APPENDIX H:

ABORIGINAL HERITAGE ASSESSMENT (BENCHMARK HERITAGE MANAGEMENT, 2013)

City of Greater Dandenong Green Wedge: Aboriginal Heritage Assessment

Prepared for City of Greater Dandenong

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Due Diligence Heritage Assessment

BENCHMARK HERITAGE MANAGEMENT

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Executive Summary

This Aboriginal heritage assessment has been prepared for City of Greater Dandenong Green Wedge (CGDGW). There are a total of 92 registered sites within the CGDGW. These comprise 77 scarred trees, 13 artefact scatters, a retired site and a sub-surface cultural deposit comprising an earth feature.

Sections 1-2 of the CGDGW and adjacent land comprises land within the former Carrum Carrum Swamp and the northern and eastern margins of the former Carrum Carrum Swamp; the latter being one of the most sensitive archaeological areas within the Melbourne region.

The site distribution in areas subject to intensive archaeological assessment (excavation) is dense however few site types are represented.

The presence of a several sites dating from the late Pleistocene to 5000 years ago attests to the significance of the area as a significant resource to the Bun wurrung and Woi-wurrung people for over 30ka.

Several large base camps with multiple occupation layers have been identified on the aeolian dune landforms that ring the former Carrum Carrum Swamp; these elevated well drained sand dunes therefore form the most sensitive landforms in the area. The density of sites demonstrates that the area was a point of central focus for the Bun wurrung and Woi-wurrung and holds great cultural values to their living descendants. Further, the sites in the area are of great scientific significance.

In light of this, any sand dunes and sand sheets within the CGDGW should be considered to be of high cultural heritage sensitivity. Visible surface remains are considerably rare due to factors including vegetation removal, agricultural activity and the construction of modern urban infrastructure however these dune systems are frequently over 1m in depth therefore consideration should be given to the fact that the sites are likely to contain deeply buried and ancient subsurface components.

Recommendations

To facilitate ideas and commence a partnership with the Aboriginal traditional owners meetings were held with the Bunurong Land Council Aboriginal Corporation on the 1st of November and the Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc on the 15th of November. The Boonwurrung Foundation were invited to the former but could not attend.

Sean Kelly from the Bunurong Land Council Aboriginal Corporation attended a meeting on the 1st of November. A meeting was later held at the Wurundjeri offices on November 15th 2013. The meeting was attended by Matthew Barker of Benchmark Heritage Management Pty Ltd, Ceinwen Gould and Warren Wood (City of Greater Dandenong), Alex Parmington, Cultural Heritage Manager of the Wurundjeri with Perry Wandin, Ron Jones and Bobby Mullin, Wurundjeri Elders.

The following recommendations were made as a result of the discussion:

1. Collaboration with local indigenous communities and organisations;

   A panel of nominated traditional owners comprising members from the Wurundjeri, BLC and BWFL; and a cultural heritage advisor should be available to:

   - Provide advice on cultural matters;
   - Provide general advice on CHMP requirement including a preliminary assessment of the level of cultural heritage assessment required;
   - To undertake site inspections for landowners with the CGDGW.
   - Undertake cultural heritage inductions.
   - Provide education opportunities to local schools;
   - Provide display materials for the CGD and for the 'community get together' detailed in Section 4. These may include stone artefacts, wooden artefacts, old photographs of the area; information about Aboriginal life within the area and cultural practices.

2. Development of a 'Aboriginal Cultural Heritage Fact Sheet' or booklet for landowners outlining responsibilities and processes should be complied by a cultural heritage advisor and should comprise:

   - Basic information on the 2006 Aboriginal Heritage Act and its implications for developments within the CGDGW.
   - Information on the site types to be found within the CGDGW using available Office of Aboriginal Affairs (OAAV) fact sheets (see Appendix 2).
   - Links to online cultural heritage resources at OAAV.
   - The Aboriginal Cultural Heritage Fact Sheet will be provided to all landowners within the CGDGW.

3. The development of cultural heritage trails through the CGDGW to facilitate public access and education. Recommended methods for acknowledging and promoting aboriginal cultural heritage values in the Green Wedge, include:

   - The development of bike paths and walking trails within the CGDGW which link the different landforms inhabited and utilised by the traditional Aboriginal owners.
   - Interpretive signage in parks or at designated points along bike paths/walking trails.
   - These measures will increase the public accessibility of the CGDGW and therefore attract people into the area. This will refute the argument made by the development community that much of the CGDGW is 'wasteland'.

4. The team considered that a "Welcome to Country" ceremony should be held with an invitation extended to landowners with the CGDGW to meet with the traditional owners to facilitate better understanding of Aboriginal culture and the importance of protecting known and unknown cultural heritage. Essentially this will be a 'community

get together' for residents and stakeholders within the CGDGW to meet to improve community links, knowledge and understanding. The complexities of the Aboriginal Heritage Act should not be discussed at this event.

5. As detailed in Section 2.7 the Regulations to the Aboriginal Act 2006 do not trigger mandatory CHMPs in the highly archaeological sensitive sand bodies located in the northwest and east of the CGDGW (Map 10). It was recommended that the CGD introduce additional requirements that require a cultural heritage assessment to be undertaken. The City of Casey have a local planning policy that has been incorporated in to the Casey Planning Scheme that targets such areas; 'Aboriginal Cultural Heritage Policy' and has proven highly successful in identifying Aboriginal cultural heritage.

6. Maintenance of an up to date database of all Aboriginal heritage within the CGDGW and the CGD in general. Existing heritage sites and site cards can be downloaded from the VAHR maintained by OAAV. Recommendations include:

    - The creation of an Aboriginal heritage database which is updated and maintained by a cultural heritage advisor or council cultural heritage officer;
    - Undertake a site inspection of existing cultural heritage sites to assess their current condition including an audit of registered scarred trees.

7. A cultural heritage officer should be appointed within the CGD to facilitate the above actions and recommendations. The appointee should be a suitably qualified traditional owner from the Wurundjeri, BLC and BWFL.

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Disclaimer

The information contained in this report references information contained in government heritage databases and similar sources and is, to the best knowledge of Benchmark Heritage Management Pty Ltd, true and correct at the time of report production. While this report contains a summary of information it does not provide, nor does it intend to provide, an in-depth summary and assessment of all available research materials in relation to the Activity Area. Benchmark Heritage Management Pty Ltd does not accept liability for errors or omissions referenced in primary or secondary sources.

Any opinions expressed in this report are those of Benchmark Heritage Management Pty Ltd and do not represent those of any third parties. Benchmark Heritage Management Pty Ltd have undertaken reasonable efforts to consult with Registered Aboriginal Parties and representatives of Indigenous community groups who are, to the best of our knowledge and advice, the legal and proper representatives of the local Indigenous communities relevant to the Activity Area. However, Benchmark Heritage Management Pty Ltd will not be held responsible for opinions or actions which may be expressed by dissenting persons or organisations.

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Abbreviations

ACHP: Aboriginal Cultural Heritage Place

BHM: Benchmark Heritage Management

BLCAC: Bunurong Land Council Aboriginal Corporation

BF: Boonwurrung Foundation

CGDGW: City of Greater Dandenong Green Wedge

CGD: City of Greater Dandenong

CHMP: Cultural Heritage Management Plan

OAVV: Office of Aboriginal Affairs

STP: Shovel Test Pit

TP: Test Pit

WTLCCHC (Wurundjeri): Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc.

Part 1 - Assessment

1.0 Introduction

This Aboriginal heritage assessment has been prepared for City of Greater Dandenong Green Wedge (CGDGW). The purpose of this study is to inform the development of the Draft Green Wedge Management Plan. Key tasks include:

- Background Review of previous Aboriginal archaeological and heritage investigations within the CGDGW.
- Undertake a desktop/ field survey of potential areas of Aboriginal cultural heritage sensitivity
- Confirmation of Existing Conditions Analysis identifying:
  - Documentation of all known pre-contact heritage sites/ values/ areas of sensitivity as appropriate.
- Issues and Opportunities Analysis including:
  - Documentation of potential heritage sites/ values, including the importance of waterways;
  - Issues in the management of current heritage assets;
  - Opportunities for improvements to heritage recognition and education in the Green Wedge.
- Future Directions Plan including:
  - Collaboration with local indigenous communities and organisations;
  - Development of a 'Aboriginal Cultural Heritage Fact Sheet' for landowners outlining responsibilities and processes;
  - Recommended methods for acknowledging and promoting aboriginal cultural heritage values in the Green Wedge, including interpretive signage, heritage trail or published information ;
  - Identification of other areas, sites or themes for further investigation;
  - Recommendations for revisions to Clause 22.02 of the Dandenong Planning Scheme.

The information provided by the Technical Report should assist in answering the following questions raised in the Preliminary Scoping Paper:

- How can the existing aboriginal cultural heritage values of the Dandenong Green Wedge be retained and enhanced?
- How can existing heritage values be better acknowledged/ shared and promoted?
- How can the implications of aboriginal cultural heritage for landowners be better communicated?

- Does the information contained within Clause 22.02 provide an accurate picture of the existing characteristics and future vision for the Green Wedge in terms of heritage? Which specific aspects may need to be evaluated?

1.1 Details of Cultural Heritage Advisors

The cultural heritage advisors who have completed this CHMP are Maya Barker and Matthew Barker. Maya holds a Bachelor of Science (*2003*) from Monash University; a Bachelor of Arts (*2003*) with Honours (*2004*) from both Monash and La Trobe Universities and a PhD (*2010*) in archaeology from La Trobe University. Maya has over eight years' experience in the field of Aboriginal and Historical archaeology and cultural heritage management. Matthew holds a Bachelor of Arts with Honours (*2005)* from La Trobe University and has over eight years' experience in the field of Aboriginal and Historical archaeology and cultural heritage management.

1.2 Methodology

This heritage assessment was undertaken by the following means of investigation:

- Search of the Victorian Aboriginal Heritage Register (VAHR) to determine the location and type of Aboriginal places within the CGDGW. The VAHR also provides a summary of previous assessments undertaken in the area;

- Assessment of standard ethnographies of the region to identify traditional owners and the links which they hold with the land;

- Assessment of landforms and geology of the study area and surrounding region to determine the likelihood of sites occurring in the region as well as the types of sites which may be identified;

- A review of the land-use history of the study area with a focus on any evidence for the extent and nature of disturbance to surface and subsurface soils.

2.0 Aboriginal Cultural Heritage Assessment

2.1 Registered Aboriginal Places in the Area of Interest

There are in excess of 500 registered Aboriginal sites within a 15km radius of the Area of Interest. In order to make the discussion of nearby site types more practicable the discussion below is limited to sites located within arbitrary units.

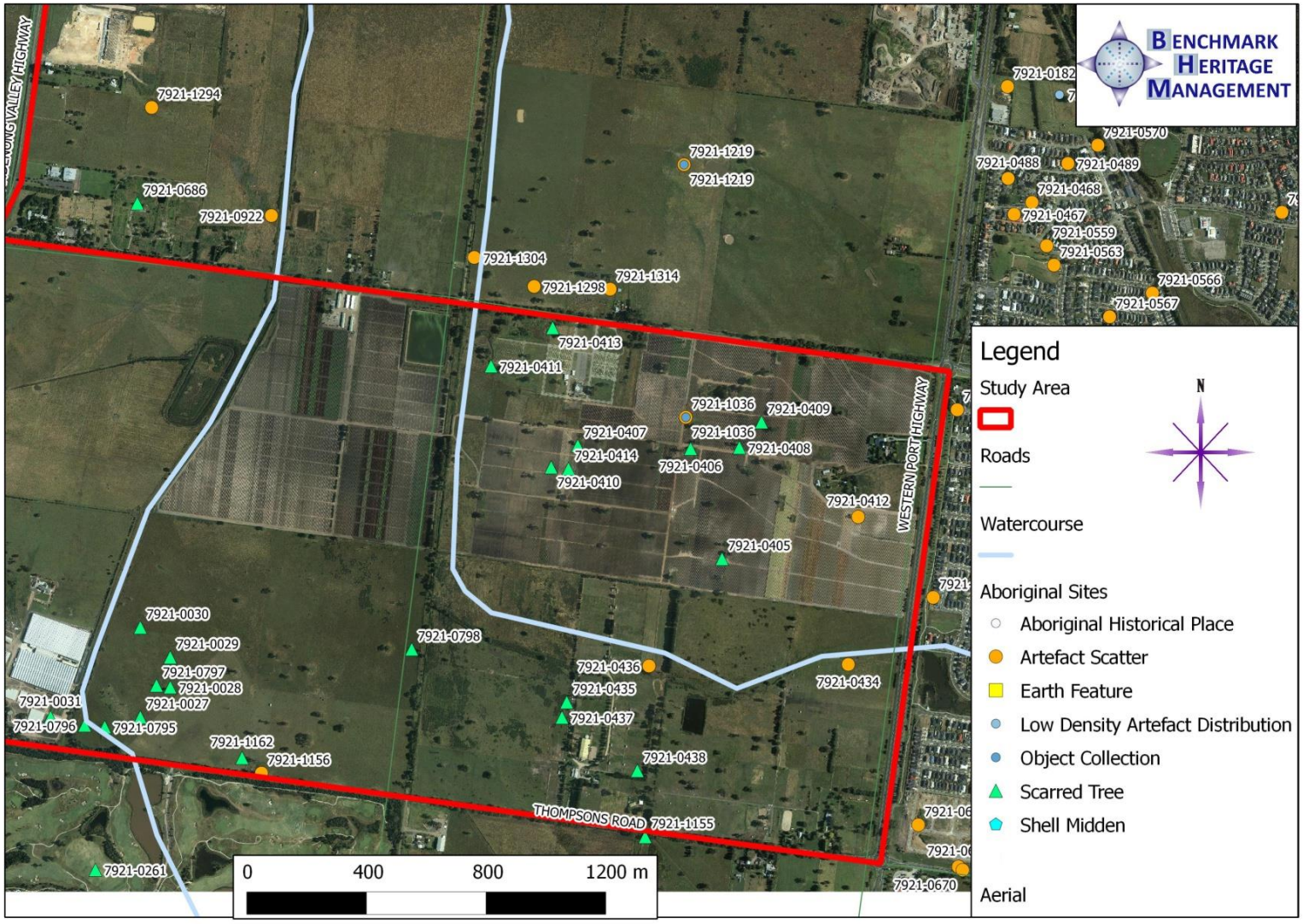
2.1.1 Section 1: Eastlink-Westernport Highway

There are a total of 33 registered sites within this section of the CGDGW. These comprise 25 scarred trees and 8 artefact scatters. The discussion of each area highlights the types of sites found, the landforms on which they were located and the general archaeological sensitivity of the area. Table 1 shows detail of the sites. Maps 1-2 show site locations within the CGDGW.

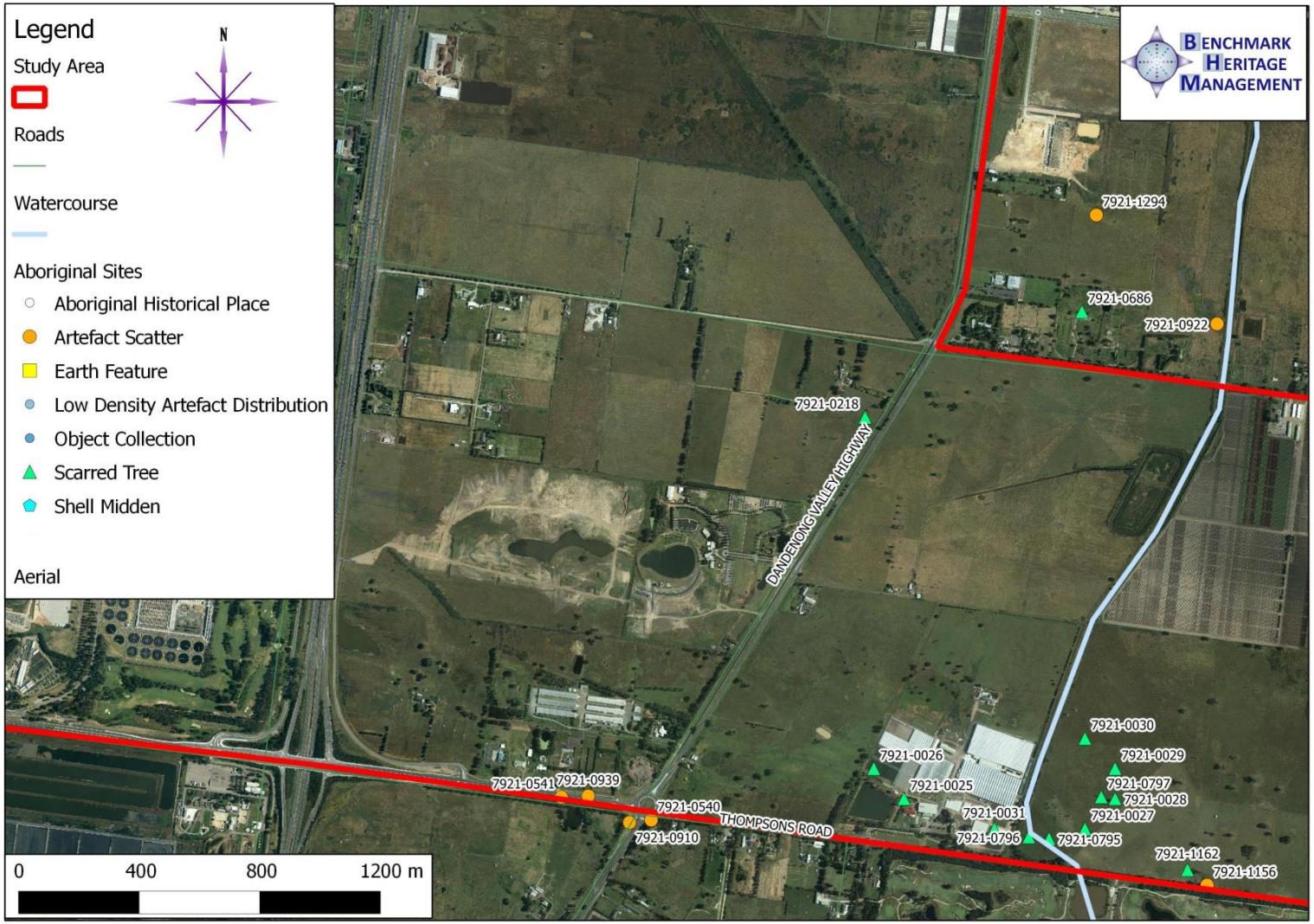
Table 1: Summary of Site Types and Landforms – East of Frankston-Dandenong Road

VAHR Number	Site Name	Site Type	Landform
7921-0025	GREEN ACRES 1	Scarred Tree	Floodplain
7921-0026	GREEN ACRES 2	Scarred Tree	Floodplain
7921-0027	THOMPSON 1	Scarred Tree	Floodplain
7921-0028	THOMPSON 2	Scarred Tree	Floodplain
7921-0029	THOMPSON 3	Scarred Tree	Floodplain
7921-0030	THOMPSON 4	Scarred Tree	Floodplain
7921-0031	THOMPSON 5	Scarred Tree	Floodplain
7921-0218	DANDENONG 5	Scarred Tree	Floodplain
7921-0405	ST (2)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0406	ST (75)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0407	ST (45)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0408	ST (1)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0409	ST No. 3	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0410	ST No. 4	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0411	ST (16)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0412	DANDENONG-HASTINGS ROAD SURFACE SCATTER	Artefact Scatter	Sandy Rise (Baxter Sands)
7921-0413	ST (60)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0414	ST (41)	Scarred Tree	Sandy Rise (Baxter Sands)
7921-0434	MONDOUS SS	Artefact Scatter	Low Rise on Floodplain
7921-0435	GAS EASEMENT ST	Artefact Scatter	Floodplain
7921-0436	MONDOUS IA	Artefact Scatter	Low Rise on Floodplain
7921-0437	MONDOUS ST 1	Scarred Tree	Floodplain
7921-0438	MONDOUS ST 2	Scarred Tree	Floodplain
7921-0541	DIRUN DJIRRI 3	Artefact Scatter	Low Rise on Floodplain
7921-0576	AIR CLUB	Artefact Scatter	Low Rise on Floodplain
7921-0795	THOMPSONS TREE 1	Scarred Tree	Low Rise on Floodplain
7921-0796	THOMPSONS TREE 2	Scarred Tree	Floodplain
7921-0797	THOMPSONS TREE 3	Scarred Tree	Low Rise on Floodplain
7921-0798	THOMPSONS TREE 4	Scarred Tree	Low Rise on Floodplain
7921-0939	THOMPSON RD NORTH 1	Artefact Scatter	Low Rise on Floodplain
7921-1036	GLASSCOCKS RD 1	Artefact Scatter	Sandy Rise (Baxter Sands)

7921-1156	THOMPSONS ROAD 15	Artefact Scatter	Low Rise on Floodplain
7921-1162	THOMPSONS ROAD SCARRED TREE 6	Scarred Tree	Floodplain



Map 1: Registered Aboriginal Sites: Section 1 (East)



Map 2: Registered Aboriginal Sites: Section 1 (Centre South)

2.1.2 Section 2: Eastlink – Springvale Road/Mornington Peninsula Freeway

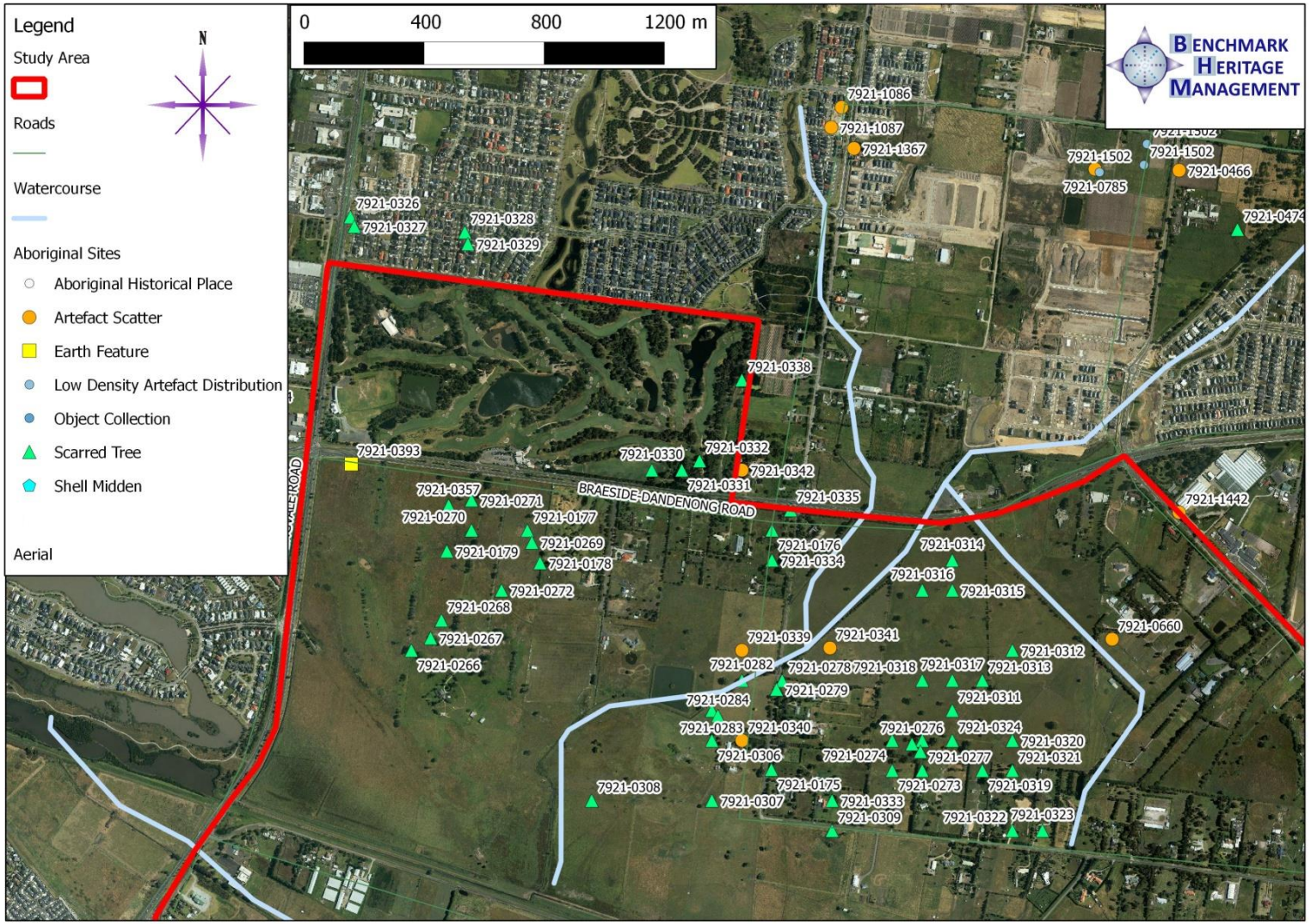
There are a total of 59 registered sites within this section of the CGDGW. These comprise 52 scarred trees and five artefact scatters, a retired site and a sub-surface cultural deposit comprising an earth feature. The discussion of each area highlights the types of sites found, the landforms on which they were located and the general archaeological sensitivity of the area. Table 2 summarises the sites within this area and the landforms on which they are located. Maps 3-4 show site locations within the CGDGW.

