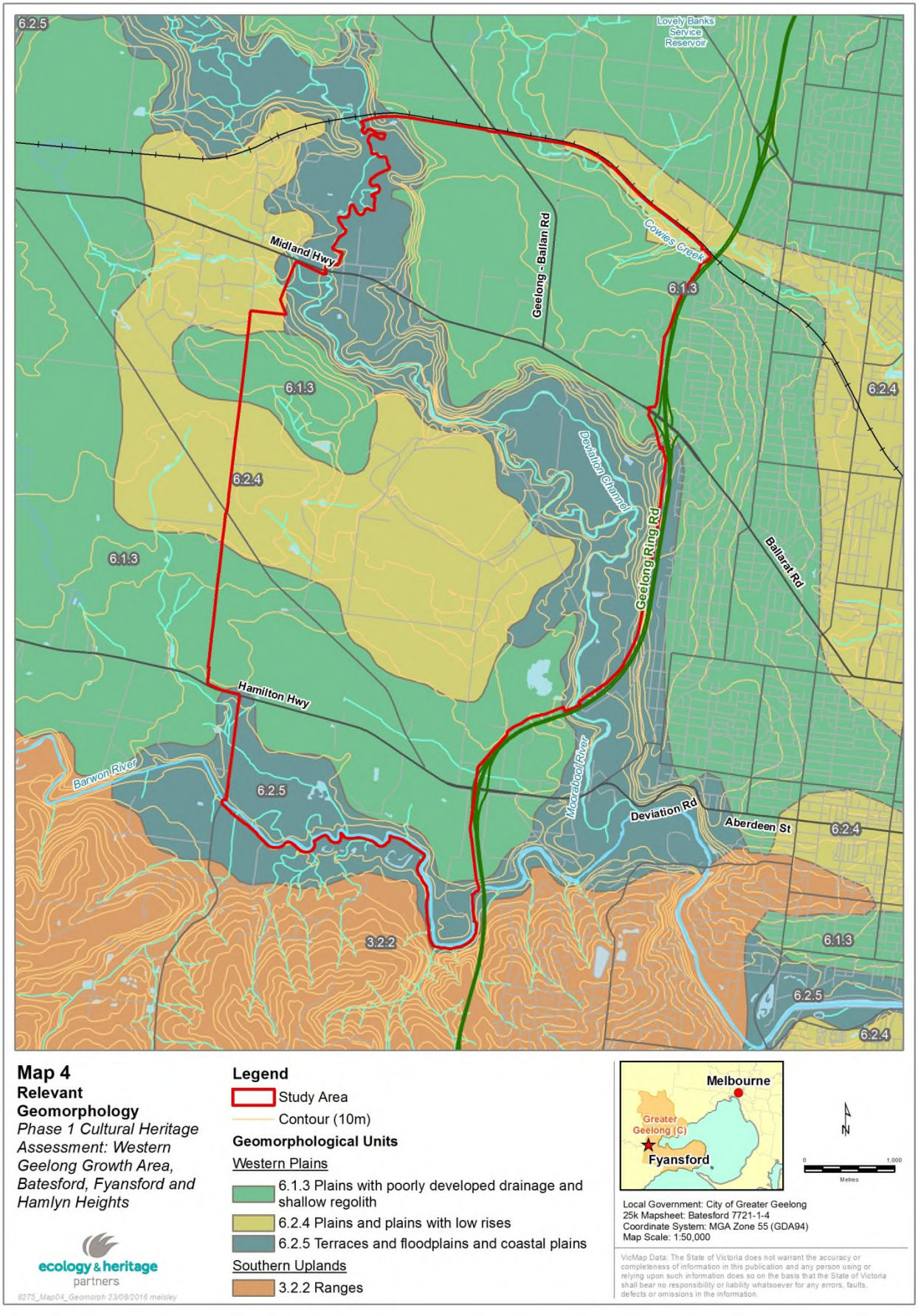
6275_Map03_Geology 23/08/2016 melsley

Legend

Study Area

Geology

- G278 - Dog Rocks Granite (Devonian (Late Devonian) to Devonian (Late Devonian) in age)
- Koe - Eumeralla Formation, Fluvial, braided stream deposits: volcanolithic sandstone, siltstone, mudstone, with feldspar and quartz grains, fine to medium grained (Cretaceous (Early Cretaceous) to Cretaceous (Early Cretaceous) in age)
- 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)
- Qc1 - Unnamed colluvium, Fluvial: "gully" alluvium, colluvium: gravel, sand, silt (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)



Map 4
Relevant Geomorphology
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

ecology & heritage partners
6275_Map04_Geomorph 23/08/2016 meisley

Legend

Study Area
Contour (10m)

Geomorphological Units

Western Plains
- 6.1.3 Plains with poorly developed drainage and shallow regolith
- 6.2.4 Plains and plains with low rises
- 6.2.5 Terraces and floodplains and coastal plains

