Station Street, Bonbeach
Level Crossing Removal Program
Aboriginal Cultural Heritage Desktop Assessment

Report to AECOM/GHD Joint Venture
Date of Completion: 22 February 2017
Station Street, Bonbeach
Level Crossing Removal Program
Aboriginal Cultural Heritage Desktop Assessment

Senior Project Manager
Andrew Long + Associates Pty Ltd
PO Box 2471
Fitzroy BC  VIC  3065
Australia

22 February 2017
Executive Summary

The following report is a desktop assessment of known and predicted Aboriginal cultural heritage values which may have implications for the removal of the level crossing at Station Street, Bonbeach. It assesses the existing condition of the project area and concludes with a recommendation as to whether a mandatory Cultural Heritage Management Plan (CHMP) will be required for the level crossing removal works at Station Street, Bonbeach.

The assessment draws on information currently being assembled as part of the preparation of CHMP No. 14493 for the Combined Services Route on the Frankston line between Bentleigh and Frankston.

The assessment noted the following outcomes:

- There has been no formal archaeological investigation of the project area.
- Ethnographic observations indicate that the project area is located within the traditional lands of the *Bun wurrung* language group. The closest documented Aboriginal clans to the project area were the *Mayune balug* and the *Ngaruk willam*.
- Fifty-one registered Aboriginal cultural heritage places and six historical references are situated within the wider geographic region defined for CHMP 14493. These are clustered:
  - within or near [ ] and the [ ];
  - within one kilometre of [ ];
  - within 2.5 kilometres of [ ] township.
- There are no Aboriginal cultural heritage places situated within the project area or the wider geographic region defined for this desktop assessment.
- Registered Aboriginal cultural heritage places are generally located on coastal dunes, inland dunes and plains, and along the margins of the former Carrum Swamp. Cultural heritage places tend to occur in higher densities between Mordialloc and Frankston, and for this reason the coastal dunes, inner swamp and lagoon deposits associated with the former Carrum Swamp are considered to have a low-to-moderate or moderate archaeological sensitivity.
- Places containing stone artefacts (artefact scatters and low density artefact distributions (LDADs)) are the most commonly occurring Aboriginal cultural heritage place within the wider CHMP geographic region. They occur on all major landforms across the region. Ninety-three percent of these places have artefact densities that warrant their designation as LDADs.
- The Frankston rail line between Mordialloc and Frankston is situated on elements of the Eastern Plains and Coast geomorphic units. Landforms include swamp and lagoon deposits associated with the former Carrum Swamp, which are separated from the Port Phillip Bay coastline by an outer sandy coastal dune barrier and segments of an inner sandy barrier dating to the Pleistocene period. Major waterways within this section of the geographic region include Mordialloc and Kananook creeks.
- Many of the CHMPs previously prepared within the wider CHMP geographic region between Mordialloc and Frankston did not identify any Aboriginal cultural heritage, an observation that was largely attributed to evidence for significant prior disturbance across the region.
- Most of the Aboriginal cultural heritage places situated between Mordialloc and Frankston (especially around Frankston) were recorded during the preparation of small, residential CHMPs which in many instances identified the heritage as having been found in disturbed contexts.
- The area around [ ] has been identified as a highly sensitive location based on the identification of archaeological sites and historical references, which collectively characterise the area as a culturally significant place.
for Melbourne’s Aboriginal community, and for the descendants of the *Bun wurrung* language group in particular.

- The project area has been cleared of native vegetation and has been used for agricultural, residential, industrial and rail purposes probably since the 1840s. Due to the highly modified nature of the rail corridor and adjacent road reserve, the project area is considered to contain a high level of previous ground disturbance.

- Previous investigations indicate that there is a high level of previous disturbance within the Frankston rail corridor, affecting the likelihood of identifying intact Aboriginal cultural heritage material in these areas. Many of the areas adjacent to the rail corridor contain residential housing estates, and activities such as scraping and levelling have been undertaken across this land, further impacting the potential to locate intact Aboriginal cultural heritage.