Table 2: Summary of Site Types and Landforms

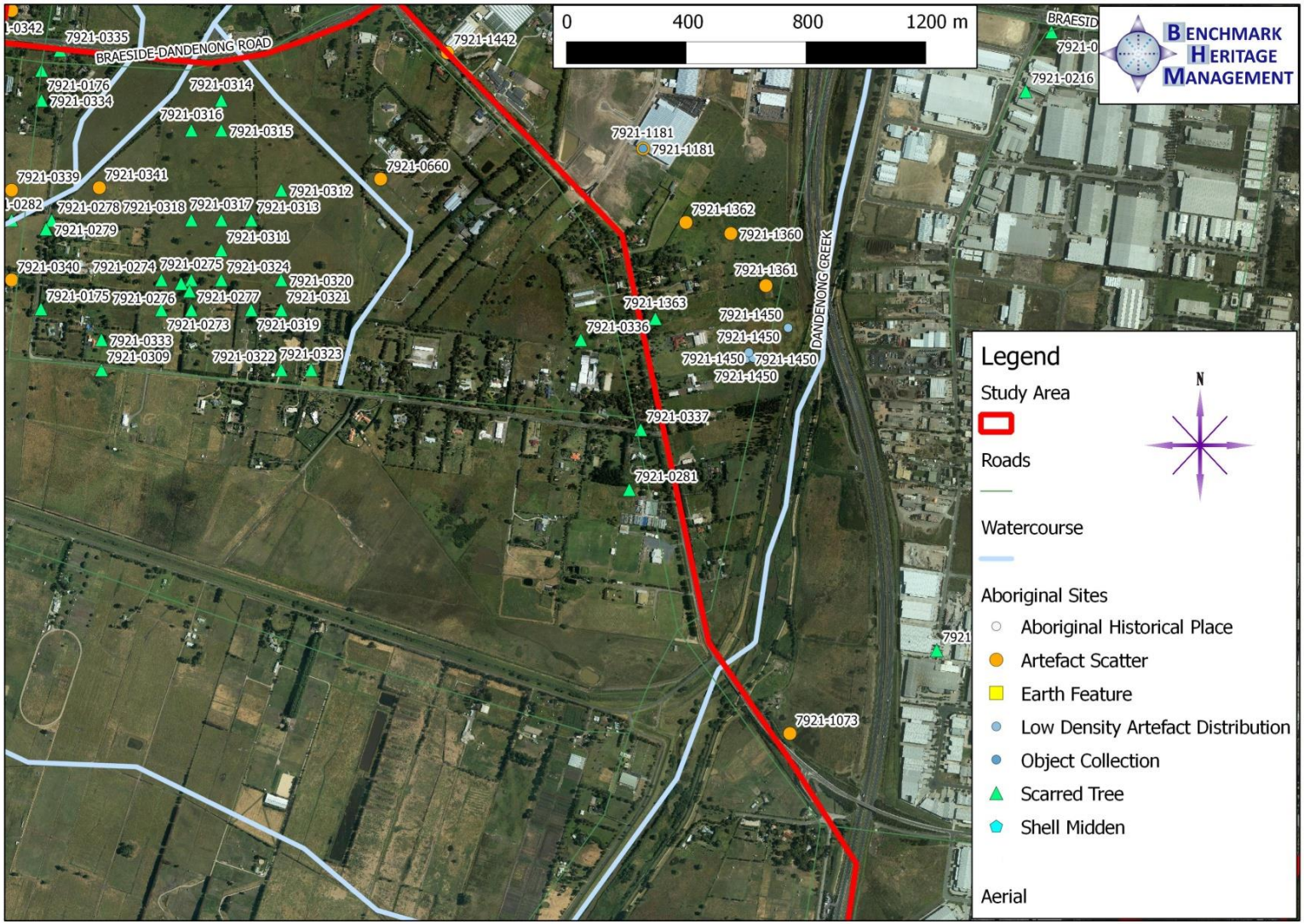
VAHR Number	Site Name	Site Type	Landform
7921-0175	CHAPEL ROAD 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0176	HUTTON ROAD 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0177	HUTTON ROAD 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0178	HUTTON ROAD 3	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0179	HUTTON ROAD 4	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0266	KEYS 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0267	KEYS 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0268	KEYS 3	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0269	KEYS 4	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0270	KEYS WEST 1	Scarred Tree	Floodplain
7921-0271	KEYS WEST 2	Scarred Tree	Floodplain
7921-0272	KEYS 6	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0273	MORISON 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0274	MORISON 3	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0276	MORISON 6	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0277	MORISON 7	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0278	FRYER 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0279	FRYER 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0281	BEYER 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0282	BOWMAN 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0283	BOWMAN 2	Scarred Tree	Floodplain
7921-0284	BOWMAN 3	Scarred Tree	Floodplain
7921-0306	BOWMAN 4	Scarred Tree	Low Rise on Floodplain

7921-0307	BOWMAN 5	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0308	BOWMAN 6	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0309	BOWMAN 7	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0310	FRYER 3	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0311	FRYER 4	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0312	FRYER 7	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0313	FRYER 9	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0314	FRYER 10	Scarred Tree	Floodplain
7921-0315	FRYER 11	Scarred Tree	Floodplain
7921-0316	FRYER 12	Scarred Tree	Floodplain
7921-0317	FRYER 13	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0318	FRYER 14	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0319	GLENN FRYER 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0320	GLENN FRYER 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0321	GLENN FRYER 3	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0322	MS FRYER 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0323	MS FRYER 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0324	FRYER 15	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0325	N/A	Retired Site	Sandy Rise/sheet (Moorabool Sands)
7921-0330	GOLF 5	Scarred Tree	Floodplain
7921-0331	GOLF 6	Scarred Tree	Floodplain
7921-0332	GOLF 7	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0333	HEWITT 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0334	PARK 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0335	PARK 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0336	SCRHIMER 1	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0337	SCRHIMER 2	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0338	GOLF 8	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0339	BOWMAN NORTH	Scarred Tree	Sandy Rise/sheet (Moorabool Sands)
7921-0340	BOWMAN SOUTH	Artefact Scatter	Low Rise on Floodplain

7921-0341	FRYER WALLOW	Artefact Scatter	Sandy Rise/sheet (Moorabool Sands)
7921-0342	KEYS GOLF STONE	Artefact Scatter	Sandy Rise/sheet (Moorabool Sands)
7921-0393	HUTTON RD RESERVE 1	Earth Feature	Sandy Rise/sheet (Moorabool Sands)
7921-0357	K1	Scarred Tree	Floodplain
7921-0660	FRYER RIDGE	Artefact Scatter	Sandy Rise/sheet (Moorabool Sands)
7921-1442	PERRY ROAD RESERVE AS	Artefact Scatter	Sandy Rise/sheet (Moorabool Sands)



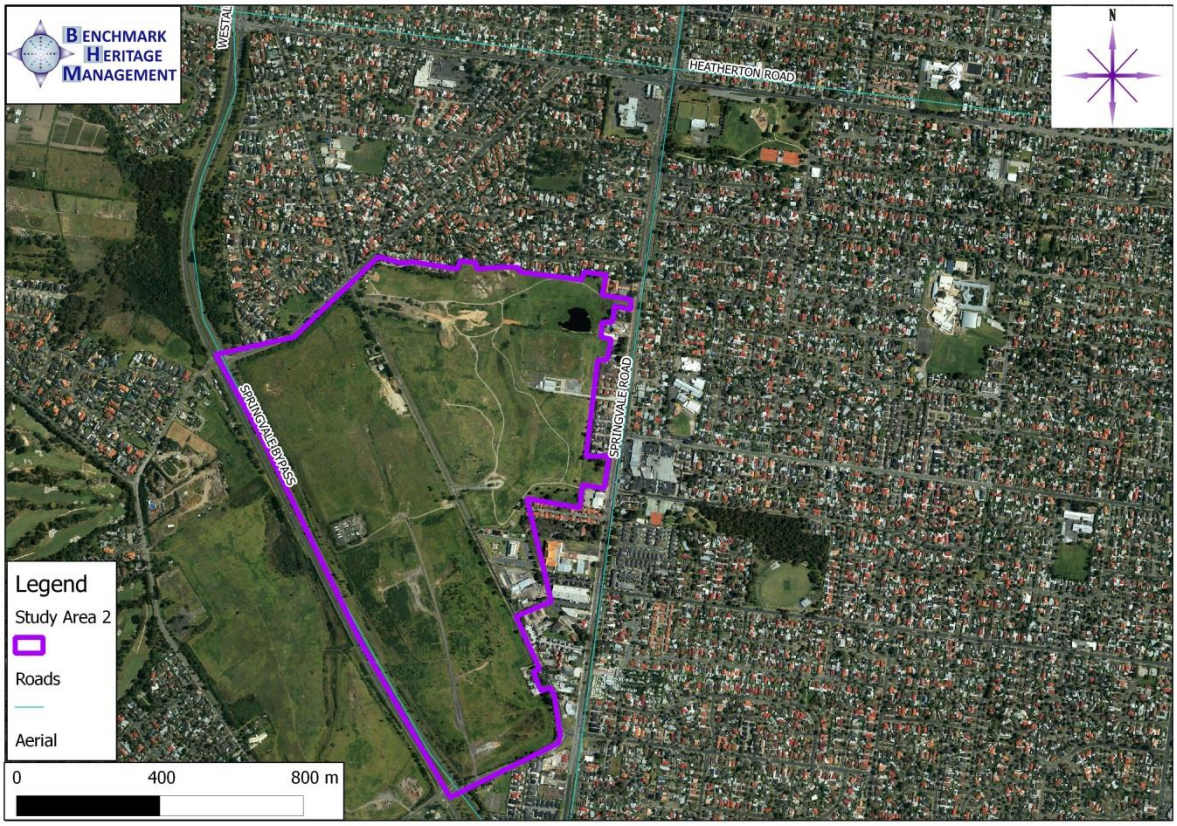
Map 3: Registered Aboriginal Sites: Section 2: Northeast



Map 4: Registered Aboriginal Sites: Section 2 (Centre)

2.1.3 Section 3: Westall Road

There are no registered sites within this section of the CGDGW and nor have any Aboriginal archaeological surveys been undertaken at this location (Map 5). This section of the CGDGW is highly disturbed and comprises a working tip and a former tip that has been grassed and landscaped and is now public open space.



Map 5: Area East of Westall Road

2.2 Summary of Site Types and Distribution

2.3 Previous Works in relation to the Area of Interest

A number of previous cultural heritage investigations have been undertaken within the region. A summary of these works offers a basis on which to form a site prediction model for the current area by providing an indication of the most sensitive landforms and soils in the region. The studies which are most relevant to the study area are outlined and summarised below.

Archaeological Assessments

Regional Investigations

Gaughwin (1981) conducted an archaeological assessment of the Western Port Catchment and recorded 266 Indigenous archaeological sites, 13 of which were found within an area referred to as “Top of the Bay”. Near the present Study area the highest site and artefact

densities were found to occur on the sandy ridges of the Cranbourne area, particularly those associated with water. Gaughwin considered that the sites located on these sand ridges were situated to take advantage of resources associated with swamp depressions. The site prediction model formulated by Gaughwin for the "Top of the Bay" landform is applicable to the current Study area:

- Artefact scatters and isolated artefacts are the most likely site type to occur within this unit:
- Most sites will be within 100m of a water source, including rivers, creeks, swamps, ponds, springs, the coastline, lagoons and soaks:
- The highest site densities will be found in the Cranbourne Sands and high dry ground such as ridges and hummocks:
- The lowest site densities will be found along the foreshore and in low-lying areas such as past swamps:
- It is highly unlikely that scarred tree sites will be located within the region due to the lack of suitable trees: and
- Surface scatters will be dominated by silcrete, quartz and chert artefacts.

Keysborough Local Structure Plan – Webb (1995) conducted an archaeological study of the Keysborough Local Structure Plan area, which encompassed an area of approximately 1200 hectares bounded by Mordialloc Creek, Eastlink, Perry and Greens Roads, the Dingley Freeway Reserve and Cheltenham Road, and Springvale Road. The study involved field survey of approximately one third of the total LSP area (but not including the current study area), and resulted in the location of 56 sites, including four isolated artefacts and 52 scarred trees (22 of which were considered to be definitely culturally scarred and the remainder 'probable' or possible). The trees were distributed fairly evenly across the areas surveyed, while 3 of the 4 artefact sites were found south of Hutton Road. Webb argued that although only a small number of artefact sites were found, if ground surface visibility was greater the likelihood was that greater numbers of artefacts would be found. A number of reports were produced over the years 2000 to 2002 related to the Keysborough C2 Amendment and the Keysborough South Development Plan area and associated developments (Webb and Marshall 2000, Chamberlain 2002a and 2002b, Marshall, Chamberlain & Webb 2002a and 2002b). These reports were closely connected and generally focussed on the block bounded by Springvale Road, Cheltenham Road, Dingley Freeway Reserve, Chandler, Island and Perry Roads and Hutton Road. These investigations involved predominantly survey and some limited shallow subsurface testing (none of which occurred in the current study area), and resulted in the location of only two new Aboriginal sites – one scarred tree near the corner of Church and Island Roads and an isolated artefact near the corner of Church and Perry Roads. In all cases the absence of archaeological material was put down to the impact of prior and existing land-use, particularly market gardening, which was considered to have destroyed or dispersed any archaeological material, and the area was generally considered to be of low archaeological sensitivity.

Murphy (1997) undertook a desktop Aboriginal archaeological investigation of an area described by the City of Casey as the 'Foreshore & Non-Urban Foreshore', which stretches from Cranbourne to Western Port Bay, an area bounded by Ballarto Road, South Gippsland Highway, Baxter-Tooradin Road and Dandenong-Hastings Road. The predictive archaeological

model generated by this study concluded that surface scatters and isolated artefact occurrences are the most likely site types to occur within the Study area, and that the majority of these sites will be located within 100m of a past or present water supply.

Murphy considered that the following areas are archaeologically sensitive (1997, 22-23):

- The Cranbourne Sands Unit, encompassing land which is higher than the surrounding area and therefore may have potential for camp sites from which the swamp resources may have been utilised, or had provided convenient, dry access routes to the coast in the past.

- The Foreshore Unit, extending 100m inland throughout the entire study area, which have potential for containing shell middens.

- The Low-Lying Plains Unit, assessed as having only moderate Aboriginal archaeological sensitivity.

The highest archaeological site densities will be found within the Cranbourne Sand, ridges and hummocks landform unit (Murphy 1997: 19). It was also concluded that the sites located within the Cranbourne Sands, ridges and hummocks landform unit may possibly be much older than those identified on the present coastline. Aboriginal quarry sites and scarred trees were considered to be rare site types within this Study area due to lack of suitable resources.

Rhodes (2001) prepared an Aboriginal heritage study for the City of Greater Dandenong. The study was confined to pre-Contact Aboriginal heritage, and covered an area from Police Road in the north to Thompson Road in the south, bounded to the east and west by Dandenong-Hastings Road and Springvale/Westall Roads. Its aim was to provide information on the location of Aboriginal heritage places and develop management strategies for these sites. Based on past archaeological studies within the region, Rhodes proposed that sites would most likely be found in less developed areas and remnant pockets of parkland or bushland. The dune land system south of Hutton Road was seen as having potential for early to mid-Holocene sites, including shell middens. Surface artefact scatters were viewed as most likely to occur on remnants of the dune land system and the undulating plains to the west of Dandenong-Hastings Road and south of Abbotts Road, with some possibility of scatters in the wetland landforms that extend along and around Dandenong and Eumemmerring Creeks, and south to Thompson Road, especially within 100m of the former channels of the creeks. The dune landforms were also considered to retain potential for burial sites, while all landforms were regarded as having potential for scarred tree sites. An archaeological survey was designed with this predictive model in mind. Ground surface visibility was extremely poor, and only two new scarred tree sites were located. However, the survey showed that the most sensitive area for archaeological sites in the Greater Dandenong area lay between Hutton Road, Springvale Road, Perry Road and Mordialloc Creek. A number of additional areas of potential archaeological sensitivity were also identified:

The area bounded by Abbotts Road, Dandenong-Hastings Road, Thompson Road and Frankston-Dandenong Road was considered as having high potential for scarred tree sites. Rises in the undulating plains in this area were also considered sensitive for artefact scatters, as they form an area of high ground between wetlands. The sandy loam soils of these rises

aid the preservation of successive occupation sites; however, Rhodes considered that such sites, if located, would most likely be disturbed by land clearing and ploughing, and would only be located by subsurface testing, given the poor surface visibility.

Rhodes (1991: 29-38) listed a range of known Bun wurrung places in or near the city of Greater Dandenong, based on historical sources. These included:

1. An Aboriginal track used by Hovell in 1827 to move from the Moorabbin area along the northern margin of Carrum Carrum Swamp to Mordialloc Creek. Part of this track may have followed the present day Governor Road.
2. Carrum Carrum Swamp itself, where William Thomas reported large numbers of Bun wurrung people gathered for eeling in 1841.
3. A possible Aboriginal burial ground on the corner of Hutton Road and Springvale Road, referred to by descendants of local landowners.

Aside from these, Rhodes also notes several other campsites around Dandenong and Eumemmerring Creeks mentioned in the historical sources.

Bend Road Archaeological Investigations – Hewitt and DeLange 2007

In 2005-06 an extensive and detailed investigation was conducted within the alignment of the Eastlink Tollway which yielded important information about the antiquity of human occupation of the Dandenong region. This investigation is not in the CGDGW but lies within close proximity and is therefore relevant to this study.

In 2005, Tardis Enterprises Pty. Ltd. was commissioned by construction contractor Thiess John Holland (to carry out a program of sub-surface testing). A preliminary report of this work pointed to Bend Road 1 as being particularly rich in Aboriginal artefacts, stating that, despite a moderate level of post-depositional disturbance, in situ archaeological deposits remained below the plough zone. One particularly dense concentration of artefacts was interpreted as being a probable Aboriginal 'flaking floor' used for the production of stone artefacts. On the basis of these findings, the site, particularly to the south of Bend Road, was characterised as possibly being of high to very high scientific significance, perhaps unique for this landform type within Victoria in terms of artefact density and intensity of occupation. In order to resolve the question of the integrity of the site and to establish its chronology and scientific potential, a team from La Trobe University, directed by Emeritus Professor Jim Allen conducted a carefully controlled excavation at Bend Road 1 during January 2006. A trench with a total surface area of 12 square metres was excavated close to the location where Tardis had found the presumed 'flaking floor'.

The excavation at Bend Road 1 revealed a sheet of generally undifferentiated grey sand, approximately 1200 mm deep, overlying coffee rock rubble. Based on optically stimulated luminescence (OSL) dating it was concluded that the sand below 700 mm from the surface dated from the late Pleistocene. Stone artefacts were present predominantly in three diffuse bands, and each band showed differences in artefact style, technology and raw material. Artefacts from the uppermost zone were flakes and angular fragments of a variety of raw materials but with a high percentage of quartz. Silcrete was the dominant material in the

middle zone, and the artefacts made of this material included backed blades and microliths typical of the Australian Small Tool Tradition (ASTT). In the lowest zone, associated with sands of late Pleistocene date, there were no ASTT artefacts and flakes were generally larger and made on poorer-quality and coarser grained raw materials.

Artefacts were present in a pale brownish grey sand unit and in a dark brown sand layer above the coffee rock. These artefacts bore a resemblance to those found in late Pleistocene deposits in the Bend Road 1 excavation and an OSL sample taken from the dark brown stained sand returned a date of ca. 35,000 years. Consequently, it is argued that the Bend Road site was likely occupied by humans at ca. 28,000 BP (ie. at some ten thousand years before the last glacial maximum) and possibly as early as 35,000 years BP. Overall, the Bend Road 2 excavations yielded 3036 stone artefacts (lithics) and 146 other items, including ochre fragments, charcoal, a few faunal remains, as well as historical artefacts (glass, metal, ceramic fragments etc.). The authors concluded:

"that the location of Bend Road 2 has known human occupation from some 10,000 years prior to the last glacial maximum (LGM) and possibly as early as ca. 35,000 years ago. This early date for occupation in southeastern Australia has confirmed the very high scientific and cultural significance of the Bend Road SSTA23 sites".

From the physiographic evidence, it was concluded that swamps were present in this part of the Port Phillip Sunkland during both the Pleistocene and the Holocene. During the Pleistocene, swamp alluvium deposited around the bases of earlier sand dunes formed the present basal clay and, with increasing aridity towards the LGM, mobilised dune sand spread to cover the dried-up swamps. Climatic amelioration and a rise in sea level, during the Holocene, created new beach barrier dunes and swamps again formed behind them, fed by drainage from the higher land to the north and northeast. Long and Hughes (2005) envisaged the sand sheet at Bend Road to have been a dynamic environment, characterised by multiple episodes of wind deflation and redeposition occurring over a very long time period. This notion is possibly reflected in the archaeology at Bend Road, where the effect of such an environmental regime is one possible explanation for the bands of higher artefact density within the sediment column. Down to a depth of 900 mm, the sedimentary column within the higher ground of the Bend Road 2 ridge shows evidence of constant reworking of the surface during a regime of slow nett accumulation, beginning some 20,000 years ago.

In the uppermost 200-300mm of the sand sheet, the effects of European cultivation is apparent in the developed plough zone. The presence of burned tree roots may also be a residue of the efforts of nineteenth-century European selector settlers in clearing the land. In addition, the isolated and distinctive effects of processes such as tree throw and small animal burrowing, are present. Although bioturbation from insects and worms has undoubtedly moved artefacts within the deposit, both the presence and the distinctive contents of the bands of artefacts within the sand column, indicate that the scale of this type of post-depositional disturbance has been small. There is little evidence, within the sand sheet at Bend Road 2, in support of the generalised severe disturbance by bioturbation, postulated by Hughes (2005:4). Archaeological excavations conducted at Bend Road have confirmed that the evidence for prehistoric indigenous human occupation consists almost entirely of stone

artefacts, the exception being a small amount of charcoal that might be both anthropogenic and prehistoric.

Smaller Scale Investigations

Several smaller scale archaeological studies have been carried out solely for Indigenous cultural heritage values within the geographic region.