Southern Uplands
- 3.2.2 Ranges

N

0 1,000 Metres

Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:50,000

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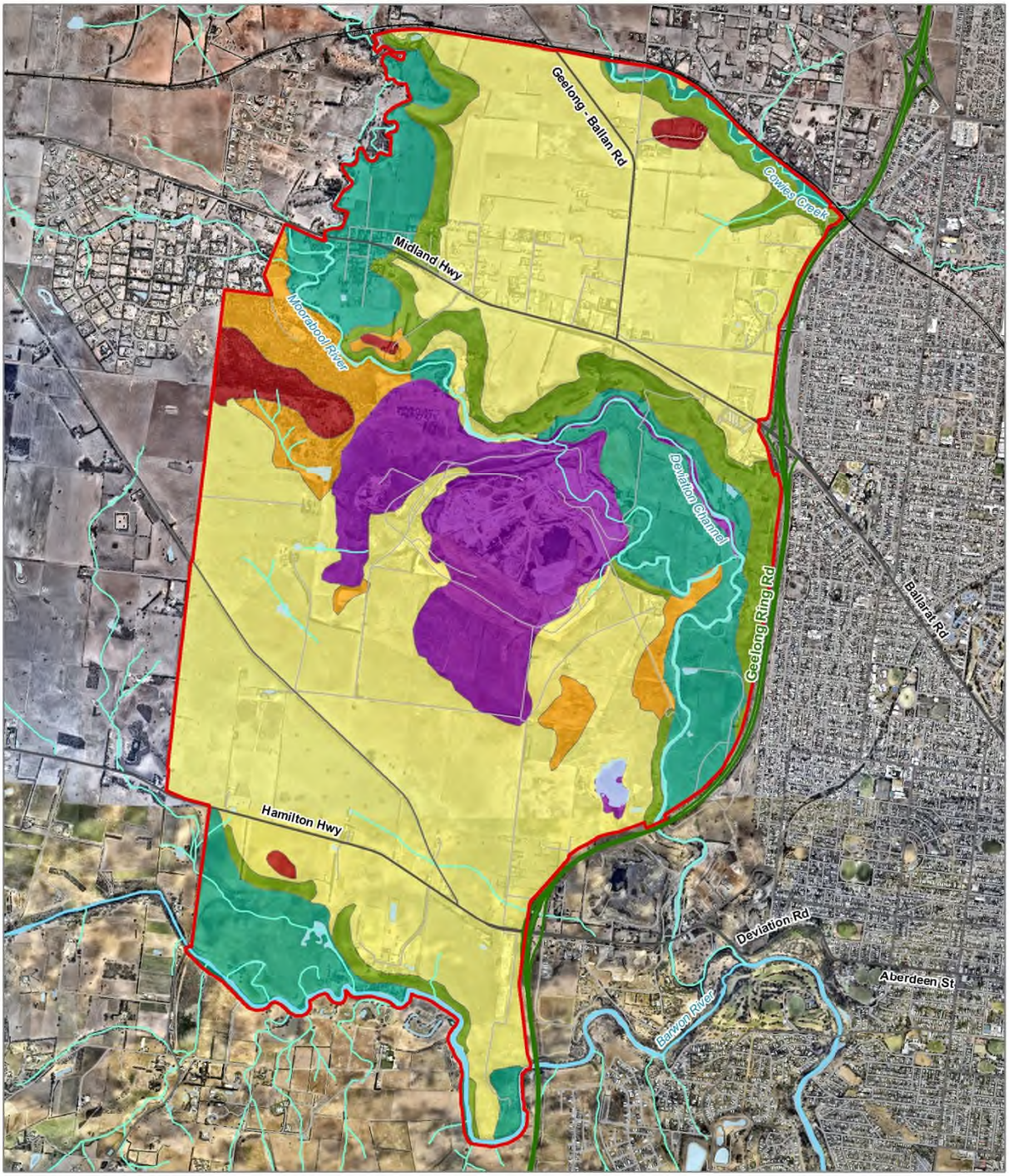

Map 5
Natural Landforms
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

Legend
Study Area
Landforms
Ridge / Hill Crest
Moderate Slopes
River Escarpments / Steep Slopes
Flat to Gentle / Undulated
Floodplain / Terraces
Modified Landscape (Quarry)

Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:42,000

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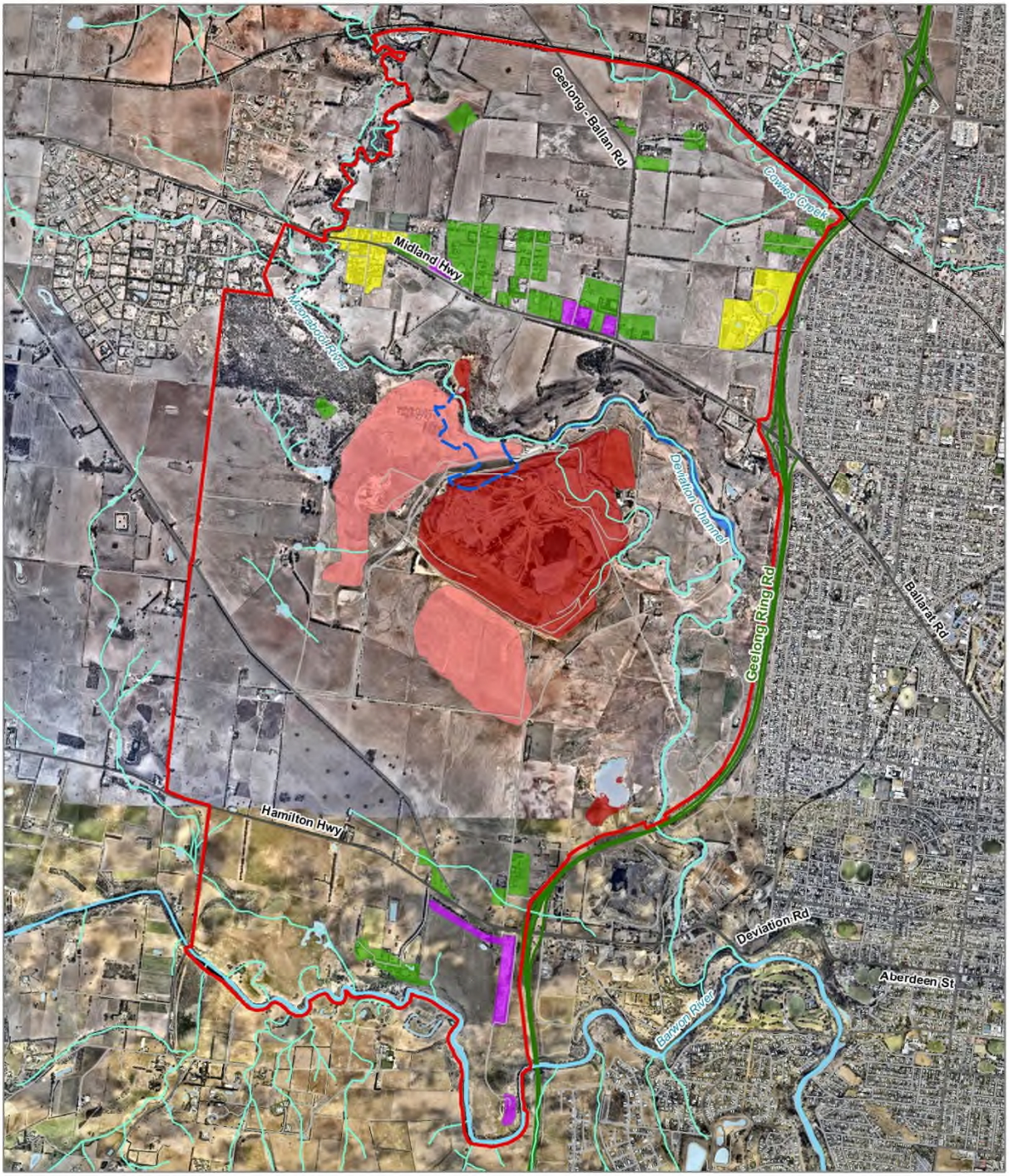
6275_Map05_Landforms 23/08/2016 meisley



Map 6
Previous Disturbance
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

Legend
- Study Area

Areas of previous disturbance
- Individual Development
- Moorabool River Deviation
- Overburden Dumps (Approx.)
- Quarry Pits
- Rural Living (Isolated Disturbances)
- Township
- Original River Course

Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:42,000

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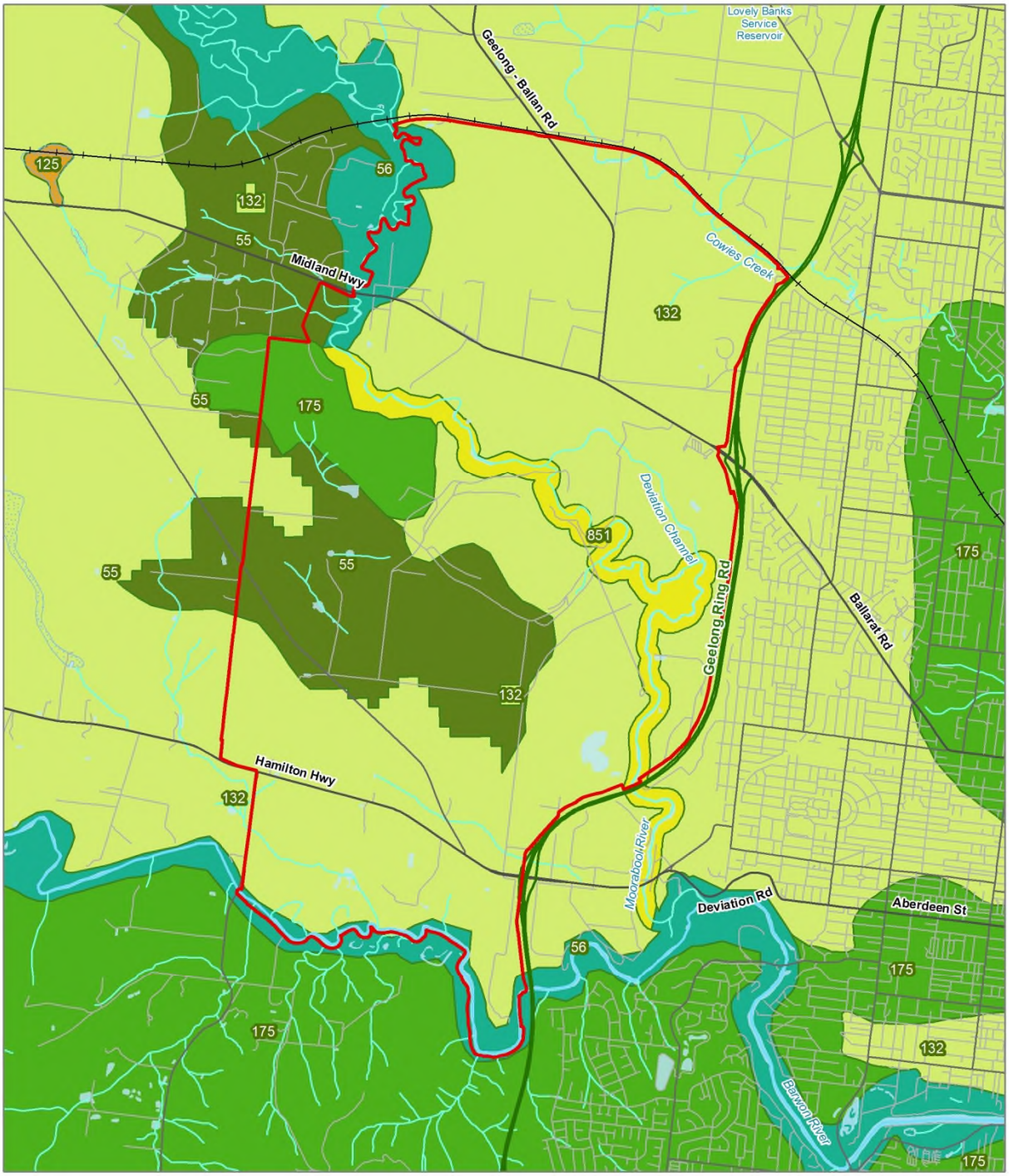
6275_Map06_Disturbance 23/11/2016 meisley