A mandatory CHMP is required under regulation 6 of the *Aboriginal Heritage Regulations 2007* (Vic) (the Regulations) when a high impact activity will occur within an activity area that includes an area of cultural heritage sensitivity. The desktop assessment concluded that the project area includes areas of cultural heritage sensitivity, based on its proximity to the Victorian coastline and the fact that it overlies coastal dune deposits. However, the desktop assessment also noted that the intersecting areas of cultural heritage sensitivity had previously been subjected to ground disturbance by machinery resulting from the construction and maintenance of the Frankston rail corridor and adjacent roadways. This constitutes significant ground disturbance as defined by regulation 4 of the Regulations, and on this basis, these intersecting areas of sensitivity are no longer areas of sensitivity for the purposes of the Regulations.

The assessment concluded that the *Aboriginal Heritage Regulations 2007* (Vic) do not require the mandatory preparation of an approved CHMP for the replacement of the level crossing at Station Street, Bonbeach.
Table of Contents

1  Introduction .................................................................................................................. 1
1.1  Scope .......................................................................................................................... 1
1.2  Background .................................................................................................................. 1
1.3  Project Description ...................................................................................................... 2
1.3.1  Project area ............................................................................................................. 2
1.3.2  Level crossing removal approach .......................................................................... 2
1.4  Geographic region ....................................................................................................... 6
2  Existing Conditions ......................................................................................................... 8
2.1  Traditional Owner Groups ......................................................................................... 8
2.2  Landforms and Environment ...................................................................................... 8
2.2.1  Landforms, geology and geomorphology ............................................................... 8
2.2.2  Environment .......................................................................................................... 11
2.3  VAHR Search .............................................................................................................. 15
2.4  Historical and Ethnohistorical Accounts of Aboriginal Occupation ......................... 19
2.4.1  Social organisation ............................................................................................... 19
2.4.2  Lifestyle, environment and resources ........................................................................ 20
2.4.3  Post-contact history .............................................................................................. 23
2.5  Previous Studies ......................................................................................................... 24
2.5.1  Regional studies ..................................................................................................... 24
2.5.2  Localised studies .................................................................................................... 26
2.6  Land Use History ........................................................................................................ 34
2.6.1  Regional history ...................................................................................................... 34
2.6.2  History of Bonbeach .............................................................................................. 34
2.6.3  Frankston rail line .................................................................................................. 35
2.6.4  Station Street, Bonbeach level crossing project area ............................................. 35
2.7  Summary ..................................................................................................................... 36
3  Relevant Legislation and Policy ..................................................................................... 38
4  Conclusion ...................................................................................................................... 40
5  References ..................................................................................................................... 41

Figures

Figure 1: 1866 survey map of Port Phillip Bay coastline between Mordialloc and Kananook creeks (source: Bird 1993: Figure 112) ........................................................................ 11

Maps

Map 1: Location of the project area .................................................................................... 3
Map 2: Extent of the project area ....................................................................................... 4
Map 3: Photomap of the project area ................................................................................. 5
Map 4: Geographic region, including previously registered Aboriginal cultural heritage ........ 7
Map 5: Geomorphology of the project area and geographic region ................................ 9
Map 6: Geology of the project area and geographic region .............................................. 10
Map 7: Pre-1750 ecological vegetation classes for the project area and geographic region 14
Tables

Table 1: Climate data for the wider area .......................................................... 13

Table 2: Aboriginal cultural heritage places located within the wider geographic region
defined for CHMP 14493 ............................................................................. 18

Table 3: Aboriginal historical references located within the geographic region defined
for CHMP 14493 ............................................................................................. 18