Lane (1996) carried out a field survey and subsequent subsurface testing program of 11 km of road reserve along Dandenong-Hastings Rd (Western Port Hwy) between South Gippsland Hwy and Cranbourne-Frankston Rd in Lyndhurst. Three areas were subject to ground survey, with the main focus being the identification of scarred trees, given the lack of ground surface visibility present at the time. Lane's 'Area 3' includes a portion of the current study area north of the junction of Thompsons Rd and Western Port Hwy. During the field survey of Area 3 ground surface visibility was recorded as 1050% in the western road reserve and 30-100% in the eastern road reserve (Lane 1996, 28). A light grey sandy soil was noted in this survey area. No Aboriginal cultural material was identified within Area 3. A single grey silcrete core was identified on a sandy exposure elsewhere in the study area. This was determined to be associated with a previously registered place (VAHR 7921-0182).

Two areas of archaeological sensitivity were identified by the study:

- The sandy exposure around VAHR 7921-0182;
- Cranbourne Sands in the southern section of the study area.

These two areas were subject to a subsequent subsurface testing program. In total, 130 shovel test pits (25 x 25 cm) were undertaken in the two areas of potential sensitivity to depths of 40 cm. No further Aboriginal cultural material was identified during the program, however, the program did not investigate the possibility of the presence of cultural material in deeper deposits. Lane suggests that the results of the subsurface testing program indicate that no large Aboriginal places occur within the study area, but did not rule out the presence of small or isolated occurrences of stone artefacts.

Murphy (2001) conducted a field survey of a 61 ha block of land on the north west corner of the Thompsons Rd and Western Port Hwy junction. Ground surface visibility was recorded as poor at the time of archaeological survey with the exception of a 1ha area which recorded 70-90% ground surface visibility (Murphy 2001: 23). As a result of the survey, two artefact scatters (VAHR 7921-0434 & VAHR 7921-0436) and two scarred trees (VAHR 7921-0437 & VAHR 7921-0438), both on red gums, were recorded. The stone artefact scatters were located on the bank of a creek that runs through the property (on the mid-slope of a hill). VAHR 7921-0434 comprised 30 stone artefacts made on silcrete and quartz in a disturbed context on the creek bank. VAHR 7921-0436 comprised a single silcrete flake in a disturbed context on the creek bank. Murphy (2001, 28) suggests that while the creekline itself has been subject to previous modification (excavation to a uniform depth and width), this has been limited to the original bed of the creek, therefore it is possible that some pockets of in situ creek bank deposits, potentially containing Aboriginal cultural material, remain within the study area.

Murphy considered the results of the assessment highlight the Aboriginal occupation of low-lying areas and the importance of Carrum Carrum Swamp. While elevated landforms are predicted to contain more significant Aboriginal places in the region, these lower areas should be considered within a broader archaeological landscape (Murphy 2001, 28). Murphy (2001, 28-29) calculated that the scarred trees in the study area indicate that 10% of the remnant red gum trees have cultural scars and, given the significant clearing that has previously occurred, removing more than 50% of the red gums, many scarred trees are likely to have been removed in the past. Murphy (2001, 33) considered that areas within 20m of the creek and surrounding the scarred trees should be considered as areas of Aboriginal archaeological potential. Along the banks of the creek Murphy suggests the potential is for stone artefacts to occur within the upper 200 mm of deposit, likely in disturbed contexts (Murphy 2001, 33).

Marshall & Webb (2001) conducted an archaeological survey of the Kelly Brothers Market Gardens in Colemans Road, which is situated immediately east of the current study area. Ground surface visibility was excellent due to the property's use as a market garden, and effective survey coverage was estimated at 70%. Ten Aboriginal stone artefact scatters were recorded, all but one of which were associated with sandy areas on the western side of the property. Artefact scatters comprised silcrete, quartz and chert, mostly as isolated artefacts, apart from two low-density scatters of 7 artefacts. The authors note that due to repeated ploughing, the artefact scatters are unlikely to be in situ, and the nine scatters on the western side of the property were recorded as one site, with the one scatter in the centre of the property (adjacent to the western boundary of the current study area) recorded as a separate site. It was recommended that surface artefacts be collected prior to any works in the study area.

In 2006 Murphy undertook an archaeological assessment of Aboriginal and non-Aboriginal historic cultural heritage assessment of a proposed roadway (Keys Road extension) located at 310 Chapel Road, Keysborough. Prior to this investigation, the study area has been previously surveyed for Aboriginal sites (Webb 1995) and included within regional and large scale archaeological investigations. During the previous survey no archaeological sites had been previously identified within the study area. The ground survey visibility conditions were generally poor. During the survey, no new Aboriginal or historic sites were recorded. The locations of the three previously recorded Aboriginal scarred trees located within 200m of the study area were inspected (AAV 7921-0307, 0308, 0309). In each instance, no evidence for the scarred trees was found and it must be concluded that the scarred trees have been removed/destroyed. There were no recorded Aboriginal sites located within the study area, and no areas of potential archaeological sensitivity were noted.

Barker (2007a & b) undertook an archaeological survey and subsurface testing at 75– 90 Colemans Road which incorporates part of the current study area. The survey assessment and sub-surface testing resulted in the registration of 7 newly identified sites, VAHR 7921/0809-0815 (Kelly 1-5, Colemans Road Scarred Tree 1-2). The two scarred trees were recorded during the field survey and the 5 artefact deposits (VAHR 7921/0809-0813) were identified during the field survey, excavation and sub-surface testing.

VAHR 7921-0809 consists of the area of the east market garden measuring approximately 200m x 175m, over which there are stone artefacts dispersed through the soil between

depths of 0-1100mm. VAHR 7921-0810 consists of the area of the west market garden measuring approximately 250m x 80m, over which there are stone artefacts dispersed through the soil between depths of 0-900mm. VAHR 7921-0811 consists of the area between the east and west market gardens measuring approximately 90m x 60m over which there are stone artefacts dispersed through the soil between depths of 100-600mm. VAHR 7921-0812 consists of two small sandy rises above the alluvial plain in the centre of 75-90 Colemans Road measuring approximately 60m x 60m over which there are stone artefacts dispersed through the soil between depths of 100-400mm. VAHR 7921-0813 consists of the sandy rise in the NE of 75-90 Colemans Road along the eastern boundary fence, measuring approximately 250m x 50m over which there are stone artefacts dispersed through the soil between depths of 450-750mm. A charcoal sample was obtained from between 500-700mm in lower unit of site VAHR 7921-0809 has been dated to a minimum of 8,000 years B.P., indicating the lower unit is most likely of Pleistocene origin. VAHR 7921-0809 was assessed as being of high cultural and scientific significance.

Archaeological sites VAHR 7921-0811 and 0812 were assessed as being of high significance, principally because of the size of these sites, as determined by the extent of the artefacts located by sub-surface testing, and the potential for the stone artefacts to provide important information about past Indigenous land use within and around 75-90 Colemans Road.

Archaeological sites VAHR 7921-0810 and 0813 were assessed as being of low scientific significance, principally because of the disturbance to these sites, as determined by the vertical distribution of the artefacts, and the degree of disturbance of the artefact bearing deposits. Indigenous sites VAHR 7921/0814-0815 (Colemans Road Scarred Tree 1 and 2) were assessed as being of low scientific significance primarily because of the condition of the trees (poor and dead respectively), and their common occurrence within the general region.

In 2009 Barker & Lushey 2009 conducted an archaeological investigation of 7921-0809 at 75-125 Colemans Road. The testing was intended to determine the degree of disturbance within the site, and to obtain further samples for dating. The presence of generally continuous clay bands between 400 and 1100mm suggested that the soils were largely undisturbed below the surface deposits which had been affected by ploughing for market gardens, implying minimal vertical movement of artefacts. Five samples taken for OSL dating from depths between 350 and 1250mm gave dates of 4500 ±600 BP to 11,600 ±1000 BP.

Cultural Heritage Management Plans (CHMPs)

In 2007, Stone completed a CHMP for proposed wetlands to run parallel to Eumemmering Creek in Dandenong South, approximately 1 – 2 km north of the current study area. Most Aboriginal cultural material in the local area is known to be concentrated in the sand dunes and low sandy rises within the region, but as no landforms of this nature were identified within the survey area and no artefacts were located on the surface during the standard assessment phase of the project, no sub-surface testing was undertaken. It was strongly argued that as the survey area lay within a former wetland or lower floodplain it was deemed unsuitable for Aboriginal occupation. It was also argued that if any cultural heritage material had been present, it would most likely have been destroyed by construction of the existing retarding basin and floodways.

Murphy and Rymer (2008) completed a CHMP for Goodman International on a parcel of land 1.5km east of the CGDGW. Two sites were recorded during the standard and complex assessments stages of a project - a scar tree (VAHR 7921-0922) and an artefact scatter (VAHR 7921-0686). The scar tree was assessed as being of moderate scientific significance and abstract specific cultural significance, with recommendations for management being that the scar tree be preserved within an open space and harm avoided through the use of fencing, signage and cultural heritage awareness training. Conversely, the artefact scatter, which was located on a sand drift, was assessed as having no scientific and no specific cultural significance. As such, it was determined that no harm avoidance, minimisation or management measures were required prior to the activity commencing.

Murphy and Dugay-Grist (2008) prepared a CHMP for a proposed widening of Thompsons Rd between Mornington Peninsula Freeway and 250 m east of Dandenong-Frankston Rd. Two previously registered Aboriginal places occurred within the area (VAHR 7921-0540 and VAHR 7921-0541), both stone artefact scatters (isolated stone artefacts). During the field survey, ground surface visibility was very poor and the previously registered Aboriginal places were unable to be re-identified. No cultural material was observed at this time. An area of Aboriginal archaeological sensitivity, comprising potentially undisturbed sandy rises associated with the Cranbourne Sands landform, was identified at the south west corner of Thompsons Rd and Dandenong-Frankston Rd. A subsequent subsurface testing program excavated fifteen 1 m² test pits and 28 shovel test pits. Six of the 1 m² test pits contained stone artefacts. As a result of the subsurface testing program, two additional Aboriginal places were identified, VAHR 7921-0910 and VAHR 7921-0939, both stone artefact scatters. Aboriginal place VAHR 7921-0910 was located within the area of Aboriginal archaeological sensitivity defined during the field survey and comprised 36 stone artefacts identified in two disparate stratigraphic layers. One of the 1 m² test pits appeared to be relatively undisturbed and revealed that the upper 100 mm of deposit was topsoil which overlay dark grey sand to c. 350 mm depth (containing artefacts). This overlay a sterile light grey sand deposit to c. 720 mm depth which overlay a fine white sand deposit (containing artefacts at c. 800 mm). The majority of artefacts at VAHR 7921-0910 were made on silcrete with some quartzite and quartz present. Artefact density is estimated at 7.2 artefacts per m² (based only on excavation pits containing artefacts). Murphy and Dugay-Grist (2008a, 58) suggested the stone artefacts are morphologically consistent with a late Holocene assemblage and, as the stone artefacts were recovered from varying depths and were associated with recent materials, reflect post-depositional movement and disturbance.

At VAHR 7921-0939, a low density stone artefact scatter, all of the excavations revealed disturbed subsurface deposits. The stone artefacts comprised three broken silcrete flakes and one quartz angular fragment. Artefact density is estimated at 8.33 artefacts per m² (based only on excavation pits containing artefacts). Murphy and Dugay-Grist (2008: 63) considered the entire Aboriginal place to be disturbed as a result of road construction and the installation of infrastructure with no potential for in situ deposits to be present.

Test excavations conducted in the vicinity of the previously registered Aboriginal place VAHR 7921-0540 revealed disturbed subsurface deposits. Only one of the excavation pits, a 1 m² test pit, contained stone artefacts (n=4). Artefact density is estimated at 4 artefacts per m²

(based only on excavation pits containing artefacts). Murphy and Dugay-Grist (2008: 61) considered the entire Aboriginal place to be disturbed as a result of road construction and the installation of infrastructure with no potential for in situ deposits to be present.

Murphy & Morris (2009) undertook a CHMP for a gas pipeline between Abbotts Road and Hall Road (10544), approximately 1.5km east of the current study area. No sites were located during the Standard Assessment; but two areas of elevated slopes, one with a basalt outcrop, were considered sensitive. The Complex Assessment consisted of four 1x1m test pits excavated to depths between 470 and 1150mm, and twenty-six 50x50cm shovel probes excavated to depths between 320 and 1120mm. Sediments in the areas considered sensitive generally consisted of sandy silt topsoil overlying grey to brown sand, with orange-brown clay or coffee rock bases encountered at varying depths between 640 & 1100mm. Eight silcrete artefacts (VAHR 7921-1036) were located at depths between 250 and 900mm.

In 2010 Mitchell undertook a CHMP for the Innovation Park Industrial Estate, Colemans Road (10403), which is situated south of the current study area. A total of thirty-one 1m x 1m hand excavated test trenches, twelve 2.5 m x 1.5 m machine excavated scrapes using a mechanical excavator and six 40 cm x 40 cm shovel probes. The soil and sand removed from the trenches was 100 per cent sieved using either a mechanical sieve with a 4 mm round aperture punch plate or hand sieved using 2 mm and 4 mm mesh sieves. The mechanical excavation program included the excavation of twelve 10m x 0.6m and four 6m x 0.6m trenches using two excavators and three mechanical sieves. In most trenches clay or coffee rock base was reached at depths of between 1 and 1.5 metres. A total of 539 artefacts were recovered during the subsurface testing program (Annex B). The overall artefacts density was low, at 3.8 artefacts per square metre (or 3.6 per cubic metre). In addition a large amount of modern European material was recovered during the subsurface testing up to depths of 120 cm throughout the study area. The subsurface testing confirmed that the whole of the study area has been subject to significant ground disturbance due to past land use activities. A geomorphological assessment was also conducted, and the results compared to the soil profiles identified at 75-90 Colemans Road (see summaries of Barker 2007a, b and Barker & Lushey 2009, above), which is located opposite Innovation Park on the north side of Colemans Road. Subsurface testing showed that soils in the study area mainly consisted of dark sand, becoming lighter with depth, overlying a coffee rock or clay base. Soils in the western part of the study area had a higher clay content, overlying a mottled orange clay base. Although the deposits visually appeared to be in situ, high levels of disturbance were identified, with modern European material located at depths of up to 1200mm in some places. It was determined that the two sites originally recorded during initial survey, Kelly Bros Surface Scatter VAHR 7921-0398 and Kelly Bros Isolated Artefact VAHR 7921-0399, were in fact one site that has been spread throughout the study area during the substantial earthworks that took place approximately 40 years ago. Standard assessment forms were completed for Kelly Bros Isolated Artefact VAHR 7921-0399 and this site has been de-registered from the VAHR and incorporated into Kelly Bros Surface Scatter VAHR 7921-0398.

Long et al (2010) prepared a Cultural Heritage Management Plan for the Dingley Arterial in Keysborough, which passes approximately 500 metres to the north of the activity area. This CHMP was also a complex assessment involving archaeological testing. The vast majority of this testing took place on the lower lying swampy land that characterises both the broader

region and the current activity area. Two sites were located during the testing, one of which was located on a sandy rise west of Chapel Road (possibly a continuation of the rise noted by Young), and the other on low lying land near Springvale Road. The authors concluded that the results demonstrated that the soil landscape had been significantly altered across their activity area by land-use practices (particularly market gardening) "...to the detriment of the spatial integrity of observed and potential archaeological deposits" (Long et al 2010: 5).

St George (2011) compiled a CHMP for Cojo Industrial Estate (11621), approximately 2.5km south-east of the current study area. Visibility was poor during the standard assessment, and no Aboriginal places were identified. A deflated sand ridge was identified as having potential for subsurface Aboriginal places. The Complex Assessment consisted of two 1x1m test pits, ten auger probes and eighty 40x40cm shovel probes. One silcrete artefact was located at a depth of approximately 600-700mm (VAHR 7921-1294) in a deflated sandy rise. The soil profile of the floodplain showed black, silty clay overlying mottled black/orange clay at approximately 110mm below the surface. The sandy rise where the artefact was located consisted of dark brown silty sand and sand overlying black/orange mottled clay at approximately 700mm. The artefact was located just above this clay base. Harm was not able to be avoided to the site, and as the site was considered to be of low scientific significance, no salvage or further investigation was recommended.

In 2012 Dugay-Grist, Maher and Cowled undertook a CHMP at 80 Colemans Road in Dandenong South. One 50cm x 50cm test pit was located in the north-western corner of the study area, in an area that appeared not to have been subject to significant prior disturbance, in order to ascertain the subsurface stratigraphic composition. The top layer of TP01 comprised sandy loam topsoil that extended down to 100mm; with an underlying brown sand to 900mm. Below this was a layer of white sand to 1300mm. Sticky/ saturated sands with coffee rock pieces began appearing at a depth of around 1300mm and the basal depth an indurated coffee rock was reached at 1400mm. The water table was reached at 500mm, causing sediments below this to be saturated and pit walls to be unstable and collapse into the base of the pit. No Aboriginal cultural heritage materials, deposits or features were identified during the excavation of TP01 at 80 Colemans Road, Dandenong South. An additional thirteen 50cm x 50cm TPs were excavated within the study area to examine the presence/absence of cultural heritage. These were located across the entire property to ensure each section was adequately assessed. Most of the test pits displayed stratigraphic compositions similar to TP01, with a sandy loam topsoil, deep sand layer, a sticky/saturated sand layer, and then an indurated coffee rock base at depths that varied slightly across the study area. The water table was present in all test pits, again at varying depths from 500mm, with exception of TPs 11 & 12.

The subsurface testing conducted during the Complex Assessment at 80 Colemans Road, Dandenong South did not uncover any Aboriginal cultural heritage materials, features or deposits in any of the excavation areas and the results are considered to reflect the nature of prior land use of the study area by Aboriginal people. The results indicate that the study area is unlikely to have been favoured as a long-term occupation place. The absence of any Aboriginal cultural heritage materials, features and deposits in any of the units suggests a low level of occupation of the study area with no discernible material remains attesting to the nature of pre-Contact occupation. Areas of elevation in close proximity to water and

associated resources in the broader geographic region are likely to have been favoured as occupation and camping sites.

Long et al 2010 conducted a CHMP north of CGDGW which demonstrated a similar landform and soil profile to the Bend Road excavations described by Hewitt and DeLange above. Perry Road 1 (VAHR 7921-1181) was registered within the south unit of Long et al's study area approximately 600m east of the study area, consisting of 176 artefacts recovered from surface and sub-surface contexts on a sandy rise. Long et al argued that Perry Road 1 (VAHR 7921-1181) may date to the Last Glacial Maximum (c. 30,000 years ago). Furthermore, Long et al argued that artefacts associated with the Australian Small Tool Tradition (ASTT) were identified within a stratigraphic layer older than 9.0±0.4 ka (as determined through Optically Stimulated Luminescence [OSL] dating). Long et al also argued, however, that the downward movement of artefacts through the sediment may have affected the results. Furthermore, the formation of the Aeolian sands (within which the Aboriginal Place is located) may have affected the validity of the OSL dating.

Chamberlain & Nicholls 2011 (CHMP 11825) undertook a CHMP for a residential subdivision at 103 Chapel Road, Keysborough. The Desktop & Standard Assessment identified that the study area has two landforms: low-lying former swamp considered to be of low archaeological potential and a sandy rise: likely to contain Aboriginal cultural heritage. As a result of the sub-surface testing, one Aboriginal place was identified (VAHR 7921-1367). The site comprises a low density stone artefact scatter measuring 5 x 8m. Harm could not be avoided to the site and a small salvage program was recommended prior to the activity being undertaken.

In 2013 Kennedy and Crocker undertook a CHMP (12053) for proposed pipeline construction and drainage infrastructure installation within the road reserve along Perry Road, within private property situated at 196, 208-214 Perry Road and 100 Keys Road, and within the road reserve along Bowmans Lane. The authors made the following predictions:

- Scarred trees and stone artefact scatters are the most likely Aboriginal place types to be located within the study area;
- Sandy rises / stable sand dune crests are particularly sensitive. Numerous previous investigations have demonstrated that stable sandy rises have a high potential to contain deep cultural sequences comprised of stone artefact deposits;
- Lower density and frequency of artefact scatters at distance from creeks, swamps and stone sources;
- Lower potential for artefact scatters within sub-surface deposits on land that was formerly waterlogged/wetland. The AHMS investigations at First Avenue Chelsea Heights have demonstrated the potential for specific locations within the former swamp to contain buried sand dune deposits underneath swamp gleys. Where present, the buried sand dune deposits may have potential to contain stone artefact deposits depending on the formation history and age of the dune;
- Isolated finds anywhere across the landscape; and
- Burials in soft sands that have a neutral or alkaline pH and are more than 300mm deep.

The distribution of Aboriginal places across the local landscape suggests that higher density and larger sites are likely to be located on slightly elevated flat landforms, particularly sandy rises / stable sand dune crests, located within the former Carrum Carrum Swamp. There is a much lower likelihood for intact archaeological deposits within areas of prior residential development and previous disturbance. Sub-surface testing was therefore targeted within the Perry Road reserve, and 196 Perry Road, 208-214 Perry Road & 100 Keys Road where it was deemed safe to do so and in areas where minimal previous disturbance had occurred. The work comprised controlled manual excavation of eighteen 1 x 1 m test trenches. All of the test trenches were located on the low-lying plain landform as no sandy rises were identified during the Standard Assessment.

In 2013 Kennedy (CHMP 12285) completed a CHMP for a proposed utility construction within a section of the Perry Road reserve (beginning at the intersection of Perry/Greens Road and continuing south for 1.1km until 239 Perry Road) and infrastructure construction within a private property at 259 Perry Road, Keysborough, situated within the municipality of Greater Dandenong City Council. A total of twelve trenches were excavated. Aboriginal cultural heritage was identified within the small sandy rise landform along Perry Road, and recorded as a sub-surface stone artefact scatter (Perry Road Reserve AS: VAHR 7921-1442) . A total of 64 stone artefacts were recovered from the sandy rise. No specific recommendations were proposed for VAHR 7921-1442 as its nature, extent and significance were fully investigated by this CHMP and the deposit was heavily disturbed.

2.4 Synthesis and Site Distribution

It is clear from the considerable archaeological investigations that have examined the margins of the former Carrum Carrum Swamp that under certain conditions archaeological deposits potentially great antiquity (c. 35,000 years BP) and cultural deposits can be preserved at depth (up to 1.2 m) below the level of modern disturbance (c. 300 mm). Although there has only been limited investigation of these landforms, it is probable that similar deposits occur elsewhere across the sand dune landforms that form the northern extent of the former wetlands.

The pattern of Aboriginal site distribution in the region is characteristic of a subsistence strategy focused on the varied and substantial resources of the wetland habitat which were exploited from base camps on elevated well drained landforms on the surrounding the margins of the former Carrum Carrum Swamp, where wetland resources would have been exploited on a recurrent or seasonal basis. Therefore sandy rises within the study area have the potential to contain buried deposits of stone artefacts of great antiquity at depths ranging from 0-1.5m Other more unusual archaeological site types (such as burials or shell middens) may also occur, though these have not been identified to date in the study region.

In the past, rises associated with the Cranbourne Sands/Baxter Sands and Moorabool Sands would have formed the highest and driest locations within the surrounding plain, thus likely to have been a focus for Aboriginal occupation. Within a broader regional area, these more elevated landforms may have acted as the most reliable pathways into the Carrum Carrum Swamp, and would have formed places visited by Aboriginal groups from the Yarra Valley,

Mornington Peninsula and Westernport as part of a transitory hunter-gatherer lifestyle incorporating a range of resources across a broad region.

2.5 ACHP Risk Assessment: Site Types

The risk that future examples of these site types occur within the CGDGW Study area is assessed below.

1. **Scarred Trees**
   The potential for further unregistered scarred trees within the study area is therefore low due to land clearance and agricultural activity. Aboriginal scars are generally found on River Red Gums which occur along watercourses and drainage lines. Much of the CGDGW has been previously been subject to surface archaeological assessment with the exception of the small section adjacent to Westall Road which comprises a former council tip which has been re-vegetated.