Map 7
Modelled Pre 1750 Ecological Vegetation Classes
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

Legend
Study Area
Ecological Vegetation Classes (pre 1750)
- EVC 125 Plains Grassy Wetland
- EVC 132 Plains Grassland
- EVC 175 Grassy Woodland
- EVC 55 Plains Grassy Woodland
- EVC 56 Floodplain Riparian Woodland
- EVC 851 Stream Bank Shrubland

Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:50,000

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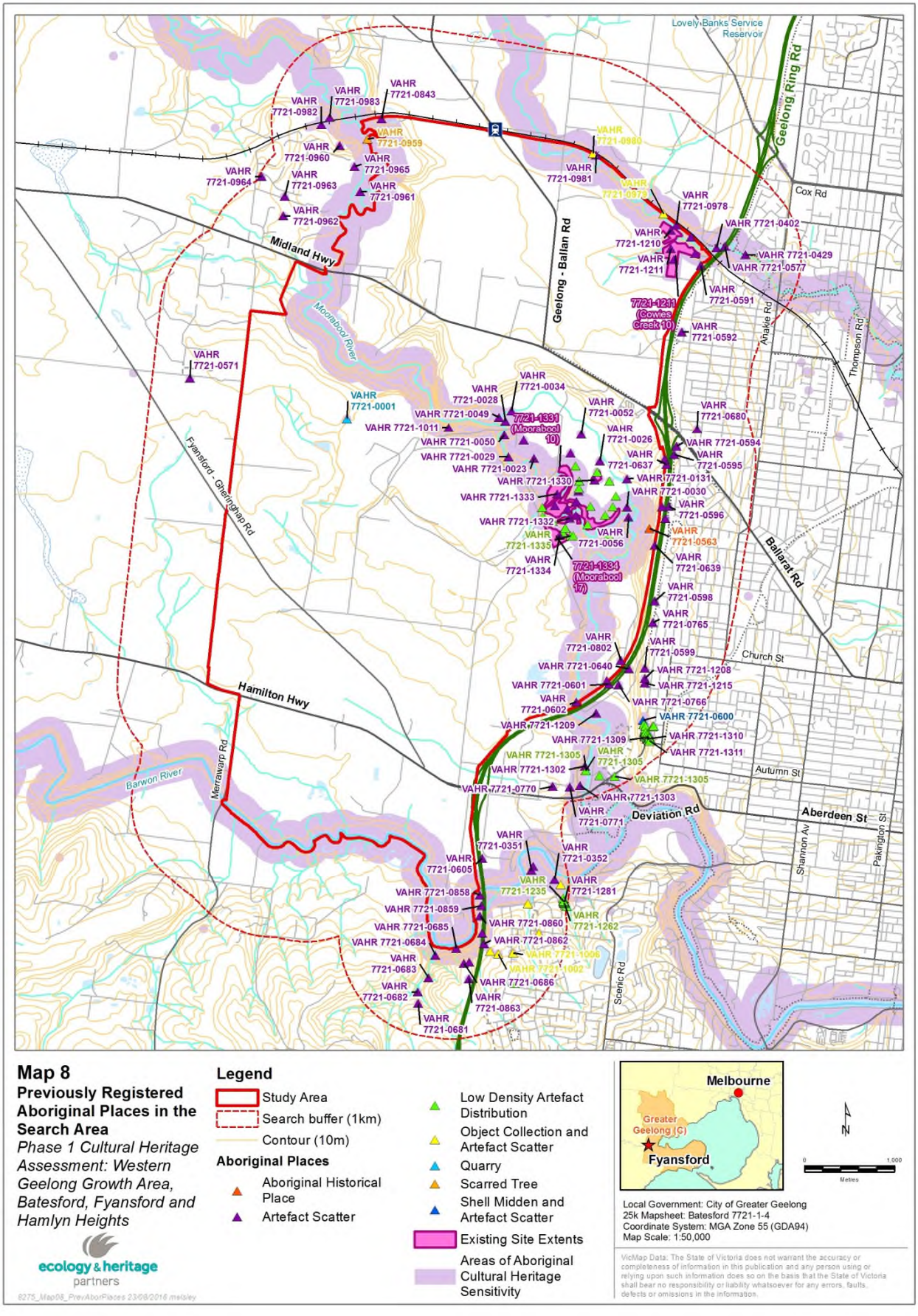
8275_Map07_Pre1750_EVCs 23/08/2016 meisley