Table 4: Previous studies within CHMP 14493 geographic region in which no Aboriginal
cultural heritage places were identified (highlighted studies are located within one
kilometre of the project area)........................................................................ 29
## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Synonym</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td>Aboriginal Victoria</td>
</tr>
<tr>
<td>BLCAC</td>
<td>Bunurong Land Council Aboriginal Corporation</td>
</tr>
<tr>
<td>BLASAI</td>
<td>Bunurong Land and Sea Association Incorporated</td>
</tr>
<tr>
<td>BP</td>
<td>Before Present</td>
</tr>
<tr>
<td>BWF</td>
<td>Boon Wurrung Foundation</td>
</tr>
<tr>
<td>CBD</td>
<td>Central Business District</td>
</tr>
<tr>
<td>CHMP</td>
<td>Cultural Heritage Management Plan</td>
</tr>
<tr>
<td>DELWP</td>
<td>Department of Environment, Land, Water and Planning</td>
</tr>
<tr>
<td>EVC</td>
<td>Ecological Vegetation Class</td>
</tr>
<tr>
<td>JV</td>
<td>AECOM-GHD Joint Venture</td>
</tr>
<tr>
<td>LDAD</td>
<td>Low Density Artefact Distribution</td>
</tr>
<tr>
<td>LXRA</td>
<td>Level Crossing Removal Authority</td>
</tr>
<tr>
<td>mm</td>
<td>Millimetres</td>
</tr>
<tr>
<td>RAP</td>
<td>Registered Aboriginal Party</td>
</tr>
<tr>
<td>VAHC</td>
<td>Victorian Aboriginal Heritage Council</td>
</tr>
<tr>
<td>VAHR</td>
<td>Victorian Aboriginal Heritage Register</td>
</tr>
<tr>
<td>WTLCCHCI</td>
<td>Wurundjeri Tribe Land and Compensation Cultural Heritage Council Incorporated</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

1.1 Scope

The AECOM-GHD Joint Venture (JV) is engaged by the Level Crossing Removal Authority (LXRA) to provide specialist planning and environmental advice for the Level Crossing Removal Program. Andrew Long and Associates has been engaged by the JV to undertake a Cultural Heritage Desktop Assessment for the Station Street/Bondi Road, Bonbeach level crossing removal.

The following report is a desktop assessment of known and predicted Aboriginal cultural heritage values which may have implications for the implementation of the Station Street, Bonbeach level crossing removal. It assesses the existing condition of the project area and concludes with a recommendation as to whether a mandatory Cultural Heritage Management Plan (CHMP) will be required for the level crossing removal works at Station Street, Bonbeach.

The assessment draws on information currently being assembled as part of the preparation of CHMP No. 14493 for the Combined Services Route on the Frankston line between Bentleigh and Frankston.

The aims of the desktop assessment were to:

- Determine the level of previous investigation of the project area and the surrounding region.
- Determine the presence of registered Aboriginal cultural heritage places within the project area.
- Determine the environmental context of the project area regarding landform, geomorphology and geology, and the vegetation which would have characterised the area prior to European contact.
- Determine the potential for previously undiscovered Aboriginal cultural heritage places to be present within the project area.
- Provide a recommendation as to whether a mandatory CHMP will be required.

The methods used to undertake the desktop assessment included:

- Using appropriate sources, including Victorian government on-line information, reviewing and summarising relevant environmental background.
- Searching the Victorian Aboriginal Heritage Register (VAHR) and other research sources (for example, consultancy reports, academic research etc.) for information relating to the project area and the geographic region.
- Reviewing and analysing this information to identify or characterise the Aboriginal cultural heritage site types and locations likely to be present within the project area.

1.2 Background

Over the next eight years the LXRA will oversee the removal of 50 dangerous and congested level crossings across Melbourne.

The Victorian Government allocated $2.4 billion in its 2015-16 budget to remove at least 20 level crossings by 2018. These sites form the basis of a long-term strategic plan being developed to remove all 50 level crossings by 2022.

Construction has already commenced on several sites, and planning and early consultation is underway for the delivery of the entire program.

Level crossings are a key cause of congestion on Melbourne’s roads, and form one of the limitations on the number of train services that can operate on each line. The 50 level crossings planned for removal were chosen on a range of different factors, including safety, congestion and overall network benefits.
Three level crossings on the Frankston railway line have already been removed:

- North Road, Ormond
- McKinnon Road, McKinnon
- Centre Road, Bentleigh.