2. **Artefact Scatters**
   The entire CGDGW Study area has some surface disturbance associated with agriculture and animal management, including land clearance, cultivation, irrigation and the construction of buildings. It is therefore highly unlikely that undisturbed surface scatters will be located. On sandy landforms extensive and stratified deposits of stone artefacts may also be found below the plough zone (>30cm) within the sand deposits, that are essentially in-situ apart from natural turbation of the sand.

2.6 Historical and Ethno-historical Accounts of the Geographic Region

This section provides a review of documentation relevant to Aboriginal historical and ethno-historical accounts related to the study area and surrounding region. An examination of lifeways provides an additional tool in the prediction of locating Aboriginal cultural heritage in specific regions. This is achieved through a broad analysis of the ways in which Aboriginal people utilised landscapes and resources (such as watercourses, flora, fauna and stone). The following is intended as a basic review of resources and should be treated cautiously as the information is based primarily on accounts written just after the point of contact with Europeans (Coutts, Witter & Parsons 1977).

The CGDGW and surrounding lands were utilised by Aboriginal people for thousands of years. The study area is located within the groups identified as *Kulin* who shared a common language, social, religious and economic lifeway. Throughout the regions numerous different (yet related) *'wurrung'* (or dialects) were spoken.

At the time of European contact, clans from two language groups, the Bun wurrung and the Woi wurrung (spelling according to Clark 1990, 364, however numerous variants exist) are believed to have occupied land in the Keysborough and Dandenong regions. A language group consisted of independent groups of closely related kin, or 'clans', who were spiritually linked to designated areas of land through their association with topographic features connected to mythic beings or deities. Clan lands were inalienable and clan members had religious responsibilities (e.g. conducting rituals) to ensure 'the perpetuation of species associated with the particular mythic beings associated with that territory' (Berndt 1982, 4, Long et al 2010).

The territories of three clans who are thought to have extended into the study area are:

- The Bulug willam – meaning 'swamp dwellers'. This Woi wurrung clan identified with the ranges and swamps south of 'Yering' on the Upper Yarra, extending south east to Koo Wee Rup Swamp and the head waters of the LaTrobe River, south west to adjoining Bun wurrung clans at Cranbourne (Clark 1990, 385-386, Long et al 2010).

- The Ngaruk willam – meaning 'stone dwellers', a Bun wurrung clan who identified with the coastal littoral of Port Phillip Bay from Brighton in the north, and extending down the western Mornington peninsula to Mt Martha (Clark 1990:365). This group was also known as the Karrun, as they appear to have custodianship over the Carrum Carrum Swamp area. Their main focus of activity, however, appears to have been the coastline and the lower reaches of Mordialloc Creek (Hibbins 1984, 10-12, Long et al 2010).

- The Mayune balug clan – meaning 'Mayune people' (i.e. people associated with the locality of Mayune). This Bun wurrung clan was associated with Carrum Carrum Swamp, the upper Mornington Peninsula and the head of Western Port Bay (Clark 1990, 366-7).The *wurrung* relevant to the study area is the *Woi wurrung* (Clark 1990: 364) which comprised the group who occupied the basins of the Yarra and Plenty Rivers.

Clans were spiritually linked to areas and held guardianship over specific regions of land that were delineated by topographic features such as mountains, creeks or rivers (Howitt 1904: 41; Cotter 2001).

Marriages were arranged with alternate *moieties* (or groups) from the Woi wurrung Bun wurrung and the Taungurung (Barwick 1984: 104). By marrying into alternative *moieties* it was possible to gain the resources of the other clans. It was expected that mutual access to resources, and consequently reciprocal sharing and land management, would be imposed as a marital obligation (Barwick 1984: 106).

Archaeological evidence suggests that Aboriginal peoples have occupied the Mornington Peninsula as early as 35,000 BP (Hewitt & De Lange 2007). The information used to establish pre-settlement Aboriginal spatial organization is mostly based on observations made by Europeans during the initial period of contact and subsequent settlement of the Study area (Presland 1994; Goulding 1988: 14-32; Barwick 1984; Clark 1990).

Language groups were comprised of collections of neighbouring clans who shared a common dialect as well as mutual economic and political interests. They were also communally connected to specific areas of land through their spirituality, including an association with topographic features linked to deities and other mythical beings (Clark 1998).

The ethnographic record of the region is scant (Dugay-Grist and McAlister 2011) and predominantly contained in writings by Bunce (1858), Smythe (1878), Jamieson (1853), and Haydon (1846). The information used to establish pre-settlement Aboriginal spatial organization is mostly based on observations made by Europeans during the initial period of contact and subsequent settlement of the study area (Presland 1994; Goulding 1988: 14-32;

Barwick 1984; Clark 1990). Each of these people recorded some details about the Peninsula's Bun wurrung people, such as language, traditions and customs. However, the majority of information is derived from papers and Journals of the Assistant Protector of Aborigines, William Thomas, and Chief Protector George Augustus Robinson.

The Woi wurrung and Bun wurrung groups followed a semi-sedentary hunter-gatherer lifestyle. Resource rich watercourses and swamps, containing a diversity of fish, shellfish, birds and other plant or animal foods formed a particular focus for regular Aboriginal occupation. William Thomas observed clans in the wider Westernport district living a hunter-gatherer lifestyle, moving within their lands to make use of seasonal plant and animal resources, trading opportunities and to meet ritual and kinship obligations. Thomas noted that during the winter months Bun wurrung clans moved between Port Phillip and Western Port Bays whilst during the summer they moved to hinterland areas (Gunson 1968, 10).

The effective exploitation of resource diversity within a group's territory was integral to their success as hunter-gatherer communities. For example, Hibbins (1984, 11) has noted that the coastal Ngaruk willam moved between three distinct environmental domains throughout the year, thus reducing their vulnerability to severe ecological fluctuations (e.g. droughts).

The permanent section of Carrum Carrum Swamp formed the primary food source, providing the most reliable and diverse range of resources throughout the year, but especially in spring when birds, eggs, fish, yabbies and edible plants were readily available, in particular myrnong and swamp rushes (Hibbins 1984, 11, Long et al 2010).

The surrounding morass would dry out or swell according to rainfall and through-flow from the surrounding uplands channelled along Dandenong Creek and Eumemmerring Creek, thus expanding the range and availability of swamp resources on a seasonal basis (Long et al 2010). In this wider swamp basin, the land surrounding the major creek inlets would probably have formed other foci for semipermanent or recurrent activity, partly through the occurrence of accessible elevated ground and the welling of floodwater into ephemeral swamps and waterholes Long et al 2010).

During the drier summer weather, people moved to the coast edge, to gather shellfish and mutton birds, or catch eels in the lower reaches of the larger creeks such as Mordialloc Creek, using wooden spears with bone tips and fish traps (Presland 1994, 75-6; Hibbins 1984, 12, Long et al 2010). In addition to the dwindling swamp resources, the increase of mosquitoes in stagnant pools may have added impetus to the coastal move (Hibbins 1984, 11, Long et al 2010).

The higher wooded ground and grassy plains surrounding the swamp were subject to more transient occupation in winter, when seasonal rains inhibited accessibility to the core swamp and regenerated smaller outlying water bodies. This broader area was useful for hunting kangaroo, as well as gathering smaller animals, fruits, roots and grubs. Huts or mia mias were rapidly erected during bad weather to form temporary settlements (Bunce 1856:109), but these were swiftly abandoned when local resources were exhausted. In summary, early accounts suggest that the most frequented parts of the swamp were locations where freshwater was consistently available, such as the lower reaches of Kananook and Mordialloc

Creeks (McGuire nd, 5) and waterholes at the creek inlets (e,g. Baungan Waterhole on the Eumemmering Creek, Hibbins 1984, 12, Long et al 2010). In comparison to much of the surrounding landscape , Carrum Carrum Swamp was especially rich in plant foods and game, including kangaroo, emu, wildfowl and eels, and it is probable that relatively high ground with easy access to fresh, or flowing water within or on the edge of the swamp formed foci for diverse cultural and socio-economic activities, as well as bases for forays out onto the marshland.

The Bun wurrung people are among the first of the Victorian tribes to come into contact with Europeans, due to their coastal location. From 1798, whalers and sealers were active in locations offshore and along the southern coast of Victoria (Ellender and Weaver 1994: 12) and a number of sealers lived year-round on Phillip Island, exploiting a colony of furs seals (Weatherall 1826 in Gunson 1974:3). The early explorer Hovell noted that sealers on Phillip Island had taken and were several hundred Aboriginal women for domestic chores, seal hunting and sex. Although a large proportion of those women taken were Tasmanian (Gaughwin and Sullivan 1984: 46), according to an unpublished diary of one such woman taken by sealers to Tasmania, some were also Bun wurrung (Robert Ogden pers. comm.). The presence and actions of the sealers caused considerable tension with Bun wurrung populations, leading to at least two altercations (Ellender and Weaver 1994: 12).

Additionally, William Thomas, Assistant Protector of Aborigines, reported that the Bun wurrung populations were suffering significantly from repeated raids and attacks from Gippsland Aborigines (most likely Gunai/Kurnai, see Clark 1990: 364; Thomas 1840 in Gaughwin and Sullivan 1984: 83).

William Thomas was appointed Assistant Protector in 1839, in charge of the welfare of Aboriginal people in the Westernport and Gippsland districts. From 1839 to 1841 Thomas worked from a hut near Arthurs Seat. The journals Thomas kept during his period at Arthurs Seat (Tubbarubba) are of particular interest, as the Aborigines in this area were then still practising aspects of their traditional lifestyle. In 1839, Thomas counted 83 members of the Bun wurrung tribe remaining. Therefore, even at this early stage, Aborigines had already been severely affected by European settlement (Sullivan 1981: 17). As a result of granting grazing licences, Aborigines became dispossessed of their land and were forced to rely on handouts of food from Thomas and other settlers. Once guns were introduced, traditional methods of hunting were no longer practised, with some Aboriginal people selling ducks and eels to Europeans. Some Bun wurrung members joined the Native Police Corps based at Narre Warren (Narre Narre Warren) (Murphy 1997).

European settlement from the 1830s and the consequent urban development of Melbourne, resulted in the loss of traditional lands, foods and resources for the many tribes around Melbourne, including the Woi wurrung and Bun wurrung people (Thomas no date in Gaughwin and Sullivan 1984: 83).

After the establishment of Melbourne and the rapid dispersal of pastoralists around Port Phillip in search of quality grazing and water for stock, the Woi wurrung and Bun wurrung were swiftly excluded from traditional food resources and the more reliable water sources in the region. In particular, the yam daisy or myrnong, a staple food found in swamps, was

rapidly destroyed by introduced grazing animals. Access to the woodlands, swamps and billabongs of the Dandenong Creek and Eumemmering Creek became difficult following the establishment of station homesteads at significant locations. In addition to the dislocation and social breakdown caused by this conflict, the limited resource diversity available to each group became critical, forcing the survivors increasingly to dependence on government and station supplied rations.

Following the loss of traditional resources, Aboriginal people increasingly camped in close proximity to the township of Melbourne where rations and to an extent, social justice were available, particularly after George Robinson, the Government appointed Chief Protector of Aborigines arrived in Melbourne in 1839.

After this point it is very hard to trace the history of Aboriginal people in Victoria outside of the Missions and other Government settlements, however there are indications that Aboriginal people continued to move through Carrum Carrum Swamp into the early 20th century. Graham Allan, a local resident whose family have cultivated land in the Keysborough area since the 19th century, recalls his father speaking of Aboriginal people calling at their homestead in the early 1900s (pers. comm. 2005). Although the identity and association of these people is unknown, it appears likely that Aboriginal people may have continued to use the natural resources of Carrum Carrum Swamp until the reclamation process was completed in the 1930s.

This proved to be devastating for Aboriginal people, particularly coupled with the spread of European introduced diseases and social turmoil and breakdown due to the relocation of individuals and groups to reserves and mission stations (Clark 1990). To add to this, Aboriginal people from various clans and language groups, from as far away as the Murray River, were attracted to Melbourne for a range of reasons. In this situation, the numerous groups would have been extremely difficult for the European colonists to differentiate between clans and/or tribes.

This upheaval is one of the major reasons why the ethnohistory and post-contact history of specific clans and tribes in the Melbourne area, such as the Bun wurrung, has been so sparsely documented. In an attempt to offset the devastating effects of European settlement and entice the Aboriginal population into agriculture, Thomas, as Protectorate, established several Aboriginal stations on the Mornington Peninsula (Gaughwin and Sullivan 1984: 84).

2.7 The Landforms and Geomorphology of the Area of Interest

In terms of the wider landscape the CGDGW study area is dominated in terms of geomorphology and hydrology by Carrum Carrum Swamp.

An initial survey of Carrum Carrum Swamp was undertaken in 1866 by T.E. Rawlinson. He recorded one site of European settlement – Moodie Yallo. This area corresponds to what is today known as Keysborough. Settlement of Moodie Yallo dates back to 1837 around the same time that the first pastoral run was being established nearby in Dandenong.

The swamp extended from Mordialloc to Frankston and inland to about the Dandenong-Frankston road. The area was dominated by a combination of red gum, tea tree and swampland. While red gum was used for foundations and post and rail fencing, the majority of early settlers used tea tree saplings and wattle and daub to construct their residences. The fact that much of the area was dominated by swamplands and therefore poorly drained made it a particularly difficult area to settle, with the problem of drainage dominating Keysborough's early history.

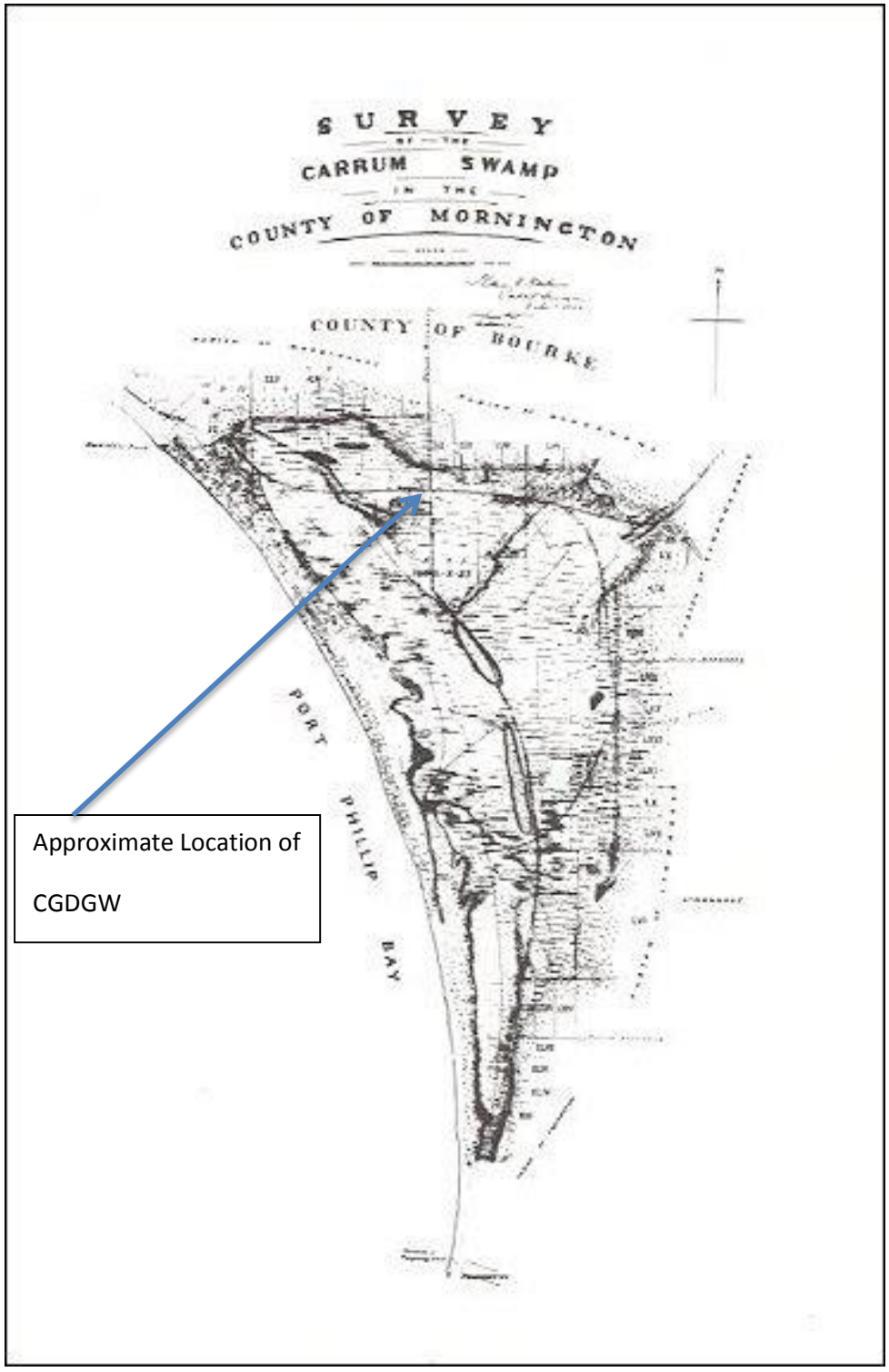


Figure 1: Extent of Carrum Carrum Swamp

Figure 1 is an impression of the physiography of the region in which the CGDGW study area is situated. Both Hills (1975) and Whincup (1944) (see Figure 51) create a distinction between the nearshore part of the wetland, which they identify as Carrum Carrum Swamp and the roughly triangular area behind an emerged beach ridge (both Hills 1975:190 and Whincup 1944:56 refer to this beach ridge formation as the Wells Road Ridge). The area landward of the ridge is identified as "alluvial flats" by Hills and "Dandenong Swamp" by Whincup. However, the historic Parish Plan C403 (Department of Lands and Survey 1870) not only names both parts as Carrum Carrum Swamp but also clearly includes the northeastern arm of the wetland, where Dandenong Creek enters, as part of it. A notation on an earlier parish map, D20B (1866) (Figures 53 and 54), however, identifies the Dandenong Creek arm as "Tea Tree Swamp". Whether this was intended as a description of the flora, a name for the landscape, or both, is not clear. Nonetheless, Hibbins' local history of Springvale (Hibbins 1984:76) not only refers to this part of the wetland as "Tea-Tree Swamp" but also includes a useful description of it as encountered by European settlers during the 1870s:

"..so constantly wet that although Martin applied to select in 1873 it took until late in the summer of 1876 before the land was dry enough to survey. Martin put in nearly 100 chains of two feet deep drain between 1876 and 1879 and cleared four acres of dense tea-tree before planting potatoes, maize, vegetables and an orchard.." Hibbins 1984:76)

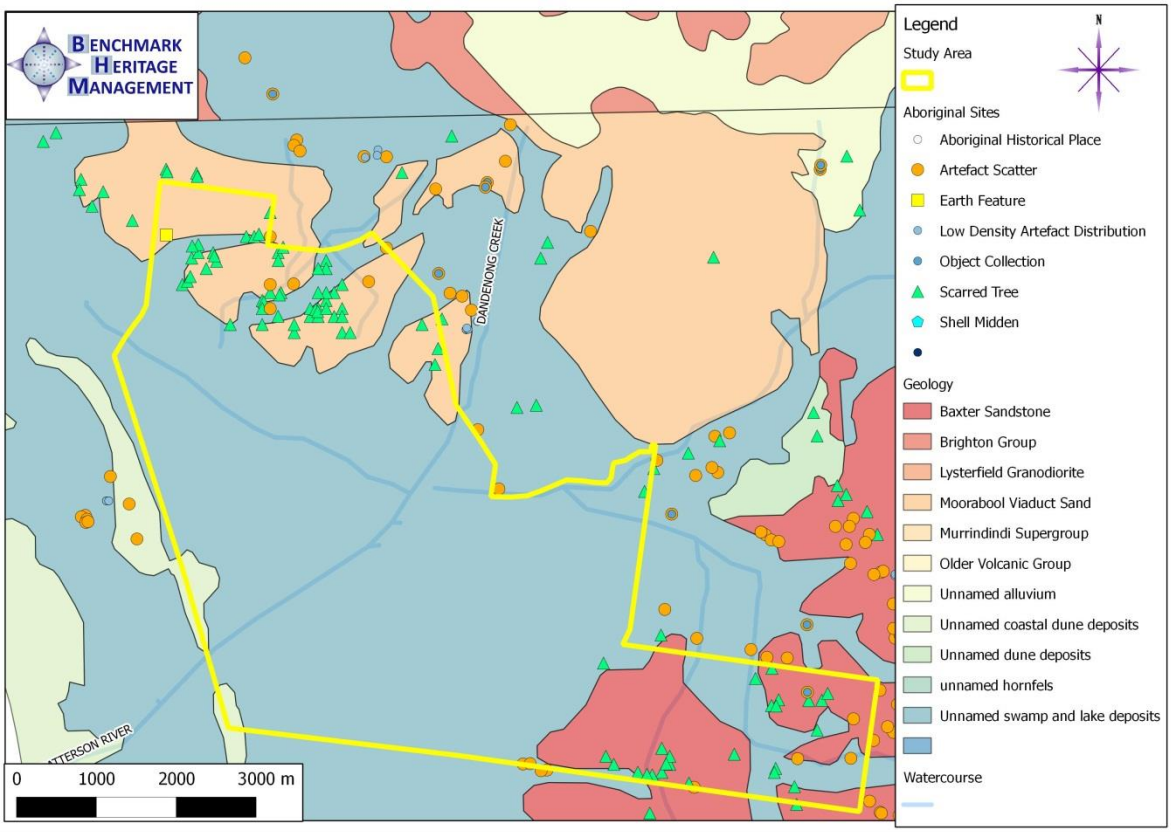
Using the name inclusively, the Carrum Carrum Swamp occupied (and still occupies in remnant form as the Seaford Swamp, Donnelly et al. 1985) the easternmost part of the Port Phillip sunkland. The present Port Phillip Bay occupies part of a structural depression or 'sunkland' bounded by geological faultlines. The Rowsley Fault forms the western boundary of this sunkland, and the Selwyn Fault, which formed the Mornington Peninsula, is the eastern boundary. A fault known as the Melbourne Warp, which follows a north-westerly alignment from Dandenong, bounds the Port Phillip sunkland on the northeast (Bird 1990:5, 1993:124-5). According to Bird (1990:3), the Port Phillip basin has been subject to intermittent subsidence since the Triassic. However, the broad lowland occupied by the present marine embayment was produced as a result of recurrent subsidence since the early Tertiary (Bird 1993:124). Newer Volcanic (Plio-Pleistocene) lava flows encroached upon the northwestern sector of the sunkland (Bird 1993:125) and the sea now occupies the remainder. That is, with the exception of the eastern portion which became the Carrum Carrum Swamp.