Lovely Banks Service Reservoir
Geelong Ring Rd
Cox Rd
Geelong - Ballan Rd
Midland Hwy
Moorabool River
Fyansford - Gheringhap Rd
Hamilton Hwy
Barwon River
Merrawarp Rd
Anakie Rd
Thompson Rd
Ballarat Rd
Church St
Autumn St
Aberdeen St
Deviation Rd
Shannon Av
Pakington St
Scenic Rd
7721-1331 (Moorabool 10)
7721-1334 (Moorabool 17)
7721-1211 (Cowies Creek 10)
Melbourne
Greater Geelong (C)
Fyansford
Map 8
Previously Registered Aboriginal Places in the Search Area
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights
Legend
Study Area
Search buffer (1km)
Contour (10m)
Aboriginal Places
Aboriginal Historical Place
Artefact Scatter
Low Density Artefact Distribution
Object Collection and Artefact Scatter
Quarry
Scarred Tree
Shell Midden and Artefact Scatter
Existing Site Extents
Areas of Aboriginal Cultural Heritage Sensitivity
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:50,000
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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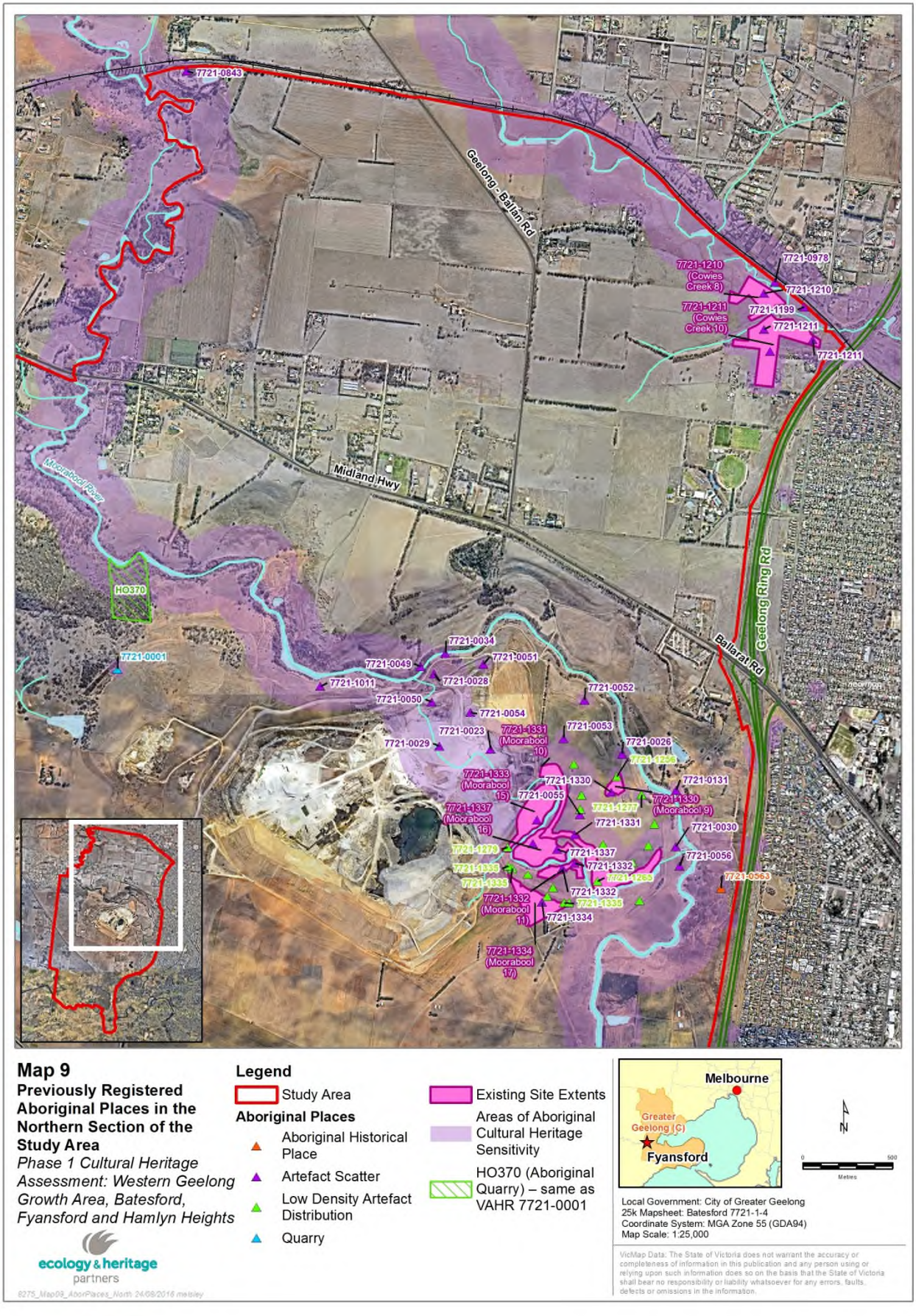
6275_Map08_PrevAborPlaces 23/08/2016 melsley