In November 2015, the Victorian Government announced that work on removing a further eight Frankston line level crossings had commenced. These are:

- Charman Road and Park Road, Cheltenham
- Balcombe Road, Mentone
- Station Street, Bonbeach
- Station Street/Bondi Road, Bonbeach
- Station Street, Carrum
- Eel Race Road, Carrum
- Seaford Road, Seaford
- Skye Road, Frankston.

1.3 Project Description

1.3.1 Project area

The Station Street/Bondi Road, Bonbeach level crossing removal project area (the project area) extends approximately 730 metres north from Station Street/Bondi Road to Glenola Road and approximately 900 metres south to Mascot Avenue. The project area includes the rail corridor and all of Station Street and Nepean Highway located to the east and west respectively between Glenola Road and Mascot Avenue (Map 1).

Pedestrian/cyclist rail crossings are located near Station Street/Bondi Road, Golden Avenue, Wellwood Road, and The Glade.

At its closest point the Bonbeach project area is approximately 125 metres north of Patterson River.

The site resides within the Port Phillip & Westernport catchment. The extent of the project area is defined in Map 2 and Map 3.

1.3.2 Project scope

It is proposed to remove the level crossing by lowering the Frankston railway line into a trench under Bondi Road whilst maintaining Bondi Road at the current road level. The trench would be approximately 1,100 metres in length and 12 metres wide. The rail track would be approximately eight metres below ground level at its lowest point at Bonbeach Station and would include underground infrastructure (below the rail track) to collect and divert rain water from the trench. Barriers, fencing and screening would be erected along the trench at road level to prevent access by vehicles or people. Decking above the rail trench would be required to provide for station car parking and new pedestrian bridges would be constructed to maintain pedestrian access across the railway line. A new station building would be provided with access to the below-ground train platforms.

---

1 Park Road has since been included in the Cheltenham package of works
2 Station Street, Carrum and Eel Race Road, Carrum are being considered as a single package of works
Map 1: Location of the project area
Map 2: Extent of the project area
Map 3: Photomap of the project area
1.4 Geographic region

It is important to understand the geographic and environmental context of the project area to gain a better understanding of the possible resources available to Aboriginal people and European settlers which may have influenced past human activity. This information also assists in determining the degree to which environmental (e.g. natural erosion of landforms) and/or human processes (e.g. land clearance, cultivation) have impacted on Aboriginal cultural heritage places.

For the purposes of this assessment, the geographic region has been defined as a one kilometre radial buffer centred on the project area and, where relevant, bounded along its western margin by the high-water mark of Port Phillip Bay (Map 4). This region neatly captures the dominant topographic features and underlying geological substrates relevant to the project area, as well as several Aboriginal cultural heritage places and historically relevant vegetation classes. It is deemed sufficient to adequately capture information relating to relevant landforms, geology and soils, fauna and flora, and past evidence for Aboriginal occupation relating to the project area, including all relevant Aboriginal cultural heritage place types.

Where appropriate, reference will also be made to the wider geographic region defined for CHMP 14493 (27 kilometres long by two kilometres wide), to provide a broader context for the project area in instances where no relevant records are available regarding previous studies or the likely nature of local Aboriginal cultural heritage places.
2 EXISTING CONDITIONS

2.1 Traditional Owner Groups

At the time this assessment was prepared, the Victorian Aboriginal Heritage Council (VAHC) had not appointed any Registered Aboriginal Parties (RAPs) as being responsible for lands including the project area, nor were there any current RAP applicants before the VAHC for land including the project area.

Four former RAP applicants exist for land including the project area:

- Bunurong Land Council Aboriginal Corporation (BLCAC)
- Bunurong Land and Sea Association Incorporated (BLASAI) (now amalgamated with BLCAC)
- Boon Wurrung Foundation Ltd (BWF)
- Wurundjeri Tribe Land and Compensation Cultural Heritage Council Incorporated (WTLCCHCI).