Between Mordialloc and Frankston, a continuous line of sand ridges lies immediately inshore of, and parallel to, the present shoreline (Inan 1992:261). These ridges defined the seaward limit of the Carrum Carrum Swamp, as it existed when Europeans arrived. According to Bird (1993:160, 163), the ridges, which are evident in Hills' block diagram (Figure 50) and Whincup's map (Figure 51, date from the Holocene (ca.3,700 years BP for the dune ridge to the landward of Kananook Creek). While the beach ridges readily account for the presence of wetland resources - and people utilising them - during the Holocene, compelling evidence also exists for the presence of a swamp within this part of the Port Phillip Sunkland during the late Pleistocene. According to Bird (1993:166), the Wells Road Ridge, identified by Hills (Figure 50) and Whincup (Figure 51), represents the beach barrier and sand dune of a Pleistocene shoreline. Hills (1975:190) asserted that the present coastline and the stranding of the former

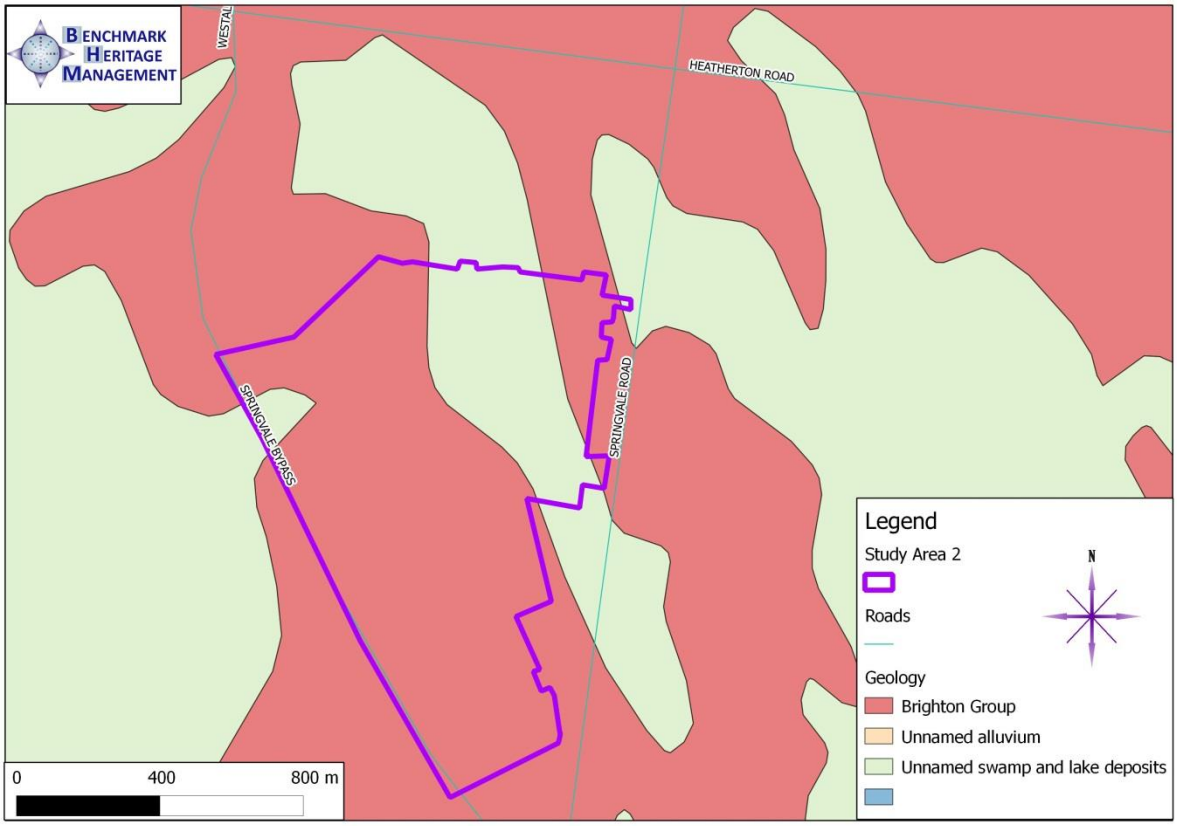
coastline at the Wells Road Ridge is the result of "slight emergence" causing the sea to recede. However, an alternative explanation, perhaps more in line with present understandings, is provided by the sea level at certain times within the late Pleistocene standing considerably higher than it does at present (Gardner et al. 2006:1562). Beach barrier dunes, of the type evident in relict form in the Wells Road Ridge, probably played a key role in the formation of swamps behind them by barring drainage from the higher land beyond the Melbourne Warp (Whincup 1944:75). Such swamps probably existed, at least intermittently, during the numerous interstadials that occurred against the background trend of increased glaciation and lowering of sea levels towards the LGM (Williams et al. 1998:119). Swamp resources can hence be considered as a reason for the, at least, intermittent presence of humans at the Bend Road site once the southeast of the continent of Sahul (Greater Australia) became populated. Whincup (1944:59-60) noted the presence of four curved sand ridges, having eastwest orientation, bordering the northern edge of the Carrum Carrum Swamp. Whincup concluded that these ridges are probably younger than the Pleistocene Wells Road ridge, possibly having formed in the manner of lunettes during periods when the swamp was dry. However, Whincup made a distinction between these lunette ridges and what she has decribed as "low, irregular, sand ridges, many of which are entirely surrounded by alluvium". These forms were noted to occur in the general area of Bend Road (1944:59). They are identified on Figure 51 as "low sandy areas". From an examination of the exposed stratigraphy in a sand pit, Whincup was able to conclude that an example of such a sand ridge had been "..partly buried around its base by alluvium" (1944:59). Hence, it appears that during the late Pleistocene, the swamp created behind the inshore beach barrier at Wells Road invaded an older dune system. Water backed up in the swamp caused the sand from the old dunes to be eroded and redistributed, while swamp sediments, including the eroded sand, accumulated around pre-existing sand masses. The processes possibly involved in evolution of the present land form, as it is evident from the stratigraphy observed at Bend Road, are modelled in Figure 56. The OSL age of ca. 126 ka BP (KB15) within the sand body beneath the coffee rock at toe drain section DS3, suggests that the dune system had become established by that time, and that the later Pleistocene swamp invasion came subsequently. The older dune system, which probably rests directly upon the Tertiary sediments, perhaps clays of marine origin (Whincup 1944:60), represents a significant mobilisation of sand. One of the numerous, but relatively brief, stadial phases characteristic of the last interglacial, approximates to the 126 ky BP date. During this stadial phase, sea level receded to about the present level, which may account for sand movement and dune formation at that time. According to Hughes (2006b:2) this mobilisation may be contemporaneous with the formation of the "Inner Barrier" sands of the NSW coast. However, according to data from the Huon coral terraces (Williams et al. 1998: Figure 6.7, p.119), the stadial and interstadial fluctuations between ca. 120 and 130 ka BP were probably minor compared to the particularly severe and long-lasting period of glaciation that was at a maximum at ca. 150 ka. At that glacial peak, the sea level dropped almost to the -150 m level reached at the LGM and widespread mobilisation of sand might be expected to have occurred. It is possible that a dunefield formed during the earlier glaciation was reworked during a stadial phase ca. 126 ka BP, and the OSL 'clock' reset at that time.

Below are detailed descriptions of each geological formation within the study area. The descriptions include a summary of the soils associated with each geological landform and provide an indication of the depths at which Aboriginal sites are commonly located (see Maps 6-7). There is a clear co-relation between geology and site distribution within the CGDGW in

that 51 ACHPs (62.2%) are located on either Baxter Sands or Moorabool Sands) whilst the remaining 31 ACHPs comprise either scarred trees on the floodplain; n = 21 (25.6%) or artefact scatters located on low rises on the floodplain; n=10 (12.2%).



Map 6: Geology of the CGDGW Study Area 1



Map 7: Geology: Study Area 2

The majority of the study area is an essentially flat landscape adjoining the eastern margins of the former Carrum Carrum Swamp, a broad basin fringed by deposits of fluvial Moorabool Viaduct Sand and other sand deposits. These sand deposits formed during the Pleistocene in a low sea-level phase when the climate was more arid, and are at their greatest extent across a ridge of high ground at Cranbourne, where they are characterised by elongated ridges and parabolic dunes trending south eastward (LCC 1973, Map 3; LCC 1991, 53; Bird 1993, 193). However they frequently occur as low sheets that may be barely detectable without subsurface excavation, and are invariably unmapped. Geomorphological investigations of similar sand sheets determined that these deposits have been to a degree reworked in the late Pleistocene and early Holocene, and can contain human occupation deposits dating to this early timeframe (Hewitt & de Lange 2007; Allen et al. 2008, Whincup and Albrecht 2012). In terms of geology the study area is characterised by three geological formations:

QM1 –Unnamed Swamp and Lake Deposits

Quaternary Unnamed swamp and lake deposits are paludal silt and clay deposits which generally consist of dark clayey Holocene swamp sediments. These deposits comprise the bulk of the study area with the exception of Moorabool Viaduct Sands in an area bordered by Pillars Road, Perry Road and Hutton Road; and sand deposits derived from decomposing Baxter Sandstone located in the far southeast of the study area south of Glasscocks Road. These deposits are associated with Carrum Carrum Swamp and Eumemmerring Creek and comprise a broad floodplain formed from recent Holocene non-marine alluvium (DPI, 2013). Soils on the floodplain are paludal swamp deposits of silt and clay. Examples of this landform are shown in Plates 1-2.

Plate 1: Low-lying floodplain north of Thompsons Road	
Plate 2: Low-lying floodplain south of Glasscocks Road	

NXX - Baxter Sandstone

Baxter Sandstone is characterised weathered deposits of sandstone, conglomerate, siltstone and ironstone (DSE Geovic Interactive Map, Accessed 18/9/2013). The Baxter Sandstone deposits date to the Tertiary Period, the oldest age being Miocene (23.7-5.3ma) and the youngest age being Pliocene (5.3-1.8ma). During the Holocene (10,000 years – to present) sediments derived from Baxter Sandstone were reworked by wind action into the sand dunes and sand sheets which are prevalent in the region (Plate 3 shows an example with the COGDGW). This geological landform is not considered a culturally sensitive area under the Regulations to the Aboriginal Act 2006 and does not trigger a mandatory CHMP, however is considered of moderate to high archaeological sensitivity within the CGDGW.

NBM - Moorabool Viaduct Sands

Moorabool Viaduct Sands were formed during the Pleistocene in a low sea-level phase when the climate was more arid. The many archaeological and geo-morphological investigations to the region have shown these sands to include low silt and clay components, indicating the sands have been wind-blown. During the last glacial maximum the landscape was more arid and located at considerable distance from the coast. During the mid-Holocene high stand (approximately 2,000-6,000 years ago). Aboriginal use and occupation would have favoured higher ground (particularly sandy rises) due to the waterlogged and swampy nature of the lowland plain. These elevated landforms may also have acted as the most reliable pathways to the Carrum Carrum Swamp. The highly significant Bend Road investigation within the Eastlink Tollway alignment was located on Moorabool Viaduct Sand (Plate 4 shows an example with the CGDGW). This geological landform is not considered a culturally sensitive area under the Regulations to the Aboriginal Act 2006 and does not trigger a mandatory CHMP, however is considered of moderate to high archaeological sensitivity within the CGDGW.

NB – Brighton Group

The section of the Study Area east of Westall Road is located on the Brighton Group. The Brighton Group comprises two formations: a predominantly marine sandy fossiliferous unit, known as the Black Rock Sandstone of Late Miocene age; and the overlying Red Bluff Sands, thought to range in age from Late Miocene into the Pliocene. The Black Rock Sandstone is well exposed in the cliffs between Point Ormond and Mentone, as well as in railway cuttings at Royal Park and South Yarra where it is highly ferruginised and difficult to distinguish from the underlying weathered Fyansford Formation. The Red Bluff sands are composed of poorly fossiliferous yellow-brown sands, gravels, and conglomerates that are mostly very weathered. They outcrop over a wide area of the northern, eastern, and south-eastern suburbs, in many places as hill cappings. This geological landform is not considered a culturally sensitive area under the Regulations to the Aboriginal Act 2006 and does not trigger a mandatory CHMP. The section of the 'Brighton Group' within the CGDGW is considered of moderate to high archaeological sensitivity with the exception of the areas utilised current or formerly as a tip.

Plate 3: Baxter sands exposed near corner Western Port Highway and Glasscocks Road	
Plate 4: Rise west of Springvale Road	

Discussion

Generally the site distribution in terms of geology corresponds to the raised sandy landforms within the study area and contains the majority of the ACHPs recorded within the Green Wedge. It is however a proven fact that geological mapping within the Dandenong region is

often inaccurate on a local scale. Several large and significant archaeological sites in the region have been located on areas mapped as unnamed swamp deposits; Barker (2007) located five extensive sub-surface deposits on an extensive barrier sand dune system on the north side of Colemans Road (Kelly 1-5) located only 300m west of the current study area. Therefore unmapped aeolian sand deposits (Nbm 1:63, 360 Series (Cranbourne Sheet)) may also be present on the fringes of the former Carrum Carrum Swamp. Aboriginal places are most likely to be distributed within formations of aeolian sand deposits.

Generally any raised elevated sandy landform within the CGDGW should be considered of potential archaeological sensitivity (Examples are shown in Plates 3-4). Plate 5 shows an example of an excavated sand body containing an Aboriginal sub-surface artefact scatter at Abbots Road, Dandenong South which was located on an unmapped geological landform designated as unnamed swamp deposits but clearly represents an unmapped sand dune.

Plate 5: Deep sand deposits containing VAHR 7921-0813 located south of Abbots Road in South Dandenong	

2.8 Resources Available to Aboriginal People within the Study Area

Prior to European settlement, the Study Area and surrounding land would have offered a number of resources such as plants and animals that could have been utilised by the traditional Indigenous owners.

2.8.1 Climate

Temperature averages at Dandenong indicate a cold to hot maximum average of 6.8°C in July to 22.9°C in February. Minimum average temperatures throughout the year range from 6.8°C in July to 13.9°C in February. The annual average rainfall for the area is 687mm. These climate conditions would have placed no restrictions on the Aboriginal occupation of the area (LCC 1991).

2.8.2 Water Sources

Eumemmerring and Dandenong Creeks both flow from the northeast and originally drained in to Carrum Carrum Swamp. Both creeks would have provided a permanent source of fresh water.

In addition to the more permanent source of water described above, during winter water would have collected in depressions between dunes (indicated by areas of swampy scrub) and may have lasted for several days (Sullivan 1981: 8).

Swamp reclamation works which began in the 1870s resulted in the channelling of the southern sections of Dandenong and Eumemmerring Creeks (Plate 6), the cutting of a channel through the Carrum Carrum Swamp (now the Patterson River) and construction of a network of field drains and channels (such as the Mordialloc Main Drain, Plate 7), to bring most of the former swamp land into agricultural production.

Plate 6: Straightened Eumemmerring Creek Channel west of Frankston-Dandenong Road	
Plate 7: Mordialloc Main Drain west of Worsley Road	

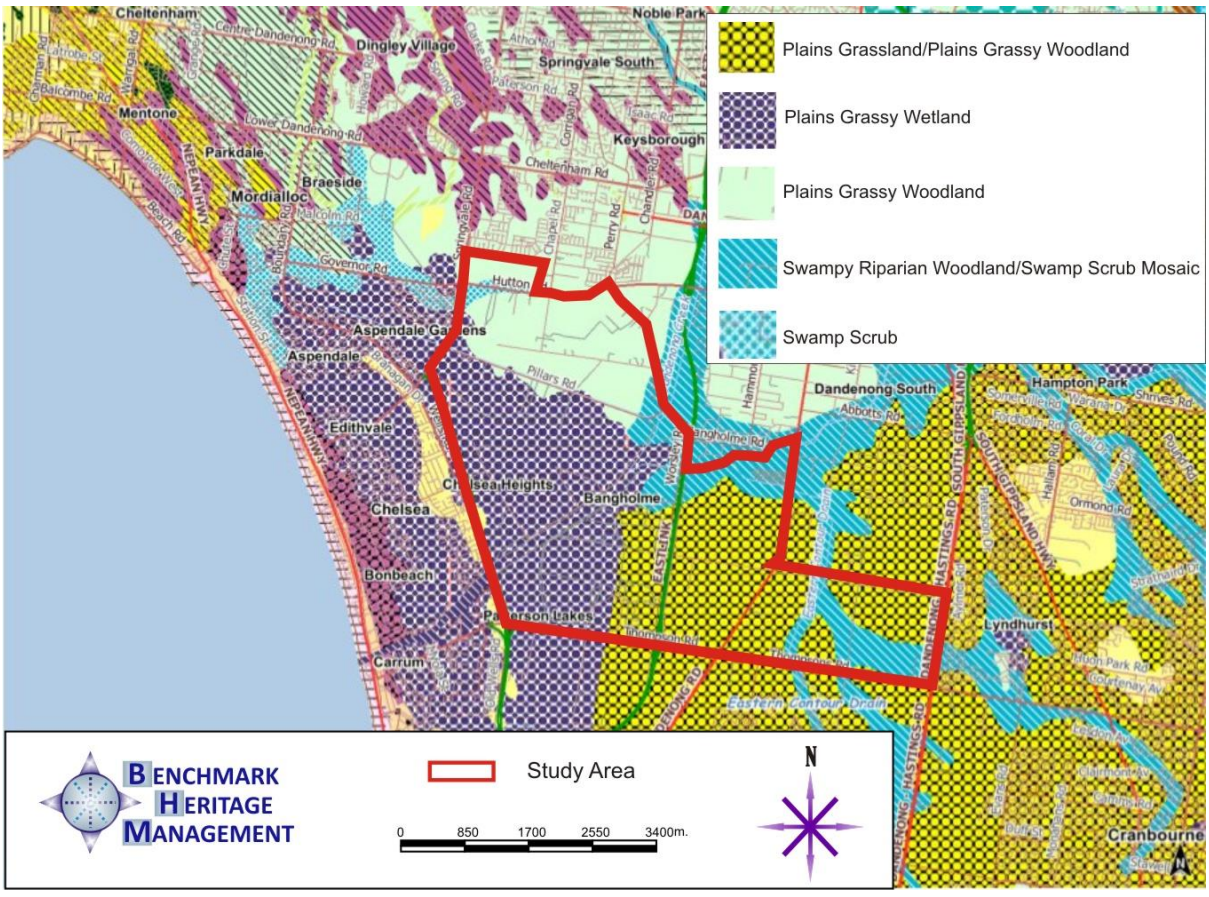
At one time Carrum Carrum Swamp stretched from Mordialloc to Seaford and inland as far as Bangholme (Presland 1994: 31, Barker 2010). The swamp no longer exists in its natural form because of a drainage program that took place during the 1960s in order to reclaim the land. The swamp originally overflowed into Port Phillip Bay via the Mordialloc and Kananook creeks, but the Patterson River, an artificial channel near Carrum, has drained the swamp since the late 1960s (Cupper et al. 2004, Barker 2012).

The swamp was formed when shifting dunes blocked drainage from the Dandenong and Eumemmering Creeks into the bay (Hills 1964: 163; Presland 1994: 32, Barker 2010). Down warping (tectonic movement) between the Beaumaris Monocline and Selwyn Fault formed a low-lying triangular depression, which is occupied by the Carrum Carrum Swamp (Hills 1964).

Up to 20m of alluvial–swamp sediments have accumulated in this area behind a line of coastal dunes. Sediments consist of sands with intercalcated swamp deposits and are thought to be late Cainozoic in age. Before the contact period, Carrum Carrum Swamp stretched from Seaford to Mordialloc and provided Aboriginal people with a wealth of edible plant and animal resources.

2.8.3 Description of Existing and Pre-Contact Vegetation

The 1750s ecological vegetation communities (EVCs) within the CGDGW (Map 8) included Plains Grassy Woodland (EVC55); Plains Grassland/Plains Grassy Woodland Mosaic (EVC 897); Plains Grassy Wetland (EVC 125); Swampy Riparian Woodland/Swamp Scrub Mosaic - EVC No: 688; and Swamp Scrub EVC 53. These are vegetation communities that were formerly found within the CGDGW of which very little now remains due to vegetation clearance which began in the mid nineteenth century. The vegetation now located within the CGDGW is primarily agricultural with the occasional small stands of modified native vegetation; i.e. Bowmans Park.



Map 8: Pre 1750 Vegetation Communities within the CGDGW

Swampy Riparian Woodland/Swamp Scrub Mosaic - EVC No: 688 (DPI Biodiversity Interactive Map, 1750 EVC's, accessed 8/9/2013).

This comprised woodland to 15 m tall generally occupying low energy streams of the foothills and plains. The lower strata are variously locally dominated by a range of large and medium shrub species on the stream levees in combination with large tussock grasses and sedges in the ground layer. At low elevations on alluvial deposits along streams or on poorly drained sites with higher nutrient availability this comprises closed scrub. Soils vary from organic loams to fine silts and peats which are inundated during the wetter months of the year. Often lacks a tree overstorey and is typically dominated by shrubs of Swamp Paperbark Melaleuca ericifolia which often form a dense thicket. Where light penetrates to ground level, a moss/lichen/liverwort herbaceous ground cover is often present.

Plains Grassland/Plains Grassy Woodland Mosaic (EVC 897) (DPI Biodiversity Interactive Map, 1750 EVC's, accessed 8/9/2013).

Plains Grassland occured on lowland plains on fertile clay loams of Quaternary and Tertiary origin. Plains Grassland is characterised by a very low density or complete absence of trees and shrubs, although occasional trees such as Buloke (Allocasuarina luehmannii) may be present. The ground layer is dominated by perennial grasses, including Spider Grass (Enteropogon acicularis), Wallaby Grasses (Austrodanthonia spp.), Spear grasses (Austrostipa spp.) and perennial herbs such as composites (daisies) and chenopods (saltbushes). A large number of annual herbs are also a feature of this vegetation type (Department of Primary Industries, Website Accessed 26/12/2012). Plains Grassy Woodland is an open, grassy eucalypt woodland in low (mostly <700mm per annum) rainfall areas occurring on fertile soils on flats and gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a diverse grassy, herb-rich ground layer (Oates and Taranto 2001).

Plains Grassy Wetland (EVC 125) (DPI Biodiversity Interactive Map, 1750 EVC's, accessed 8/9/2013).

This EVC was usually treeless, but in some instances can include sparse River Red Gum Eucalyptus camaldulensis or Swamp Gum Eucalyptus ovata. A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas.

Grassy Woodland – VC 175 (DPI Biodiversity Interactive Map, 1750 EVC's, accessed 8/9/2013).

Grassy Woodland was open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer. This vegetation is characterised by a very low density of trees including River Red Gum *Eucalyptus camaldulensis*, Yellow Box *E. melliodora* and Grey Box *E. microcarpa*. Black Box *E. largiflorens*, Yellow Gum *E. leucoxylon* and Buloke *Allocasuarina luehmannii* are generally more common in lower rainfall areas. The most common shrubs include low-growing species such as Gold-dust Wattle *Acacia acinacea*, Spreading Eutaxia *Eutaxia microphylla* and Cranberry Heath *Astroloma humifusum*. The ground layer is dominated by perennial grasses, particularly Wallaby Grasses *Austrodanthonia*

spp., Spear Grasses *Austrostipa* spp., Kangaroo Grass *Themeda triandra* and a range of perennial and annual herbs and geophytes, especially orchids and lilies. Chenopods (saltbushes) and composites (daises) may also be a feature of this vegetation in lower rainfall areas.

Swamp Scrub EVC 53 (DPI Biodiversity Interactive Map, 1750 EVC's, accessed 8/9/2013).

This comprised closed scrub to 8 m tall at low elevations on alluvial deposits along streams or on poorly drained sites with high nutrient and water availability. Soils vary from organic loams to fine silts and peats which are inundated during the wetter months of the year and is dominated by either Woolly Tea-tree Leptospermun lanigerum and/or Paperbarks Melaleuca species which often form a dense impenetrable thicket, out-competing other species. Emergent trees (e.g. Swamp Gum Eucalyptus ovata) may sometimes be present. Where light penetrates to ground level, a moss/lichen/liverwort herbaceous ground cover is often present.

The structure and species of the pre-1750s vegetation would have presented a diverse range of vegetation for the area and would have provided a wide range of resources for the Aboriginal population including precious food resources. The area was likely dominated by an overstorey of River Red Gum (*Eucalyptus camaldulensis*) with Black Wattle (*Acacia mearnsii*) and Blackwood (*Acacia melanoxylon*). A variety of grasses would have been present, including Kangaroo Grass (*Themeda triandra*), as well as a range of lilies; Yellow Rush-lily (*Tricoryne elatior*), Twining Fringe-lily (*Thysanotus patersonii*) and Vanilla-lilies (*Arthropodium*). The bulbs of these lilies were utilised as a source of food by Indigenous people. The yam daisy or *murnyong*, was also available and is considered to have been a widely-used staple food. Plants available for medicinal purposes and for the manufacture of weapons would have been available within the study area.