Map 9

Previously Registered Aboriginal Places in the Northern Section of the Study Area

Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights

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6275_Map09_AborPlaces_North 24/08/2016 melsley

Legend

- Study Area
- Existing Site Extents
- Areas of Aboriginal Cultural Heritage Sensitivity
- HO370 (Aboriginal Quarry) – same as VAHR 7721-0001

Aboriginal Places

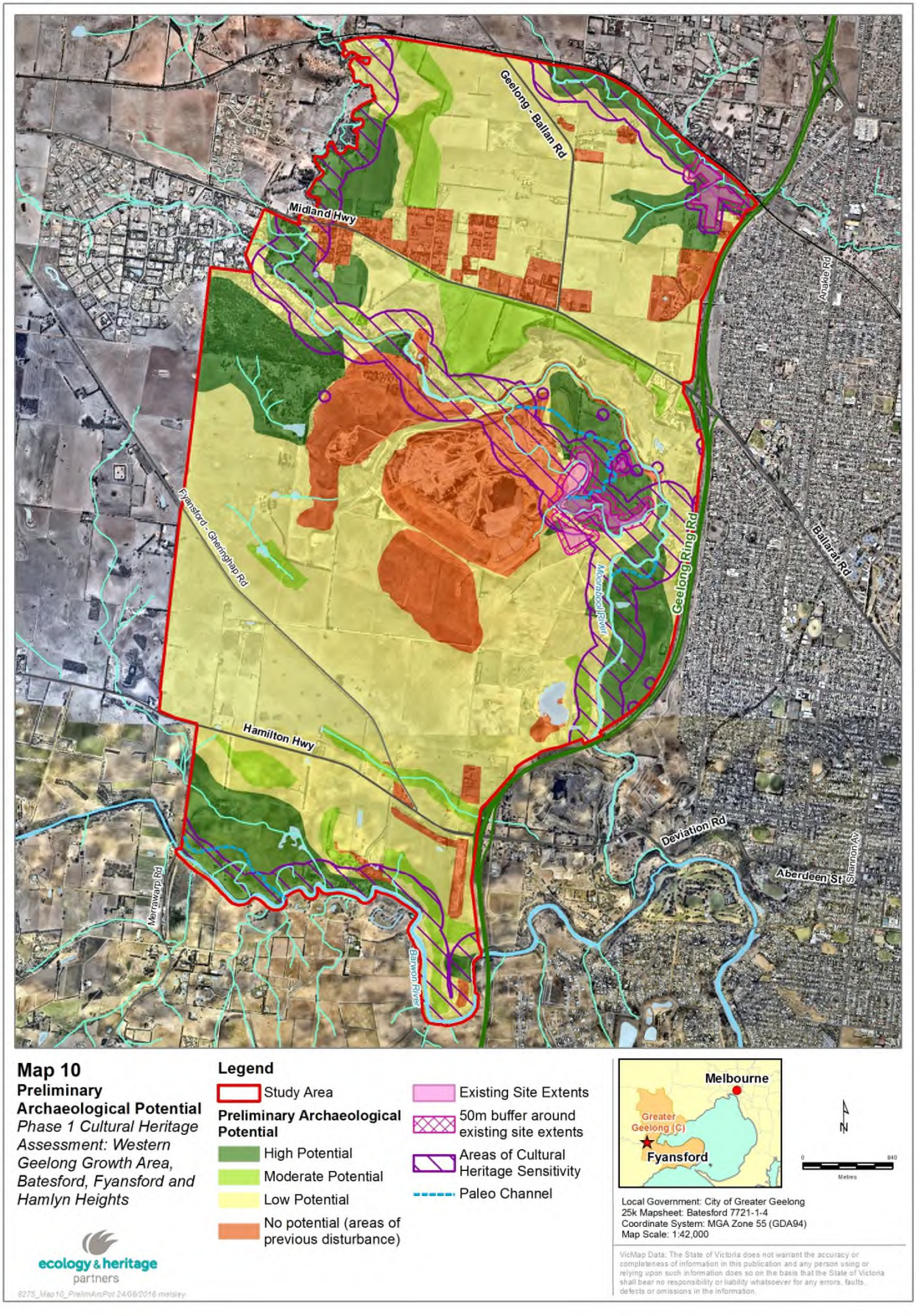
- Aboriginal Historical Place
- Artefact Scatter
- Low Density Artefact Distribution
- Quarry