Previous RAP applications by the BLCAC, BLASAI, BWF, and WTLCCCHI for lands including the project area were declined by the VAHC. Nevertheless, the VAHC has acknowledged that these groups represent Traditional Owner groups for the areas of their former applications, and where no RAP is appointed are to be consulted in relation to cultural heritage matters.

2.2 Landforms and Environment

2.2.1 Landforms, geology and geomorphology

The geographic region is situated within the Eastern Plains and Coast geomorphological units as defined within Victoria’s Geomorphological Framework. More precisely, the project area sits within sub-unit 8.4 (coastal barriers within the Coast unit).

Unless otherwise referenced, the following landform, geological and geomorphological descriptions are derived from online resources developed by the Victorian Government, including GeoVic 3 and Victorian Resources Online.4 The geomorphology of the geographic region is presented in Map 5, and the geology in Map 6.

The coastal barrier between Mordialloc and Frankston compromises a quartzose sand beach (Bird 1993: 160), which forms the seaward margin of an outer barrier system that was backed by Carrum Swamp. Carrum Swamp drained either to the north into Mordialloc Creek or south into Kananook Creek, which flows along a swale between outer barrier foredunes southwards for several kilometres before opening to the shore at Frankston (Bird 1993: 160). The area originally comprised an outer sandy barrier dating to the Holocene and segments of an inner sandy barrier dating to the Pleistocene, separated and backed by extensive swamps that were eventually drained and reclaimed by cutting an artificial channel (the Patterson River) in 1879 (Bird 1993: 166; see Figure 1).

Former swamps and lagoonal deposits on the Eastern Plains which form the eastern margin of the geographic region are the result of swamp deposits from streams and rivers, including:

- Dandenong and Eumemmerring creeks, that flowed into the former Carrum swamp
- Cardinia Creek and the Bunyip River that flowed across the alluvial plains south of Pakenham into the former Koo-Wee-Rup Swamp (includes the Dalmore Swamp)
- the Bass and Lang Lang Rivers which flowed into their respective alluvial plains and swamps.

---

Map 5: Geomorphology of the project area and geographic region
Map 6: Geology of the project area and geographic region
The geological substrates underlying the geographic region include the following deposits:

- Unnamed coastal dune deposits (Qdl1): comprising sand, silt and clay deposited as poorly consolidated coastal dunes and beaches during the Holocene (11,700 years ago to the present).
- Unnamed coastal lagoon deposits (Qg): comprising silts and clays deposited in lagoon environments during the Holocene 11,700 years ago to the present).

The project area directly overlies the unnamed dune deposits forming the outer coastal barrier. Soils within the project area are likely to be pale grey sands overlying silts and clays.

2.2.2 Environment

The climate of Australia has altered and fluctuated since the time of earliest human occupation during the Pleistocene period, around 40,000-60,000 years ago. The Pleistocene period is conventionally dated from two million to 10,000 years ago (Mulvaney and Kamminga 1999: 103; Aguirre and Pasini 1985; Lourens 2008: 239). During the Pleistocene, lower sea levels were present across Australia, and the southern coastline extended southwards, connecting Tasmania to the Australian mainland (Cosgrove 1999: 362). During the Late Pleistocene to Early Holocene (the Holocene period generally dates from around 10,000 years ago to the present day (Mulvaney and Kamminga 1999: 103)) sea levels began to rise in response to post-glacial marine transgression.
resulting from the melting of Late Pleistocene ice sheets (Lambeck and Nakada 1990: 143). This rise in sea levels separated Tasmania from the mainland, and reduced the Australian coastline. Victorian sea levels stabilised and reached modern levels before around 6000 years Before Present (BP) (Lambeck and Nakada 1990: 149).