2.8.4 Information on Fauna of the Study Area

Fish and eels were important resources and were speared in rivers or caught in nets (Thomas cited in Sullivan 1981: 24). Although use of the hook and line was observed, it is likely that this was a practice resulting from contact with sealers (Sullivan 1981: 24).

Plant foods were extensively exploited and included berries, fungi, roots, tubers, bulbs, leaves, and pith from fleshy plants, seeds and sap. Gum was also collected from the wattle and stored in known locations for seasons when food was less abundant (Thomas cited in Sullivan 1981: 25).

A number of animals would have been present within the Study Area and are likely to have been hunted by traditional owners. These include the Eastern Grey Kangaroo (Macropus giganteus), Common Brushtail Possum (Trichosurus vulpecula), Common Ringtail Possum (Pseudocherinus peregrinus), Short Beaked Echidna (Tachyglossus aculeatus) and the Wombat (Vomatus Ursinus). Birds, bird eggs and reptiles may have also been utilised. Birds, such as emu and bustards, were also eaten, as were bird eggs. Birds were caught with throwing sticks or in traps.

Subsistence Strategies

Typically a hunting and gathering community, the *Bun wurrung and Woi-wurrung* would have traversed the extent of their traditional lands in a well-known 'seasonal round', obtaining resources from known locations. The grassy plains which spread throughout the area would have been exploited for a variety of resources, including the larger mammals (kangaroos and wallabies), the larger bird species (emus and bush turkeys) and also reptiles. The grasslands would also have provided people with vegetable foods: the yam daisy or *murnyong*, which is considered to have been a widely-used staple food and the small but edible tuber-bearing lilies, such as the bulbine lily and milkmaids (Low 1991). The wetland of the Carrum Carrum Swamp and fresh watercourses environment would have provided an abundance of edible plants and animal; and a permanent source of freshwater.

2.8.5 Stone Resources

No stone resources and outcrops suitable for the manufacture of stone tools are found within the Study area. Chert, silcrete and quartz are available inland on the Mornington Peninsula, while marine flint is commonly found on beaches as large nodules washed ashore from an unknown source on the Bass Strait ocean floor. Steven Compton of the Bunurong Land Council Aboriginal Corporation advised Williamson in 2008 that red silcrete derived from reefs off the tip of Point Nepean washes up on beaches in the area (Williamson 2008: 60). George McCrae recounted finding outcrops of milky quartz and quartz crystals 'several inches in length' in the southern- facing gullies on the southern Mornington Peninsula in the 1840s and 1850s (McCrae 1911: 20). Locally available robust and sharpened shell edges may have been used for some cutting functions and calcarenite may serve as an abrasive, pounder or as a grinding stone. Ochre used for decorating objects and for body paint was reputed by Protector Thomas to have been obtained from an unknown source near Mount Eliza (Thomas cited in Sullivan 1981: 9).

Flakeable stone from which to make tools was available within the surrounding region. Reef quartz may have been quarried from areas on the Mornington Peninsula, including Devilbend Creek (Ellender 1991:10), where sedimentary deposits interface with intrusive volcanics (granite). Chert could be found at Devilbend. Sandstone and slate could be found at Baxter on the Mornington Peninsula (Weaver 1992). Marine flint in the form of nodules is found washed up along the Bass Strait coastline (Sullivan 1981:9-10).

Stone sources include basalt, east of Cape Schanck, as well as marine chert and quartz located in granitic areas of Cape Woolamai, on Flinders Island (Cekalovic 1999). Sources of silcrete and chert have been reported to exist in parts of the interior of the Peninsula (Freslov 2002) approximately 10 km - 15 km to the north-east of the Study area. Silcrete could also have been sourced from the Westernport region to the east. Chert, silcrete and quartz are available inland on the Peninsula (Jenkin 1974).

2.9 Conclusions from the Desktop Assessment

Ethnological and archaeological data indicates that a wide range of resources would have been available to Aboriginal people in the vicinity of the current study area. Overall, the geographic region of which the study area forms a part has been subject to thorough and in-depth cultural heritage investigation. A large number of sites have been recorded on the sand dunes, on elevated landforms and along creeklines however relatively few have been located in low lying areas.

The number of sites previously recorded in the region demonstrates that both the margins of Carrum Carrum Swamp and the Dandenong/Eumemmerring Creek floodplains were utilised intensively by Aboriginal people in the past. The results of the regional and localised studies appear to indicate that the location of Aboriginal archaeological sites is correlated to the location of dune crests and upper slopes within close proximity to watercourses; that is topographically higher ground. Map 6 shows the distribution of Aboriginal sites overlaid with geological data; the majority of the recorded ACHPs within the study area are located on elevated sandy rises associated with the Moorabool Viaduct Sands in the northwest and Baxter Sandstone in the southeast; very few have been located within the former extent of Carrum Carrum Swamp.

Prior CHMPs conducted in similar environmental contexts indicate subsurface sandy deposits to a depth of about 100cm to a sterile clay base. Several CHMPs and archaeological investigations conducted in the immediate area have located Aboriginal archaeological materials and those that have are generally associated with sand dune landforms and creek lines.

Ethnographic evidence indicates that the permanent section of Carrum Carrum Swamp formed the primary food source, providing the most reliable and diverse range of resources throughout the year, but especially in spring when birds, eggs, fish, yabbies and edible plants were readily available, in particular myrnong and swamp rushes (Hibbins 1984, 11). These resources were primarily exploited from base camps located on the sand dunes that fringed the swamp.

2.10 Conclusions and Site Prediction Model

Conclusions

Overall, the geographic region of which the Study area forms a part has been subject to thorough and in-depth cultural heritage investigation. A large number of sites have been recorded on the sand dunes, on elevated landforms and along creeklines however few have been located in low lying areas. These elevated landforms may also have acted as the most reliable pathways to the Carrum Carrum Swamp.

Based on our analysis of the VAHR Aboriginal sites database, and background archaeological data reviewed in this chapter, the topography and distribution of natural resources near the study area generally indicates a potential for:

- Scarred trees and stone artefact scatters are the most likely Aboriginal place types to be located within the study area (Plates 8-9);
- Aboriginal Scarred trees in the region are generally remnant River Red Gum which are generally found in close proximity to permanent watercourses and natural drainage lines in the few areas that have not been completely cleared of native vegetation.
- Sandy rises and stable sand dune crests are particularly sensitive. Numerous previous investigations have demonstrated that stable sandy rises (Plates 3 and 5) have a high

potential to contain sub-surface stratified layers of stone artefacts may also be preserved in these landforms (ie Hewitt and DeLange 2007, Barker 2007);

- Aboriginal cultural heritage sites may have great antiquity; and may be up to 35,000 years old;
- There is a lower density and frequency of artefact scatters at distance from creeks, swamps and stone sources;
- There is lower archaeological potential for artefact scatters within sub-surface deposits on land that was formerly waterlogged/wetland (Plates 1-2). Several investigations at have demonstrated the potential for specific locations within the former swamp to contain buried sand dune deposits underneath swamp deposits. Where present, the buried sand dune deposits may have potential to contain stone artefact deposits depending on the formation history and age of the dune;
- Artefact scatters may be found on small alluvial rises within the extent of the former Carrum Carrum Swamp;
- Isolated finds may be found anywhere across the study area; and
- Human burial sites are likely to occur in landforms characterised by relatively deep profile of soft sediments such as sand and alluvium Burials are most likely to occur in soft sands that have a neutral or alkaline pH and are more than 300mm deep.

In terms of stone artefact scatters specifically:

- Stone artefact deposits are likely to be found at varying densities across most landforms within the CGDGW;
- Higher density artefact scatters and sub-surface deposits are likely to be found adjacent to creeks or wetlands. Artefact density and frequency is likely to increase with higher stream order (for creeks) and permanence (for wetlands);
- The density and complexity of artefact scatters and sub-surface deposits is likely to decrease with distance from water sources and wetlands;
- The distribution of Aboriginal places across the local landscape suggests that higher density and larger sites are likely to be located on slightly elevated flat landforms, particularly sandy rises and stable sand dune crests, located on the margins of the former Carrum Carrum Swamp (Map 6).
- There is also a much lower likelihood within former swamps and wetlands, although the potential for buried sand dune deposits that pre-date formation of the swamp system should also be investigated to exclude the possibility of older buried cultural deposits beneath the swamp or located on alluvial rises within the swamp.

There is no potential for rock shelter sites, axe grinding grooves or rock engravings as the study area does not contain outcropping bedrock.

To summarise conclusions from the desktop assessment, previous archaeological investigations in the identified landforms have revealed a high likelihood of artefact scatters and isolated artefacts to be present in such landforms. As the study area contains these landforms, namely sandy rises near a water source, the likelihood of an artefact scatter being present is high.

Plate 8: Scarred Tree in Bowman Park	

Plate 9: Typical examples of stone artefacts from sub-surface artefact scatter VAHR 7921-0813.	

Site Prediction Modelling

Predictive modelling in archaeology evolved from the discussion of settlement patterning or "settlement archaeology" that emerged in the New Archaeology in the 1960s. Essentially, the approach assumes that if the pattern of site locations can be established for a particular cultural area, that patterning can be used to predict where undocumented sites might be found within similar cultural settings. Effective, comprehensive models can quickly and efficiently predict areas of archaeological interest and save time and energy by focusing surveys on only those areas with the greatest potential to contain sites. In the context of the current study, this modelling can also be used as planning tool, to aid in the identification of archaeologically sensitive areas during the course of the development of designs for projects that could have deleterious impacts on such deposits.

In general, there are two distinctive approaches to the problem of predicting the location of archaeological sites. These have been classified as either empirical/inductive or deductive (Hay 1993:40-41) in the literature.

The Empirical Approach

At its simplest, an inductive/empirical approach is based on low-order generalizations based on empirical observations (e.g., "sites are found within 300 feet of water" or "sites are found on level, well-drained soils"). These generalizations are based on observed correlations between the location of archaeological sites and attributes (as defined by the researchers) of the natural or cultural landscape. Warren and Asch (2000:6) characterize predictive"...models are tools for projecting known patterns or relationships into unknown times or places". According to these authors, predictive models in prehistoric archaeology are based on three basic assumptions: 1) prehistoric sites are distributed non-randomly; 2) natural

environmental features are, in part, responsible for that non-random distribution; and 3) those natural environmental features are visible in contemporary maps and databases. Methodologically, the empirical approach begins by defining what features in the environment are correlated in a statistically significant way with the location of documented archaeological sites (e.g., Rose et al. 1995; Duncan and Schilling 1999). Once the environmental feature(s) or factor(s) have been isolated, predicting the location of undocumented sites becomes a matter of mapping all locations within a given study area where the determining environmental feature(s) are found. Verification of the predictive model is achieved through archaeological survey of those areas that, according to the model, have a high probability of containing undocumented sites. If the model has accurately correlated the locations of known archaeological sites with the determining environmental variables, sites will be found where, and only where, they are predicted.

The Deductive Approach

A deductive approach to the problem of site predictive modelling shares a common assumption with the empirical approach and with archaeological settlement pattern analysis -archaeological sites are distributed non-randomly across the landscape and environmental and cultural factors are, in part, responsible for their non-random distribution. The deductive approach differs in that the analytical point of departure is not with the distribution of known sites, but with the recognition that human beings select the location of their settlements on the basis of conscious decisions grounded on a set of physical and social needs. By understanding these needs, a researcher can predict not only where settlements are located, but also why they are located where they are.

As the name implies, the deductive approach begins with a model (or models) of cultural adaptation to a specified area. The pattern of settlement locations is derived (deduced) from the distribution of resources that are believed to have been of value to the members of a culture. Not only can the physical location of archaeological sites be predicted on the basis of settlement pattern, but the types of sites (i.e., what types of resources were exploited at each site location) can also be predicted. This approach aspires to bringing the archaeologist closer to an understanding of the worldview of people being studied.

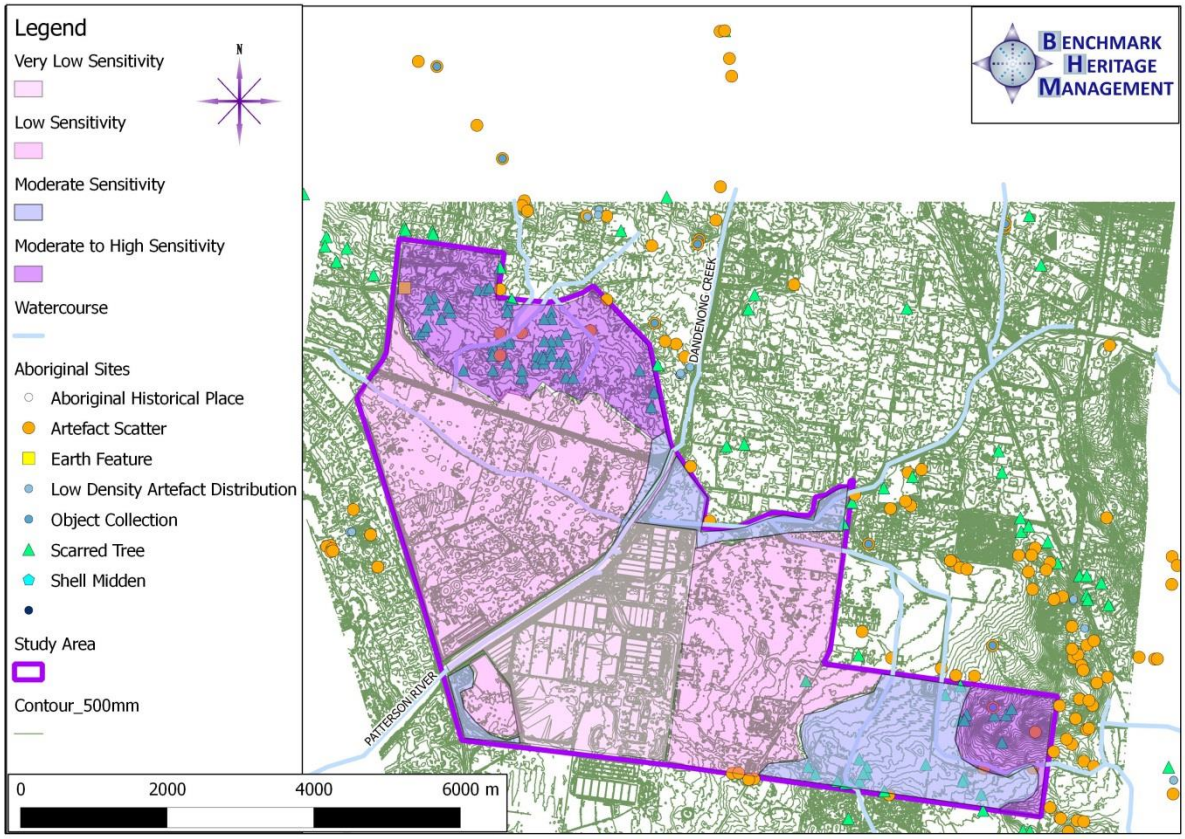
This method has the additional advantage of providing a closer link between predictive modelling and subsequent field testing. By providing predictive statements not only on the probable location of archaeological sites but on the types of sites likely to be found.

Site Prediction Model

For the purposes of the model, the term archaeological sensitivity is defined as the likelihood of identifying archaeological deposits within any given area and uses the empirical approach to site prediction.

Factors Included in the Model

The following is a list of variables that contribute to archaeological potential sensitivity within the CGDGW (see Map 9).



Map 9: Archaeological Sensitivity within the CGDGW

1. Proximity to water sources.

Sources of; and proximity to freshwater either permanent or ephemeral is one of the key determinants of archaeological potential sensitivity. Large Aboriginal sites are frequently found in close proximity to water sources. Levels of sensitivity are predicted to increase with higher order drainage lines and more permanent wetlands. Drainage and hydrology patterns within Carrum Carrum Swamp have been significantly altered since European settlement in order to drain waterlogged areas to open them up for grazing and cultivation in the late 19th and early 20th century. GIS-modelling combined with analysis of topographic maps and historic aerial photos have been used to determine the likely extent of former wetlands and areas prone to flooding. Areas within 200m of a watercourse are considered of moderate archaeological sensitivity.

2. Sand Dune/Crest Landforms.

Previous investigations in the area have shown that sand dunes and hill landforms are associated with a higher density and frequency of archaeological deposits particularly on the margins of Carrum Carrum Swamp. Crest landforms were delineated using geological mapping, topographic mapping and mapping carried out during the survey. These include areas of Baxter Sandstone/Moorabool Sands/Brighton Sands which are considered of moderate to high archaeological sensitivity.

3. Areas of Significant Ground Disturbance

These areas are considered unlikely to contain Aboriginal archaeological deposits because topsoil units (ie. artefact bearing soil units) have been removed. These areas include roads, dams and the construction of building platforms for houses and sheds. They are considered to have been disturbed. The South East Water Treatment Facility in the southwest of the CGDGW is the most obvious example of an area of significant ground disturbance along with roads, drains and buildings.

Significant ground disturbance means:

Disturbance of –

(a) the topsoil or surface rock layer of the ground; or

(b) a waterway –

by machinery in the course of grading, excavating, digging, dredging or deep ripping, but does not include ploughing other than deep ripping. These areas are considered of very low archaeological sensitivity.

4. Swamps and Wetlands.

The former extent of Carrum Carrum Swamp is considered to have low archaeological potential for Aboriginal occupation and use (because of seasonal inundation) and is less likely to contain evidence of Aboriginal occupation and use. There is some potential for these areas to contain low densities of cultural material associated with foraging into the wetlands and exploitation of resources; which are most likely to be located on low alluvial rises within the swamp and are not necessarily immediately discernible. These areas are considered of low archaeological sensitivity.

5. Previously recorded Aboriginal archaeological sites.

The number of sites previously recorded in the region demonstrates that both the margins of Carrum Carrum Swamp and the Dandenong/Eumemmerring Creek floodplains were utilised intensively by Aboriginal people in the past. The results of the regional and localised studies appear to indicate that the location of Aboriginal archaeological sites is correlated to the location of dune crests and upper slopes within close proximity to watercourses; that is topographically higher ground. Map 6 shows the distribution of Aboriginal sites overlaid with geological data; the majority of the recorded ACHPs within the study area are located on elevated sandy rises associated with the Moorabool Viaduct Sands in the northwest and Baxter Sandstone in the southeast (n = 51, 62.2%); very few have been located within the former extent of Carrum Carrum Swamp.

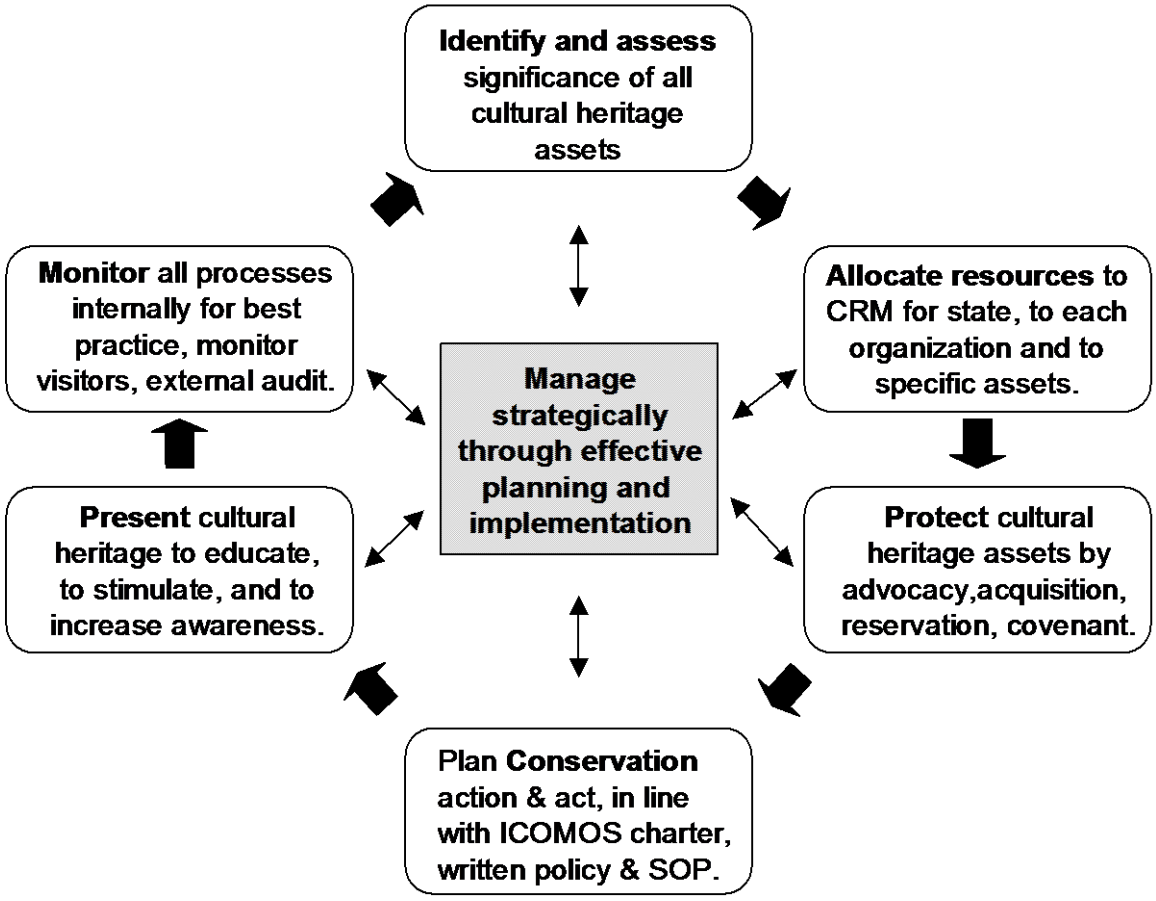
3.0 Issues and Opportunities

The management of cultural resources on reserved land is an important aspect of the management of parks and protected areas. The Greater Dandenong Green Wedge Management Plan project will allow the following issues to be addressed and has created several opportunities for best practice Aboriginal cultural heritage management.

3.1 Best Practice in Cultural Heritage Management

In 2001 the ANZECC Working Group on National Parks and Protected Area Management developed the following model to demonstrate best practice in cultural heritage management (CHM) for parks and protected areas. As the model implies, CHM will generally follow a sequence of key processes commencing with identification and assessment. All key processes will be driven by strategic goals that have been embodied in systems and standard operating procedures. There is a continuous feedback loop between each of the key processes and the strategic management process. Strategic management is a major process in itself that includes the organisational planning cycle and its links with external agencies. There is no implied requirement to apply all processes in the model to every cultural heritage asset. There may be assets for which no conservation action is taken or assets may be conserved but not presented.

Cultural Resources Management Model



Key Processes

1. **Strategic management** covers planning, policy, organisational culture and strategic initiatives which are broader in scope and vision. Strategic management requires that processes, structures and systems all embody the strategic goals of the organisation. An overall strategy must be visible at all levels of management and across all functional areas. In relation to the CGDGW the clear goal of the project should be the protection and conservation of existing and future Aboriginal cultural heritage places.

2. **Identification and assessment** covers the processes used to identify heritage places, create inventories, and assess comparative significance. It includes research, recording, investigation and assessment. The Victorian Aboriginal Heritage Register (VAHR) maintained by AAV is an important tool and should be regularly accessed to ensure the CGD records are current and accurate. Best practice should include:

    a. Inventory is updated as new information comes to light, or as new technology is introduced eg. GPS plotting of sites.
    b. Inventory is thematically linked (i.e landform, elevation) and has the primary aim of revealing a hierarchy of significant places under a variety of relevant themes.
    c. The COGD should maintain a CHM database containing all information relating to history and management of CHM assets.