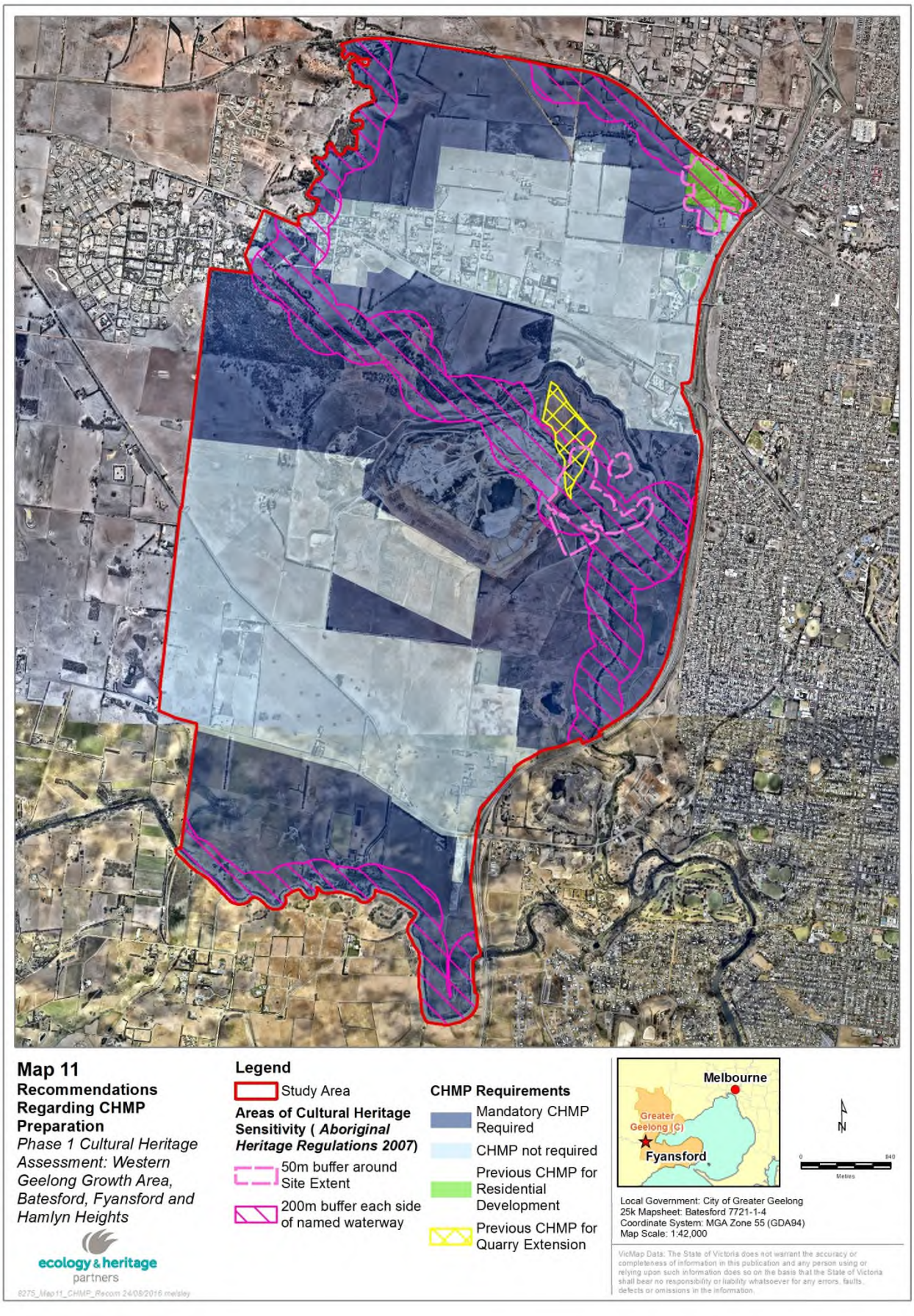
N

0 500 Metres

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

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.


Geelong - Ballan Rd
Midland Hwy
Anakie Rd
Fyansford - Gheringhap Rd
Moorabool River
Geelong Ring Rd
Ballarat Rd
Hamilton Hwy
Deviation Rd
Aberdeen St
Shannon Av
Merrawarp Rd
Barwon River
Map 10
Preliminary Archaeological Potential
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights
Legend
Study Area
Preliminary Archaeological Potential
High Potential
Moderate Potential
Low Potential
No potential (areas of previous disturbance)
Existing Site Extents
50m buffer around existing site extents
Areas of Cultural Heritage Sensitivity
Paleo Channel
Melbourne
Greater Geelong (C)
Fyansford
N
0
840
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:42,000
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
6275_Map10_PrelimArchPot 24/08/2016 melsley