During the period of Aboriginal occupation of the Melbourne region, the climatic conditions varied greatly in regards to temperature and rainfall levels. During the Last Glacial Maximum of the Pleistocene period (21,000-15,000 years BP), temperatures were approximately 6-10 degrees lower than today (Mulvaney & Kamminga 1999: 116). During the late Pleistocene period, there was less rainfall and less precipitation throughout the continent, reducing the woodland forest areas of southern Australia and resulting in a predominance of grasslands. Within this time, there is evidence for dry/shallow lakes with conditions likely to have been too dry to support swamp or open-water environments (Bowler 1981: 436-437; Aitken and Kershaw 1993: 76). The inland of Australia was characterised by arid and dry conditions and it is likely that Aboriginal people during this period would have experienced severe drought. Within southern Victoria these climatic conditions generally discouraged tree growth, although some trees survived in particularly sheltered and watered areas (Mulvaney & Kamminga 1999: 116).

In the late Pleistocene to early Holocene (around 12,000-9,000 BP), warmer temperatures and increased precipitation resulted in the expansion of woodland and forest areas dominated by Eucalypts (Aitken and Kershaw 1993: 67). At this time, the Tadpole Swamp (now located within the Cranbourne botanic gardens) was formed, possibly supported directly by precipitation or, as is more likely, a rise in the regional water table caused by wetter conditions (Aitken and Kershaw 1993: 76). At Tadpole Swamp, pollen and charcoal sample analysis of sediment cores indicate that permanent wet conditions in the Cranbourne area were in existence after 8,500BP. The highest moisture levels occurred between 7,000 and 5,000 years ago as evidenced by the expansion of wet sclerophyll taxon *Pomaderris* in the understorey (Aitken and Kershaw 1993: 77).

Similar peaks in *Pomaderris* also occurred in data from the Gippsland Lakes and with the period of highest lake levels in the volcanic crater lakes from the Western Plains (Aitken and Kershaw 1993: 77; Kershaw et al. 2004: 154).

The analysis from Cranbourne also displays the fluctuating environmental conditions of the Holocene, with data indicating that after 5,000 years ago, vegetation in the Cranbourne area became more diverse with an increased representation of understorey vegetation relating to Eucalypts (Aitken and Kershaw 1993: 78). Aitken and Kershaw suggest that it is likely that the eucalypt canopy became more open with an understorey mosaic of heath, bracken and grassland, possibly due to climatic variability with lower rainfall experienced in the Late Holocene, and also the possible result of increased burning indicated by relatively high levels of charcoal (Aitken and Kershaw 1993: 78). Palaeoecological studies of the Gippsland Lakes also indicate that lower levels of moisture were available during the late Holocene, with fluctuating fresh water conditions experienced at Lake Wellington (Reid 1989: 48). Data from crater lakes in south western Victoria also show a decline in water levels during the mid-Holocene, with a more substantive decline after approximately 5,000 years, and water levels oscillating perhaps as a result of fluctuating temperatures until the later Holocene from around 1.8-1.3 thousand years ago (Wilkins et al 2013: 8, 10). Aitken and Kershaw’s investigations at Cranbourne also highlight vegetation changes during the period of European occupation, with analysis from Tiger Snake Swamp within the Cranbourne botanic gardens revealing the addition of exotic vegetation including pines, docks and sorrels, plantains and asters/daisies, and an increase in shrub understoreys of woodland vegetation or the replacement of woodlands by scrubland and heath vegetation (Aitken and Kershaw 1993: 78). This general increase in grasses is partially a response to vegetation clearance activities, with bracken and *Casuarina* showing a marked decline.

The climate of the geographic region is generally described as temperate with dry, warm to hot summers and cool, wet winters (LCC 1991: 57). Considerable topographic variation across the Melbourne region makes the climate within the area generally quite variable. Summer drought conditions over most of the area not only create an environment particularly susceptible to fire, but
inhibit plant growth for up to three months. Winter temperatures retard plant growth in all areas, and frost commonly occurs in some.

Climate statistics for relevant weather stations are presented in Table 1.