3. **Allocating resources** covers the ways in which financial, human and other resources are obtained and allocated to the CHM structure within the organisation and allocation of resources to specific CHM assets. A proven method to ensure the ongoing conservation of existing and future Aboriginal cultural heritage is through the appointment of a qualified 'cultural heritage officer' with experience in Aboriginal heritage management; preferably an Aboriginal person with traditional links to the area and the requisite skills. The Aboriginal cultural heritage officer should undertake training and cultural awareness internally within the CGD planning team. Best practice indicators are:

    a) Access to a capital works budget for CHM conservation and protection.
    b) The proportion of CHM staff to CHM assets managed is similar to the proportion of staff to assets in other functional areas within the organisation.
    c) Identification of core competencies for CHM staff and competency-based recruitment procedures.
    d) Training in core CHM competencies are integrated into organisation-wide training programs. (Including instruction in broad CHM principles and specific standard operating procedures)
    e) Development of a suite of partnership tools to expand CHM management options eg. Traditional owner and cultural heritage professional participation.
    f) Regular analysis of Aboriginal cultural heritage places to ensure that each site is managed by the organisation with the best expertise, resources, motivation and local presence to effectively conserve that place, and to present the place if it is appropriate to do so.
    g) Comprehensive guidelines and programs to promote and support active community involvement in CHM.

4. **Protection** is defined as passive measures to protect heritage and excludes physical intervention. Specifically it covers statutory protection, advocacy and acquisition. These could take several forms:

    a) Ensuring that the recommendations of a CHMP are undertaken in terms of salvage or retention.
    b) Extending cultural heritage requirements beyond the scope of the 206 Aboriginal Heritage Act; i.e. Casey Heritage Policy which covers areas of land which are culturally sensitive which are not triggers for mandatory CHMPs.
    c) Working with developers/landowners to protect Aboriginal sites within urban parks.

5. **Conservation** is the safeguarding of a cultural resource, retaining its heritage values. It includes all work undertaken to remedy and mitigate deterioration in the condition of cultural resources, excluding passive measures covered by Protection. Such measures may include fencing of Aboriginal sites and erosion mitigation measures.

6. **Presentation** includes all the processes undertaken to "present" cultural heritage resources and legislation to the public. Presentation includes interpretation and education activities, programs and services; visitor centres; visitor facilities including tracks, bridges, car parks, fences, shops; revenue generating activities; and publications.

    Public perception of Aboriginal heritage and management is often highly inaccurate and based on the populist media and assumed knowledge. Common misconceptions include:

    - "Aboriginal people never lived here!"
    - "I've never seen an Aboriginal person here!"
    - "I've never seen any Aboriginal artefacts!"
    - "Will my land be forcibly taken?"
    - "They are only rocks!"

    The above statements are frequently made by landowners which are subject to Aboriginal heritage assessment and are driven by a lack of information and knowledge outside the cultural heritage industry. Several measures are available to change perceptions and attitudes:

    - Education through the development of the proposed fact sheet; OAAV has developed several resources which are written in plain English which discuss the Aboriginal Heritage Act 2006; Aboriginal sites and the importance of locating and protecting Aboriginal heritage. These should be incorporated in to a booklet and distributed to the landowners within the CGDGW.
    - Welcome to Country presentations and Aboriginal heritage presentations undertaken by representatives of the traditional owners.
    - Interpretation panels in public parks.
    - Dedicated centres for the presentation of Aboriginal culture; i.e. museums; keeping places; cultural centres.

7. **Monitoring** covers the monitoring and evaluation of resource delivery, identification and assessment, protection effectiveness, conservation work, and presentation of Cultural Heritage. It includes formal and informal monitoring and audit, performance measurement, visitor satisfaction surveys and any other evaluation and feedback mechanisms.

    a) A process exists for consistently reviewing plans, quality of planning and those who prepare them.
    b) Establishment of a register of contract CHM specialists that is regularly reviewed on the basis of existing contractors' work allows for the addition of new contractors and is open to public inspection.
    c) Long term monitoring of the condition of cultural heritage places.

3.2 Opportunities for improvements to heritage recognition and education in the Green Wedge.

To facilitate ideas and commence a partnership with the Aboriginal traditional owners meetings were held with the Bunurong Land Council Aboriginal Corporation on the 1st of November and the Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc on the 15th of November. The Boonwurrung Foundation were invited to the former but could not attend.

Sean Kelly from the Bunurong Land Council Aboriginal Corporation attended a meeting on the 1st of November. A meeting was later held at the Wurundjeri offices on November 15th 2013. The meeting was attended by Matthew Barker of Benchmark Heritage Management Pty Ltd, Ceinwen Gould and Warren Wood (City of Greater Dandenong), Alex Parmington, Cultural Heritage Manager of the Wurundjeri with Perry Wandin, Ron Jones and Bobby Mullin, Wurundjeri Elders.

The following recommendations were made as a result of the discussion:

1. Collaboration with local indigenous communities and organisations;

    A panel of nominated traditional owners comprising members from the Wurundjeri, BLC and BWFL; and a cultural heritage advisor should be available to:

    - Provide advice on cultural matters;
    - Provide general advice on CHMP requirement including a preliminary assessment of the level of cultural heritage assessment required;
    - To undertake site inspections for landowners with the CGDGW.
    - Undertake cultural heritage inductions.
    - Provide education opportunities to local schools;
    - Provide display materials for the CGD and for the 'community get together' detailed in Section 4. These may include stone artefacts, wooden artefacts, old photographs of the area; information about Aboriginal life within the area and cultural practices.

2. Development of a 'Aboriginal Cultural Heritage Fact Sheet' or booklet for landowners outlining responsibilities and processes should be complied by a cultural heritage advisor and should comprise:

    - Basic information on the 2006 Aboriginal Heritage Act and its implications for developments within the CGDGW.
    - Information on the site types to be found within the CGDGW using available Office of Aboriginal Affairs (OAAV) fact sheets (see Appendix 2).
    - Links to online cultural heritage resources at OAAV.
    - The Aboriginal Cultural Heritage Fact Sheet will be provided to all landowners within the CGDGW.

3. The development of cultural heritage trails through the CGDGW to facilitate public access and education. Recommended methods for acknowledging and promoting aboriginal cultural heritage values in the Green Wedge, include:

    - The development of bike paths and walking trails within the CGDGW which link the different landforms inhabited and utilised by the traditional Aboriginal owners.
    - Interpretive signage in parks or at designated points along bike paths/walking trails.
    - These measures will increase the public accessibility of the CGDGW and therefore attract people into the area. This will refute the argument made by the development community that much of the CGDGW is 'wasteland'.

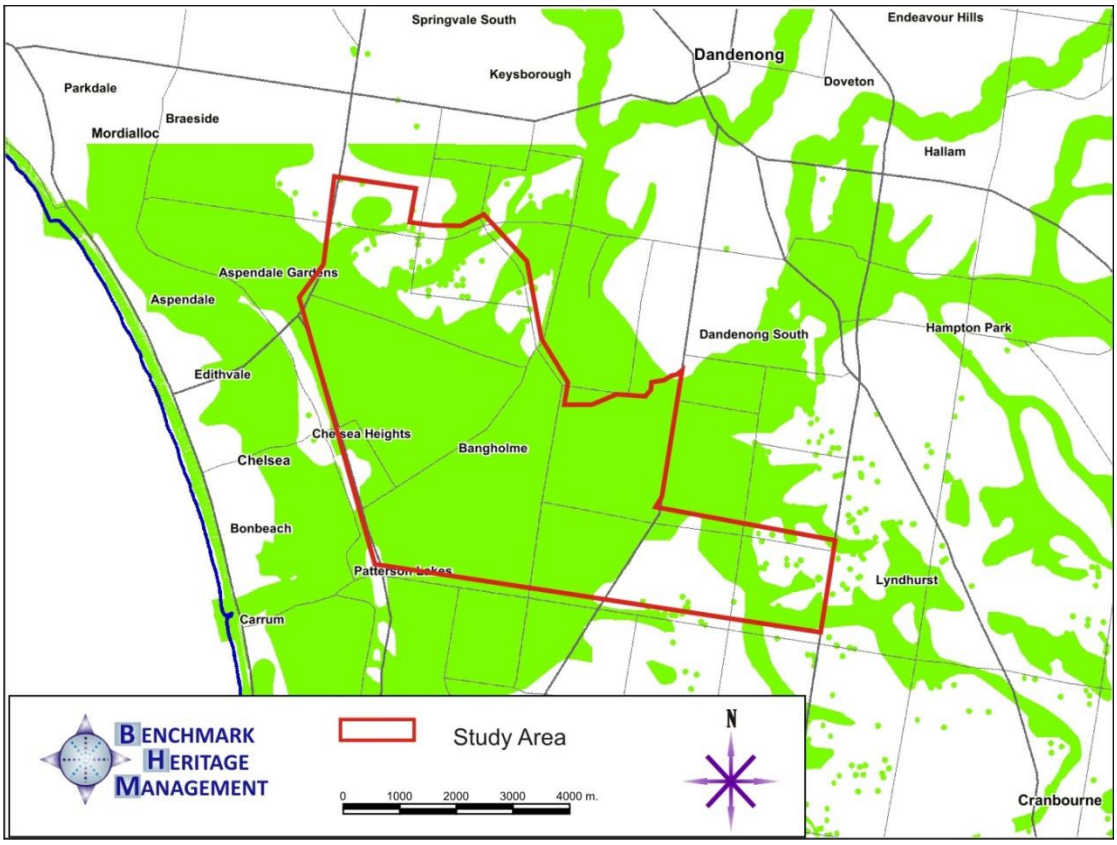
4. The team considered that a "Welcome to Country" ceremony should be held with an invitation extended to landowners with the CGDGW to meet with the traditional owners to facilitate better understanding of Aboriginal culture and the importance of protecting known and unknown cultural heritage. Essentially this will be a 'community get together' for residents and stakeholders within the CGDGW to meet to improve community links, knowledge and understanding. The complexities of the Aboriginal Heritage Act should not be discussed at this event.

5. As detailed in Section 2.7 the Regulations to the Aboriginal Act 2006 do not trigger mandatory CHMPs in the highly archaeological sensitive sand bodies located in the northwest and east of the CGDGW (Map 10). It was recommended that the CGD introduce additional requirements that require a cultural heritage assessment to be undertaken. The City of Casey have a local planning policy that has been incorporated in to the Casey Planning Scheme that targets such areas; 'Aboriginal Cultural Heritage Policy' and has proven highly successful in identifying Aboriginal cultural heritage.

6. Maintenance of an up to date database of all Aboriginal heritage within the CGDGW and the CGD in general. Existing heritage sites and site cards can be downloaded from the VAHR maintained by OAAV. Recommendations include:

- The creation of an Aboriginal heritage database which is updated and maintained by a cultural heritage advisor or council cultural heritage officer;
- Undertake a site inspection of existing cultural heritage sites to assess their current condition including an audit of registered scarred trees.

7. A cultural heritage officer should be appointed within the CGD to facilitate the above actions and recommendations. The appointee should be a suitably qualified traditional owner from the Wurundjeri, BLC and BWFL.



Map 10: Areas of Cultural Sensitivity (*Aboriginal Heritage Regulations 2007*) within the CGDGW

3.3 Revisions to Clause 22.02

The project brief asks the following:

1. Does the information contained within Clause 22.02 provide an accurate picture of the existing characteristics and future vision for the Green Wedge in terms of heritage?
2. Which specific aspects may need to be evaluated?

22.02-1 Policy basis

This policy:

- Builds on the MSS Non-urban (Green Wedge) objectives and strategies at Clause21.06-3.
- Establishes precincts within the policy area which have particular functions to perform and contribute to the appropriate development of the wider non-urban area.
- Applies particular development opportunities and requirements which respond to each precinct's functions consistent with clause 57 and the provisions of the Green Wedge Zone.

22.02-2 Objectives

- To further the "Green Space" vision for Greater Dandenong's green wedge area, as defined in the MSS at clause 21.06-3.
- To give effect to and clarify Council's vision with respect to various strategic studies undertaken of the wider non-urban area and its components within Greater Dandenong.
- To recognise and implement the Memorandum of Understanding signed with adjacent municipalities containing the South East Non-Urban Area.
- To encourage sustainable land use practices and provide optimal long term planning solutions for the use and development of land.
- To give effect to the objectives and strategies in the MSS at Clause 21.04-4 at a more detailed level.
- To recognise the particular functions, characteristics and contributions of the various precincts identified within the area and provide for appropriate development within each precinct.
- To provide guidance to stakeholders with regard to appropriate uses and forms of development which respond to the function and characteristics of each precinct.
- To provide a purpose and certainty to the uses of the land within identified precincts.
- To give effect to and clarify Council's vision with respect to various strategic studies undertaken of the wider non-urban area and its components within Greater Dandenong.
- To encourage sustainable land use and development practices within the policy area.

Discussion

In terms of the above policy it is clear that the existing information within Clause 22-02 of the Greater Dandenong Planning Scheme does not address the first question in terms of both of providing an accurate picture of the existing characteristics and future vision for the Green Wedge in terms of heritage. Although there are references to Aboriginal cultural heritage in the description of the Wetlands and the Lyndhurst Precincts these are arguably peripheral statements . The existing policy does not:

- Identify the locations of cultural heritage in terms of general location (landforms) or potential heritage sensitivity.
- There are no specific references to Aboriginal cultural heritage or the traditional owners; namely the Wurundjeri, BLC and BWFL and their links to the area.

Clause 22-02 should be revised to reflect the importance of Aboriginal cultural heritage in terms of the policy basis, objectives and each of the Green Wedge Precinct policies:

- The Wurundjeri, BLC and BWFL should be directly referred (in 22.02-1) to as the traditional owners of the land incorporating the CGDGW.
- The protection and conservation of known and unknown Aboriginal cultural heritage should be included as a policy objective in each of the four Green Wedge Precincts; 22.02-4 to 22.02-7
- Maps showing areas of Aboriginal cultural heritage sensitivity should be incorporated in Clause 22.02-3 or included in each of the four Green Wedge Precinct maps

4.0 Statutory Protection

4.1 Aboriginal Heritage Legislation

Under Sections 27-28 of the *Aboriginal Heritage Act (2006)* it is an offence to knowingly carry out an Act that harms Aboriginal cultural heritage or to knowingly carry out an Act likely to harm Aboriginal cultural heritage, including Aboriginal archaeological sites. In some circumstances, the Act requires the preparation of a Cultural Heritage Management Plan (CHMP) where a proposed activity is a high impact activity, as specified in the *Aboriginal Heritage Regulations 2007* and where that activity occurs in an area of cultural heritage sensitivity defined in the Regulations. The purpose of a CHMP is to either demonstrate that an activity will not harm Aboriginal cultural heritage or to mitigate the impacts of an activity on Aboriginal cultural heritage.

A CHMP is an Aboriginal heritage assessment which must be prepared to standards prescribed in the *Aboriginal Heritage Regulations 2007.* A CHMP can either be mandatory (required by the Aboriginal Heritage Act and Regulations) or voluntary. A voluntary CHMP is usually advisable where there is a risk that an activity (development) may impact on Aboriginal cultural heritage. The *Aboriginal Heritage Act 2006* provides blanket protection for all Aboriginal cultural heritage in Victoria. There are substantial penalties under the Act for knowingly undertaking an activity which harms or is likely to harm Aboriginal cultural heritage. Where there is some potential for Aboriginal cultural heritage to occur in a specific area and there is a risk that the activity being conducted is likely to harm Aboriginal cultural heritage, it is still advisable to conduct a voluntary CHMP as a risk management exercise.

When the assessment described above is completed, a formal technical report on the results must be prepared according to a format prescribed in the *Aboriginal Heritage Regulations 2007.* When completed, the CHMP must be submitted for evaluation. If a Registered Aboriginal Party (RAP) has been appointed for the area in which the CHMP is being conducted the document must be submitted to the RAP for evaluation. If no RAP has been appointed for the area, Aboriginal Affairs Victoria (AAV) will evaluate the CHMP. An approval for an activity (such as a planning permit) cannot be issued until the CHMP has been completed and evaluated. Where no RAPs have been appointed, AAV will still seek the opinion of Aboriginal Community Organisations who have applied to become RAPs when evaluating the CHMP. For this reason, it is strongly advisable to consult with RAP applicants, even if no RAP has been appointed.

Where an approval is issued for a CHMP, the management recommendations for Aboriginal cultural heritage contained in the CHMP, are binding on the proponent for the lifetime of the project (activity). Further information on CHMPs, RAPs or RAP applicants can be obtained by visiting the DPCD/AAV website at:

http://www.dpcd.vic.gov.au/indigenous/aboriginal-cultural-heritage

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Appendix 1: Glossary

A

Angular fragment: A piece of stone that is blocky or angular, not flake-like.

Archaeology: The study of the remains of past human activity.

Area of Archaeological Sensitivity: A part of the landscape that contains demonstrated occurrences of cultural material. The precise level of sensitivity will depend on the density and significance of the material.

Artefact scatter: A surface scatter of cultural material. Aboriginal artefact scatters are defined as being the occurrence of five or more items of cultural material within an area of about 100m2 (Aboriginal Affairs Victoria 1993). Artefact scatters are often the only physical remains of places where people have lived camped, prepared and eaten meals and worked.

B

BP: Before Present. The present is defined as 1950.

Backed blade (geometric microlith): Backing is the process by which one or more margins contain consistent retouch opposite to the sharp working edge. A backed blade is a blade flake that has been abruptly retouched along one or more margins opposite the sharp working edge. Backed pieces include backed blades and geometric microliths. Backed blades are a feature of the Australian Small Tool Tradition dating from between 5,000 and 1,000 years ago in southern Australia (Mulvaney 1975).

Blade: A stone flake that is at least twice as long as it is wide.

Burial: Usually a sub-surface pit containing human remains and sometimes associated artefacts.

C

Core: A stone piece from which a flake has been removed by percussion (striking it) or by pressure. It is identified by the presence of flake scars showing the negative attributes of flakes, from where flakes have been removed.

E

Ethnography: The scientific description of living cultures.

Exposure: Refers to the degree to which the sub-surface of the land can be observed. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land use practices, such as ploughing or grading. It is generally expressed in terms of the percentage of the sub-surface visible for an observer on foot.

F

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Formal tool: An artefact that has been shaped by flaking, including retouch, or grinding to a predetermined form for use as a tool. Formal tools include scrapers, backed pieces and axes.

G

GDA94 or Geocentric Datum of Australia 1994: A system of latitudes and longitudes, or east and north coordinates, centred at the centre of the earth's mass. GDA94 is compatible with modern positioning techniques such as the Global Positioning System (GPS). It supersedes older coordinate systems (AGD66, AGD84). GDA94 is based on a global framework, the IERS Terrestrial Reference Frame (ITRF), but is fixed to a number of reference points in Australia. GDA94 is the Victorian Government Standard and spatial coordinates for excavations, transects and places in CHMP documents.

H

Hearth: an organic sub-surface feature; it indicates a place where Aboriginal people cooked food. The remains of a hearth are usually identifiable by the presence of charcoal and sometimes clay balls (like brick fragments) and hearth stones. Remains of burnt bone or shell are sometimes preserved within a hearth.

Holocene, recent or postglacial period: The time from the end of the Pleistocene Ice Age (c. 10,300 BP) to the present day.

I

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

L

Land System: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation

M

Midden: Shell middens vary widely in size composition and complexity. Deposits vary in complexity, they range from being homogenous to finely stratified deposits. Material which may be found in middens includes different shell species, stone artefacts, hearths and animal bones.

Q

Quarry (stone/ochre source): A place where stone or ochre is exposed and has been extracted by Aboriginal people. The rock types most commonly quarried for artefact manufacture in Victoria include silcrete, quartz, quartzite, chert and fine-grained volcanics such
as greenstone.

Quartz: A mineral composed of silica with an irregular fracture pattern. Quartz used in artefact manufacture is generally semi-translucent, although it varies from milky white to glassy. Glassy quartz can be used for conchoidal flaking, but poorer quality material is more commonly used for block fracturing techniques. Quartz can be derived from waterworn pebble, crystalline or vein.

P

Pleistocene: The dates for the beginning and end of the Pleistocene generally correspond with the last Ice Age. That is from 3.5 to 1.3 million years ago. The period ends with the gradual retreat of the ice sheets, which reached their present conditions around 10,300 BP.

Pre-contact: Before contact with non-Aboriginal people.

Post-contact: After contact with non-Aboriginal people.

R

Raw material: Organic or inorganic matter that has not been processed by people.

Registered Aboriginal Cultural Heritage Places: These are Aboriginal sites registered on the Victorian Aboriginal Heritage Register (VAHR).

Regolith: The mantle of unconsolidated soil/sediments/weathered rock materials forming the surface of the land that rests upon the bedrock.

S

Scarred trees: Aboriginal derived scars are distinct from naturally occurring scars by their oval or symmetrical shape and occasional presence of steel, or more rarely, stone axe marks on the scar's surface. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes and removal of bark to indicate the presence of burials in the area. Generally, scars occur on River red gums (Eucalyptus camaldulensis) or grey box (E.

microcarpa) trees. River red gums are usually found along the margins of rivers, creeks and swamps with grey box on near and far floodplains. Size and shape of the scar depended on the use for which the bark was intended. For example, bark was used for a variety of dishes and containers, shields, canoes
and construction of huts.

Significance: The importance of a heritage place or place for aesthetic, historic, scientific or social values for past, present or future generations.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation.

Stratification: The way in which soil forms in layers.

Stratified deposit: Material that has been laid down, over time, in distinguishable layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Stone Artefact: A piece of stone that has been formed by Aboriginal people to be used as a tool or is a by-product of Aboriginal stone tool manufacturing activities. Stone artefacts can be flaked such as points and scrapers or ground such as axes and grinding stones.

T

Tool: A stone flake that has undergone secondary flaking or retouch.

Transect: A fixed path along which one excavates or records archaeological remains.

V

Victorian Aboriginal Heritage Register: A list of all registered Aboriginal cultural heritage places (Aboriginal Places) in Victoria.

Visibility: Refers to the degree to which the surface of the ground can be observed. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land use practices, such as ploughing or grading. It is generally expressed in terms of the percentage of the ground surface visible for an observer on foot.

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Appendix 2: Aboriginal Cultural Heritage Fact Sheet

The following fact sheet has been adapted from a plain English document developed by the OAVV and contains text and pictures which can be incorporated into a fact sheet.

Part 1: Traditional Owners and Aboriginal Cultural Heritage

Aboriginal People within the CGDGW

The CGDGW and surrounding lands were utilised by Aboriginal people for thousands of years. The study area is located within the groups identified as *Kulin* who shared a common language, social, religious and economic lifeway. Throughout the regions numerous different (yet related) *'wurrung'* (or dialects) were spoken.

At the time of European contact, clans from two language groups, the Bun wurrung and the Woi wurrung (spelling according to Clark 1990, 364) are believed to have occupied land in the Keysborough and Dandenong regions. A language group consisted of independent groups of closely related kin, or 'clans', who were spiritually linked to designated areas of land through their association with topographic features connected to mythic beings or deities. Clan lands were inalienable and clan members had religious responsibilities (e.g. conducting rituals) to ensure 'the perpetuation of species associated with the particular mythic beings associated with that territory' (Berndt 1982, 4, Long et al 2010).

The territories of three clans who are thought to have extended into the study area are:

- The Bulug willam – meaning 'swamp dwellers'. This Woi wurrung clan identified with the ranges and swamps south of 'Yering' on the Upper Yarra, extending south east to Koo Wee Rup Swamp and the head waters of the LaTrobe River, south west to adjoining Bun wurrung clans at Cranbourne (Clark 1990, 385-386, Long et al 2010).