Map 11
Recommendations Regarding CHMP Preparation
Phase 1 Cultural Heritage Assessment: Western Geelong Growth Area, Batesford, Fyansford and Hamlyn Heights
ecology & heritage partners
8275_Map11_CHMP_Recom 24/08/2016 melsley
Legend
Study Area
Areas of Cultural Heritage Sensitivity (Aboriginal Heritage Regulations 2007)
50m buffer around Site Extent
200m buffer each side of named waterway
CHMP Requirements
Mandatory CHMP Required
CHMP not required
Previous CHMP for Residential Development
Previous CHMP for Quarry Extension
Melbourne
Greater Geelong (C)
Fyansford
N
0
840
Metres
Local Government: City of Greater Geelong
25k Mapsheet: Batesford 7721-1-4
Coordinate System: MGA Zone 55 (GDA94)
Map Scale: 1:42,000
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

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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.

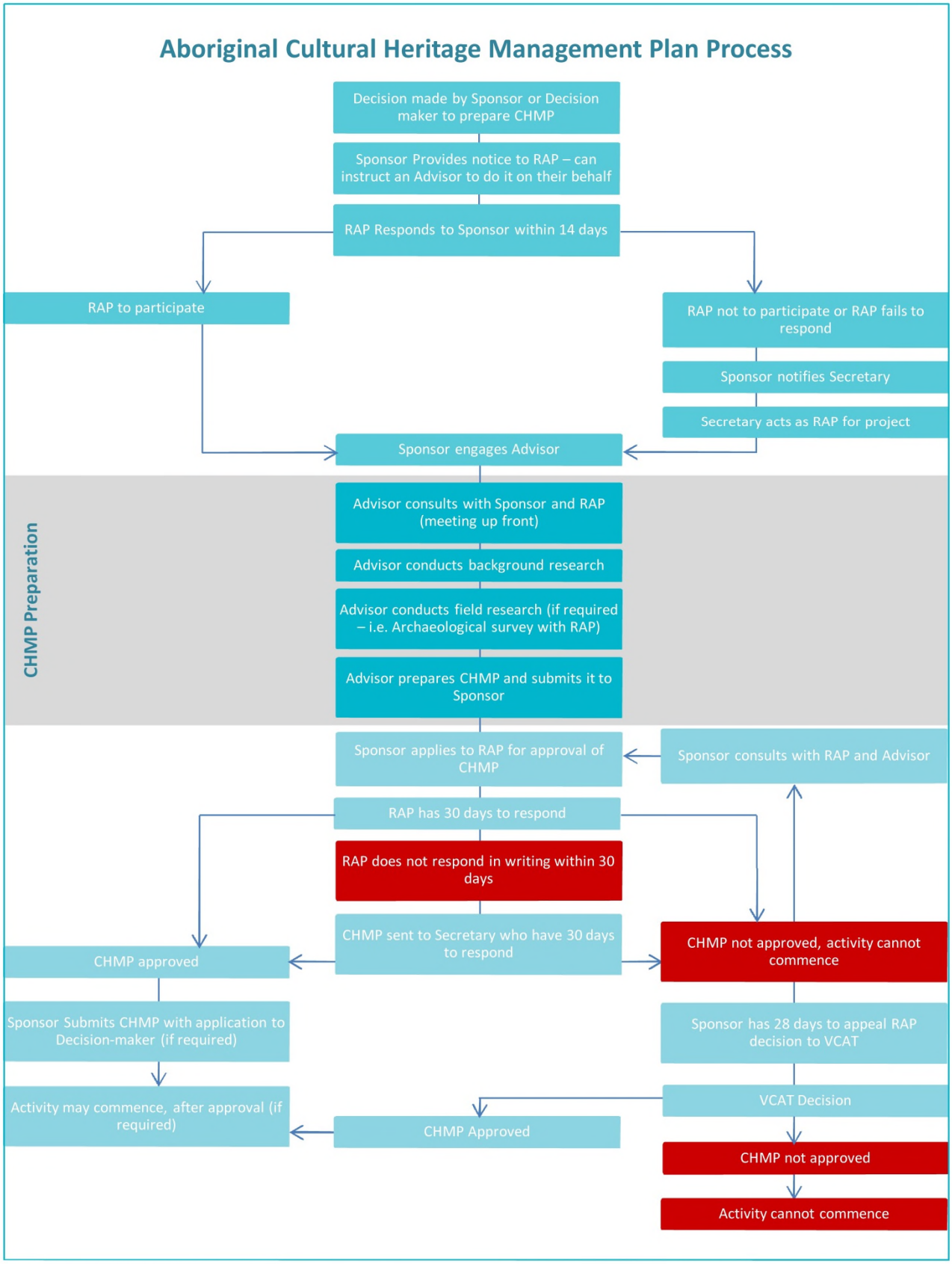
Approval of a CHMP is the responsibility of the Registered Aboriginal Party who evaluates the CHMP and then it is lodged with the Secretary of the Department of Planning and Community Development (DPCD) to take affect or, the Secretary of the DPCD (OAAV)[3]. They will be examining the CHMPs in detail 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.

[3] 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;

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- 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[4].

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.

[4] 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.

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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).

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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.

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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.

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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.

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Maps and Images

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