<table>
<thead>
<tr>
<th>Weather Station</th>
<th>Mean Max Temperature (°C)</th>
<th>Mean Min Temperature (°C)</th>
<th>Average Annual Rainfall (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorabbin Airport</td>
<td>26.1 (February)</td>
<td>13.7 (July)</td>
<td>6.2 (February)</td>
</tr>
<tr>
<td>Frankston</td>
<td>24.9 (February)</td>
<td>12.8 (July)</td>
<td>16.0 (February)</td>
</tr>
</tbody>
</table>

Table 1: Climate data for the wider area

The project area lies entirely within the Gippsland Plain Bioregion, which is characterised by lowland alluvial and coastal plains formed from erodible Tertiary sediments and Quaternary alluvial deposits (VEAC 2010: 73). The terrain is flat to gently undulating and vegetated by Swamp Scrub and open forests with a grassy and herbaceous ground layer. The bioregion is generally below 200 metres in altitude, with coastal areas of sandy beaches, shallow inlets and extensive mudflats and mangroves. The Gippsland Plain contains a large number of freshwater wetlands and saline estuaries and lagoons.

Descriptions of the likely vegetation classes that would have been dominant in the area prior to 1750 have been derived from modelling developed by the Department of Environment, Land, Water & Planning (DELWP) (Map 7).

The wider geographic region defined for CHMP 14493 includes a diverse range of Ecological Vegetation Classes (EVC’s) that are characteristic of the Gippsland Plain bioregion. These include:

- Lower Slopes or Hills Woodlands
- Herb-rich Woodlands
- Heathly Woodlands
- Coastal Scrubs Grasslands and Woodlands
- Riparian Scrubs or Swampy Scrubs and Woodlands
- Wetlands

According to current modelling, the project area would have been situated within EVC Group 1: Coastal Scrubs Grasslands and Woodlands; specifically, EVC 2 Coast Banksia Woodland. This EVC is restricted to coastal localities on secondary or tertiary dunes behind Coastal Dune Scrub. It is usually dominated by a woodland overstorey of Coast Banksia (*Banksia integrifolia*) to 15 metre tall over a medium shrub layer. The understorey consists of a number of herbs and sedges, including scramblers. Common tree and shrub species would have included Coast Banksia (*Banksia integrifolia*), and understory grasses and herbs would have included Austral Bracken (*Pteridium esculentum*).

Other vegetation types local to the project area would have included:

- EVC Group 15: Herb-rich Woodlands (specifically, EVC 418 Damp Sands Herb-rich Woodland/Heathy Woodland Complex).
- EVC Group 18: Wetlands (specifically, EVC 125 Plains Grassy Wetlands)

---


Map 7: Pre-1750 ecological vegetation classes for the project area and geographic region
2.3 VAHR Search

A search of the Victorian Aboriginal Heritage Register (VAHR) covering the full extent of the activity area and wider geographic region defined for CHMP 14493 was conducted on 24 August 2016. The results of the VAHR search are presented in Table 2 and Table 3.

A total of 51 registered Aboriginal cultural heritage places (Table 2) are located within a one kilometre radius of the wider activity area defined for CHMP 14493. These include:

- 13 artefact scatters
- one artefact scatter associated with a shell midden
- 18 low density artefact distributions (LDADs)
- seven shell middens
- six scarred trees
- two privately owned artefact collections
- five historical places (one in association with a registered shell midden)

There are no registered Aboriginal cultural heritage places situated in the geographic region defined for this desktop assessment.

In terms of the coordinates recorded for these places, none fall within the wider CHMP activity area or the Bonbeach project area defined for this desktop assessment. However, at least one historical place (VAHR 7921-1446) intersects with the CHMP activity area, and it is likely that the place extent inferred for a shell midden (VAHR 7921-0669 Shell Midden 1) also intersects the CHMP activity area. Neither of these places have the potential to intersect with the Bonbeach project area.

The following points emerge from a review of these 51 registered Aboriginal cultural heritage places:

- Most places are clustered at three locations:
  - within or near [location 1];
  - within one kilometre of [location 2];
  - within 2.5 kilometres of [location 3].