- The Ngaruk willam – meaning 'stone dwellers', a Bun wurrung clan who identified with the coastal littoral of Port Phillip Bay from Brighton in the north, and extending down the western Mornington peninsula to Mt Martha (Clark 1990:365). This group was also known as the Karrun, as they appear to have custodianship over the Carrum Carrum Swamp area. Their main focus of activity, however, appears to have been the coastline and the lower reaches of Mordialloc Creek (Hibbins 1984, 10-12, Long et al 2010).

- The Mayune balug clan – meaning 'Mayune people' (i.e. people associated with the locality of Mayune). This Bun wurrung clan was associated with Carrum Carrum Swamp, the upper Mornington Peninsula and the head of Western Port Bay (Clark 1990, 366-7).The *wurrung* relevant to the study area is the *Woi wurrung* (Clark 1990: 364) which comprised the group who occupied the basins of the Yarra and Plenty Rivers.

Clans were spiritually linked to areas and held guardianship over specific regions of land that were delineated by topographic features such as mountains, creeks or rivers (Howitt 1904: 41; Cotter 2001).

Today the living descendants of the Woi wurrung and Bun wurrung are represented by the Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc., the Bunurong Land Council Aboriginal Corporation and the Boonwurrung Foundation.

Aboriginal Cultural Heritage

Throughout Victoria, even in the most intensively developed regions such as Greater Dandenong, the landscape holds the imprint of thousands of generations of Aboriginal people. Each part of Victoria, from the coast to the high country and from the semi-arid Mallee to the rain forests of the east, has places where Aboriginal people lived; obtaining sustenance, expressing themselves artistically, passing on creation stories and cultural values, engaging in conflict, establishing alliances and social networks, trading goods, celebrating rites of passage and committing the departed to their final resting places.

With the arrival of Europeans in Victoria, the nature of Aboriginal occupation and use of the land changed dramatically. Different cultural heritage places were created; places where the first contacts between European and Aboriginal people occurred, massacre sites, missions, protectorate stations, properties where Aboriginal pastoral workers played vital roles and, in more recent times, places associated with the Aboriginal rights movement and contemporary places with ongoing uses and associations.

Underpinning these material aspects of Aboriginal cultural heritage are intangible places where there may be no physical evidence of past cultural activities. These include places of spiritual or ceremonial significance, places where traditional plant or mineral resources occur, or trade and travel routes. Information about such places may be passed down from one generation to the next or may survive in nineteenth century documents and records.

The endurance of Aboriginal society across the continent is of global significance and the cultural heritage places and objects associated with that society are a significant part of the heritage of all Australians. They are a fundamental part of Victorian Aboriginal community life and cultural identity.

What are Aboriginal places and objects?

Aboriginal people have lived in southern Australia, including what is now Victoria, for thousands of years. Archaeological evidence suggests that Aboriginal peoples have occupied the Mornington Peninsula as early as 35,000 BP (Hewitt & De Lange 2007). During that time, people left physical evidence of their activities which now survives as cultural heritage places and objects. Aboriginal places and objects can be found all over Victoria and are often near major food sources such as rivers, lakes, swamps and the coast.

Aboriginal places and objects can also be found on private property. The Office of Aboriginal Affairs Victoria (OAAV) works in partnership with landowners, land managers and Aboriginal communities to record, protect and manage these places and objects. The most likely Aboriginal site types found in the CGDGW are scarred trees and surface or buried deposits of stone artefacts. The following fact sheets developed by OAVV discuss these site types and contain photographic examples.

ABORIGINAL SCARRED TREES

Site Identification
Mini Poster 1

Aboriginal people in canoes on Lake Tyers 1886

What are Scarred Trees?

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.

Where are Scarred Trees Found?

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.

What to Do if You Find a Scarred Tree

- Check the scar for key characteristics.
- Record the tree's location and its condition.
- Note whether it is under threat of disturbance.

Please help to preserve Aboriginal cultural places by reporting their presence to Aboriginal Affairs Victoria.

Contact:

The Heritage Registrar
Aboriginal Affairs Victoria
PO Box 2392
Melbourne VIC 3001

Telephone: 1800 762 003
Website: www.dpcd.vic.gov.au/aav

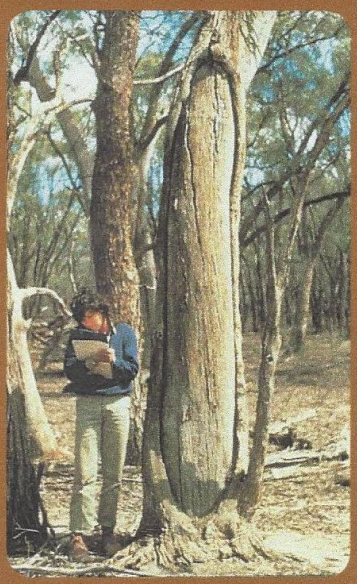
Why Did Aboriginal People Remove Bark?

Aboriginal people removed bark from trees to make canoes, containers and shields and to build temporary shelters.

They also cut toe holds in trees to make them easier to climb. This allowed them to use trees as lookouts, hunt for possums or bee hives, and cut bark higher up in the

Characteristics

- Scar more-or-less regular in shape, often with parallel sides and slightly pointed or rounded ends.
- Scar usually stops above ground level.
- Exposed sapwood free of tree knots or branches or evidence of a branch having been at the top of the scar.
- Exposed sapwood at the base and (more rarely) at the top of the scar may show stone or steel axe cuts.
- Tree an Australian native species which occurs naturally in the district.
- Tree usually over 200 years old.



Heritage Officer recording a scarred tree

tree. Sometimes trees were carved or decorated, but examples are rare in Victoria.

To remove bark, the Aboriginal people cut an outline of the shape they wanted using stone axes or, once Europeans had arrived, steel axes. The bark was then levered off. Sometimes the axe marks made by Aboriginal people are still visible on the sapwood of the tree, but usually the marks will be hidden because the bark has grown back. The amount of bark regrowth may help you tell the age of the scar. Sometimes, if the scar is very old, it will be completely covered by regrowth.

What Other Human Activities Can Cause Scars?

European settlers also removed bark from trees to build huts. Generally, these scars will be more square or rectangular in shape than those created by Aboriginal people.

Boundary or survey markers made by European settlers and farmers also caused scars. Survey markers are usually triangular and may have a number or date carved or written on the sapwood.

Trees close to roads may be damaged by passing vehicles. Scars caused in this way will usually only occur below a height of about two metres.

What Natural Processes Can Cause Scars?

Fire, lightning, storms and floods can also cause scars on trees.

Fire damage is distinctive: the scar is usually triangular, wide at the base and tapering up from the ground, and the wood is charred. A scar caused by a falling branch often looks like a 'keyhole', with the stub of the branch at the top and a tail of torn sapwood beneath.

Scars caused by falling trees can sometimes be identified by examining nearby tree stumps. These will usually give some idea of the direction in which the tree fell. If that direction matches the position of the scar, the scar may be natural.

Why are Scarred Trees Important?

Scarred trees provide valuable clues about the use of perishable materials by Aboriginal people. Because wood often rots away, Victorian museums have only a small number of Aboriginal wooden artefacts. Most of our information on Aboriginal use of wood comes from the writings of early settlers and explorers.

Scarred trees are easier to find than many other archaeological sites. They tell us where Aboriginal people used to live, and help us find other types of archaeological sites, such as scatters of stone tools. Scarred trees also provide Aboriginal people today with an important link to their culture and their past.

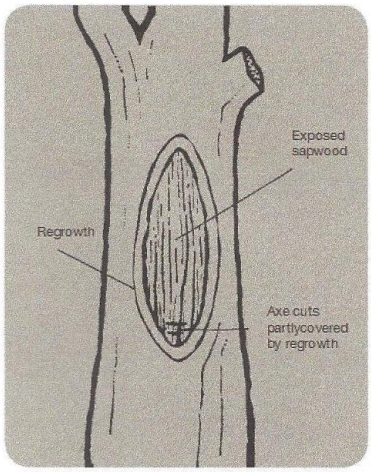
Threats to Scarred Trees

Scarred trees are disappearing because of natural aging and decay, timber cutting, environmental problems such as salinity and fire. Aboriginal Affairs Victoria records scarred trees so that we will have a permanent photographic and written record of this important part of the heritage of all Australians. Some scarred trees require attention, so they will be preserved for future generations.

Are Scarred Trees Protected?

All Aboriginal cultural places in Victoria are protected by law. Aboriginal artefacts are also protected.

It is against the law to disturb or destroy an Aboriginal place. Artefacts should not be removed from sites.



Scar Identification Characteristics

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Victoria
The Place To Be
Department of Planning and Community Development

ABORIGINAL FLAKED STONE TOOLS

Site Identification
Mini Poster 4

A group of artefacts of different size, shape and material

What are Aboriginal Flaked Stone Tools?

Flaked stone tools were made by hitting a piece of stone, called a core, with a 'hammerstone', often a pebble. This would remove a sharp fragment of stone called a flake.

Both cores and flakes could be used as stone 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 long distances.

Where are Stone Tools Found?

Stone tools are the most common evidence of past Aboriginal activities in Australia. They occur in many places and are often found with other remains from Aboriginal occupation, such as shell middens and cooking hearths. They are most common near rivers and creeks. It is easier to find them where there is not much vegetation or where the ground surface has been disturbed, for example by erosion.

Characteristics

General

- Sharp edges.
- Retouch along one or more edges.
- Stone rich in silica.
- Stone type often different to the natural rock in the area.

Flakes

- Usually less than 50 mm long.
- A 'striking platform' (see diagram) visible.
- Impact point often present on the striking platform.
- A 'bulb of percussion' often present below the striking platform.
- May have been shaped into a recognisable tool form, such as a point or scraper.

Cores

- May be fist-sized or smaller.
- May have one or more scars where flakes have been removed.

Not all of these features can be seen on each stone tool and some require an experienced eye to identify them. Breakage can remove some key features.

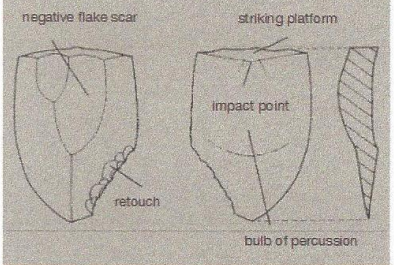
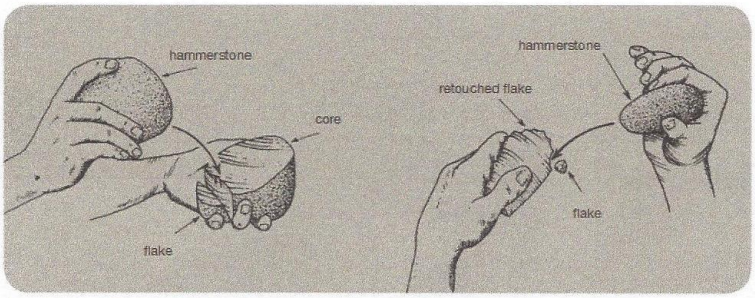


Diagram showing basic flake characteristics



How flaked stone tools were made

What to Do if You Find a Flaked Stone Tool

Do not remove any material from the area. If you pick up a stone to examine it, make sure that you put it back where it came from. Check whether it has some of the key characteristics. Record the location, noting roughly how many stones there are. Note whether the area is under threat of disturbance.

What Were Flaked Stone Tools Used For?

Flaked stone tools could be made quickly, and were used for many everyday tasks, including shaping objects made of wood, bark and bone. They were used as spear-tips in hunting weapons and as knives to butcher game. They were also used to scrape and prepare animal skins for making cloaks, containers and decorative items.

How Else can Stone be Flaked?

Many natural processes can break stone. These include rockfall and extreme changes in temperature. Modern machines, such as ploughs, can also fracture stone. It is important to be able to distinguish stone that has been naturally or accidentally fractured from stone that was deliberately flaked by Aboriginal people. Some of the characteristics of Aboriginal flaked stone artefacts may occasionally occur on naturally fractured stone. However, it is very rare for two or more of these characteristics to occur on the same piece of stone as the result of a natural process.

Why are Flaked Stone Tools Important?

Because stone artefacts do not rot or rust, they are often the only evidence of Aboriginal occupation in a particular area. Stone artefacts can provide information about where Aboriginal people lived, how they made other tools, hunted and prepared food. Sometimes traces of wood, plant food, or animal blood can survive on the edges of flaked stone tools. Specific marks and damage on a tool from use can help tell us what it was used for. This is because different tasks, such as wood carving or scraping animal skins, damaged the edge in different ways.

By finding the original source of stone that was used to make tools, it is sometimes possible to trace the movement of stone within an area. This tells us about Aboriginal systems of trade, exchange and social alliances.

There were a number of changes to the stone tools used by Aboriginal people over time. Because of this, stone tools can help provide an approximate age for the Aboriginal occupation of an area. Flaked stone tools are one of a range of artefacts that provide Aboriginal people today with an important link to their culture and past.

Threats to Aboriginal Stone Tools

Because stone artefacts are found in many different places, and are usually small, they can be difficult to protect. They are sometimes collected by people who do not understand the importance of leaving Aboriginal cultural materials where they are found. Erosion and weathering and activities such as ditch digging and ploughing can disturb flaked stone artefacts. They can also be broken when trampled by animals such as cows, or when run over by vehicles.

Aboriginal Affairs Victoria records flaked stone artefacts so that we will have a permanent photographic and written record of this important part of the heritage of all Australians. Some particularly good examples of sites containing flaked stone artefacts may require active conservation so that they can be preserved for future generations.

Are Flaked Stone Artefacts Protected?

All Aboriginal cultural places in Victoria are protected by law. Aboriginal artefacts are also protected.

It is against the law to disturb or destroy an Aboriginal place. Artefacts should not be removed from sites.

Please help to preserve Aboriginal cultural places by reporting their presence to Aboriginal Affairs Victoria.

Contact:

The Heritage Registrar
Aboriginal Affairs Victoria
PO Box 2392
Melbourne VIC 3001

Telephone: 1800 762 003
Website: www.dpcd.vic.gov.au/aav

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Part 2: Aboriginal Cultural Heritage and the Aboriginal Heritage Act 2006

How do I find out if there is an Aboriginal Cultural Heritage Place on my property?

To find out whether your property has any recorded Aboriginal cultural heritage places or sites, such as scarred trees, occupation sites or places of burial, you will need to access the Victorian Aboriginal Heritage Register.

Landowners are authorised to access the Victorian Aboriginal Heritage Register but need to apply for access. Applicants will then be contacted by the Heritage Registrar. If you don't use the internet, please email VAHR@dpc.vic.gov.au to ask for an application form to be emailed to you. If you don't have an email account, phone the Heritage Registry on 1800 762 003 to ask for an application form to be posted to you.

The following OAVV fact sheet discuss the location of Aboriginal cultural heritage on private property.

ABORIGINAL SITES ON PRIVATE PROPERTY

Site Identification
Mini Poster 11

Aboriginal stone circle, Lake Condah

What are Aboriginal Sites?

Aboriginal people have lived in southern Australia, including what is now Victoria, for many thousands of years. During that time, they left physical evidence of their activities which now survive as cultural heritage sites or places. Examples include shell middens, scatters of stone artefacts, oven mounds, stone quarries, rock art sites, fish traps, scarred trees, stone arrangements and places of burial.

Where do Aboriginal Sites Occur?

There are Aboriginal cultural heritage sites all over Victoria.

They are most common near rivers, lakes, swamps and the coast. There may be sites on your property.

Are Aboriginal Sites Protected?

All Aboriginal cultural sites and places in Victoria are protected by law. Aboriginal artefacts are also protected.

It is against the law to disturb or destroy an Aboriginal site. Artefacts should not be removed from sites.

Why Protect Aboriginal Sites?

Aboriginal sites are a precious part of the heritage of the whole community. They are of immense cultural, scientific, educational and historic interest.

Aboriginal heritage sites and places provide Aboriginal people today with an important link to their culture and their past.

Aboriginal sites and places are also fragile. When they are destroyed or damaged, information about past cultural and environmental changes may be lost forever. In many cases, information about the past occupation of Australia can only be obtained through the archaeological investigation of these sites.

If There is an Aboriginal Site on my Land, Can it be Subject to a Native Title Claim?

Generally, no. Only vacant Crown land may be subject to a native title claim. Freehold land, which is almost all private property, is not subject to native title claims even if Aboriginal sites are present. In general, having Aboriginal cultural sites on your land will not affect ownership, or stop existing land use from continuing.

What are Threats to Aboriginal Sites?

Erosion and other natural processes threaten some Aboriginal sites. Human activities may also be a threat, particularly major changes to the way land is used, such as development.

Is Agriculture a Threat to Aboriginal Sites?

Sites that have survived many decades of agriculture generally will not be further disturbed by continuing land use practices.

In many cases, sound land management has helped preserve Aboriginal sites. Major changes to the landscape, such as levelling dunes or clearing native bushland, may damage Aboriginal sites. Some practices such as ripping to destroy rabbit burrows may also be undesirable in areas that contain Aboriginal sites.

Who is Responsible for Aboriginal Sites?

Aboriginal Affairs Victoria is the State Government agency which is responsible for Aboriginal sites. Aboriginal Affairs Victoria has a register of Aboriginal sites, and records and protects sites.

Can Anyone Look for Aboriginal Sites on Private Property?

Only if the land owner gives permission, and if administrative requirements are met. Many sites have only survived because private land owners have not permitted public access. It is illegal to excavate sites without consent from the relevant local Aboriginal community and Aboriginal Affairs Victoria.

Is it Against the Law to Have a Collection of Aboriginal Artefacts?

No. The law does not prevent people from keeping Aboriginal artefacts. However, artefacts (other than those originally made for sale) may not be bought or sold without a permit from Aboriginal Affairs Victoria. Owners of collections of Aboriginal artefacts can ask Aboriginal Affairs Victoria to document their collections. There is no charge for this service.

Is it Against the Law to Possess Aboriginal Skeletal Remains?

Yes. It is illegal to possess or display Aboriginal skeletal remains without a permit.

Anyone who has such remains is advised to contact Aboriginal Affairs Victoria, so that arrangements can be made for their appropriate treatment.

Aboriginal scarred tree

What can be Done with Unwanted Collections of Aboriginal Artefacts?

Aboriginal Affairs Victoria will receive unwanted collections of Aboriginal artefacts. Such collections will be documented, then transferred to an appropriate keeping place or museum for storage or display.

For more information please contact:

The Heritage Registrar
Aboriginal Affairs Victoria
PO Box 2392
Melbourne VIC 3001

Telephone: 1800 762 003
Website: www.dpcd.vic.gov.au/aav

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What if I have found an Aboriginal place or objects?

The Aboriginal Heritage Act 2006 requires that the discovery of Aboriginal cultural heritage places or objects on any public or private land in Victoria be reported to OAAV. Landowners

who suspect a discovery of cultural heritage on their land can find out what to do by visiting http://www.dpcd.vic.gov.au/indigenous/aboriginal-cultural-heritage. The Aboriginal Heritage Act 2006 also requires Aboriginal places and objects to be recorded on the Victorian Aboriginal Heritage Register (VAHR). The Register holds the details of all known Aboriginal cultural heritage places and objects within Victoria, including their location and a detailed description.

If suspected human remains are discovered, you must contact the Victoria Police and the State Coroner's Office immediately. If there are reasonable grounds to believe that the remains are Aboriginal, the State Control Centre (which coordinates the State government's response to emergency matters) should be contacted on 1300 888 544.

Further Information on Cultural Heritage Management Plans (CHMPS)

Under Sections 27-28 of the *Aboriginal Heritage Act (2006)* it is an offence to knowingly carry out an Act that harms Aboriginal cultural heritage or to knowingly carry out an Act likely to harm Aboriginal cultural heritage, including Aboriginal archaeological sites. In some circumstances, the Act requires the preparation of a Cultural Heritage Management Plan (CHMP) where a proposed activity is a high impact activity, as specified in the *Aboriginal Heritage Regulations 2007* and where that activity occurs in an area of cultural heritage sensitivity defined in the Regulations. The purpose of a CHMP is to either demonstrate that an activity will not harm Aboriginal cultural heritage or to mitigate the impacts of an activity on Aboriginal cultural heritage.

A CHMP is an Aboriginal heritage assessment which must be prepared to standards prescribed in the *Aboriginal Heritage Regulations 2007.* A CHMP can either be mandatory (required by the Aboriginal Heritage Act and Regulations) or voluntary. A voluntary CHMP is usually advisable where there is a risk that an activity (development) may impact on Aboriginal cultural heritage. The *Aboriginal Heritage Act 2006* provides blanket protection for all Aboriginal cultural heritage in Victoria. There are substantial penalties under the Act for knowingly undertaking an activity which harms or is likely to harm Aboriginal cultural heritage. Where there is some potential for Aboriginal cultural heritage to occur in a specific area and there is a risk that the activity being conducted is likely to harm Aboriginal cultural heritage, it is still advisable to conduct a voluntary CHMP as a risk management exercise.

When the assessment described above is completed, a formal technical report on the results must be prepared according to a format prescribed in the *Aboriginal Heritage Regulations 2007.* When completed, the CHMP must be submitted for evaluation. If a Registered Aboriginal Party (RAP) has been appointed for the area in which the CHMP is being conducted the document must be submitted to the RAP for evaluation. If no RAP has been appointed for the area, Aboriginal Affairs Victoria (AAV) will evaluate the CHMP. An approval for an activity (such as a planning permit) cannot be issued until the CHMP has been completed and evaluated. Where no RAPs have been appointed, AAV will still seek the opinion of Aboriginal Community Organisations who have applied to become RAPs when evaluating the CHMP. For this reason, it is strongly advisable to consult with RAP applicants, even if no RAP has been appointed.

Where an approval is issued for a CHMP, the management recommendations for Aboriginal cultural heritage contained in the CHMP, are binding on the proponent for the lifetime of the project (activity). Further information on CHMPs, RAPs or RAP applicants can be obtained by visiting the DPCD/AAV website at:

http://www.dpcd.vic.gov.au/indigenous/aboriginal-cultural-heritage

Common Questions

The information below provides general answers to many questions which the public may have. The following information should be taken into consideration in regards to general timing for all projects.

What happens if we find an archaeological site?

The site must be recorded by the archaeologist in accordance with specific guidelines which have been produced by AAV. The process is summarised in the *Aboriginal Heritage Regulations 2007* and the *Practice Notes*. The location and extent of the site must be recorded with a differential GPS. The site contents must be recorded. AAV will not accept co-ordinates which are not recorded by a differential GPS. Once the site is recorded in the field, the archaeologist is required to complete a site card for each site.

Why Could Finding Archaeological Sites Cause Time Delays for My Project?

As outlined above, there are necessary measures which must be undertaken when a site is located within the Activity Area. The additional excavation and recording process will add time to a project. Once the site cards are lodged by the archaeologist, AAV must assess and register the site – after which they will provide a Victorian Aboriginal Heritage Register number for the site. A CHMP cannot be submitted for evaluation to either AAV or a RAP without the relevant site numbers being included within the plan.

In order to minimise the risk of delays to a project, it is important to commence the heritage assessment well in advance of the project to allow adequate time for any heritage issues to be addressed, relevant consultation to occur and for the evaluation process to be completed.

What Effects will the Presence of Sites have on the Future of My Project?

The location of sites within the Activity Area is managed by the CHMP process but there may be requirements written into the CHMP which are binding on future use of the Activity Area. These are known within the CHMP as “Recommendations” and are binding for the life of the project. The purpose of recommendations is to manage the future of each archaeological site. Recommendations are generally formed in consultation with the relevant Aboriginal communities and with Aboriginal Affairs Victoria. They may include, but are not restricted to, the following examples:

- Retention of Site (e.g., maintaining an area of open space to protect the archaeological site).

- Salvage of Site (e.g., further excavation after the approval of the CHMP which is designed to target recorded sites which are unable to be retained and which require further investigation prior to their destruction).
- Collection of Artefacts (e.g., collection and recording of any surface artefacts prior to the commencement of works).