- This distribution probably reflects the recent history of cultural heritage investigations and an earlier pattern of post-contact Aboriginal occupation across the geographic region, rather than accurately representing a pre-contact pattern of Aboriginal occupation across the region.

- Registered places are located on coastal dunes, inland dunes and plains, and along the margins of the former [location 4], i.e. they are found on all major landforms characterising the CHMP geographic region.

- Places containing stone artefacts (artefact scatters and LDADs) are the most commonly occurring Aboriginal cultural heritage place within the CHMP geographic region. They occur on all major landforms across the region.

- 30 artefact scatters/LDADs have data recorded on the number of stone artefacts present within each place. Of these, 28 (93 percent) contain 10 or less artefacts (including 11 [37 percent] isolated artefacts), and on this basis, should all be considered as LDADs according to the terminology currently recommended by Aboriginal Victoria. Most these places were identified as subsurface deposits during CHMP complex assessments.

- Two (two percent) artefact scatters contain less than ten artefacts: VAHR 7921-1613, comprising 13 artefacts situated in disturbed contexts on the sandy plain adjacent [location 5]; and VAHR 7922-0956, comprising at least 18 artefacts situated on an inland dune in Cheltenham.
<table>
<thead>
<tr>
<th>VAHR</th>
<th>Place Name</th>
<th>Place Type</th>
<th>Surface / Subsurface</th>
<th>Depth (mm)</th>
<th>No. Artefacts</th>
<th>Raw Materials</th>
<th>Contents</th>
<th>Landform</th>
</tr>
</thead>
<tbody>
<tr>
<td>7921-0187</td>
<td>Artefact scatter</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Ochre (rare) and flaked stone artefacts</td>
<td>Sand ridge adjacent to swamp</td>
</tr>
<tr>
<td>7921-0242</td>
<td>Shell midden</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Rocky shore species <em>(Subninella, Mytilus)</em></td>
<td>Coastal dune slope</td>
</tr>
<tr>
<td>7921-0243</td>
<td>Shell midden</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Rocky shore species <em>(Subninella, Cellana Mytilus)</em></td>
<td>Coastal bluff</td>
</tr>
<tr>
<td>7921-0294</td>
<td>Scarred tree</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Unidentified species; at least 1 scar</td>
<td>Coastal plain adjacent to</td>
</tr>
<tr>
<td>7921-0295</td>
<td>Scarred tree</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Manna or Swamp Gum; 5 scars; uncertain ID</td>
<td>Coastal plain adjacent to</td>
</tr>
<tr>
<td>7921-0296</td>
<td>Shell midden</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Rocky shore <em>(Mytilus)</em> and sandy shore/estuarine <em>(Ostrea)</em> species</td>
<td>Coastal dune slope</td>
</tr>
<tr>
<td>7921-0297</td>
<td>Scarred tree</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Unidentified eucalypt; 6 scars; uncertain ID</td>
<td>Coastal plain</td>
</tr>
<tr>
<td>7921-0298</td>
<td>Scarred tree</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Banksia; 2 scars; uncertain ID</td>
<td>Coastal plain</td>
</tr>
<tr>
<td>7921-0345</td>
<td>Shell midden</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Sandy shore/estuarine species <em>(Ostrea, Modiolus)</em>; eroding</td>
<td>Sand ridge adjacent to</td>
</tr>
<tr>
<td>7921-0346</td>
<td>Object collection</td>
<td>Subsurface</td>
<td>2</td>
<td>G</td>
<td>1</td>
<td>Q, C</td>
<td>2 ground edge axes</td>
<td>Sand ridge adjacent to</td>
</tr>
<tr>
<td>7921-0669</td>
<td>Shell midden; Aboriginal</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Rocky shore species <em>(Mytilus, Austrochochlea)</em>; highly disturbed context</td>
<td>Coastal sandsheet adjacent to</td>
</tr>
<tr>
<td>7921-0877</td>
<td>Shell midden place</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Mainly estuarine species <em>(Anadara and Ostrea)</em> with rocky shore <em>(Abalone, Scutus)</em> and sandy shore <em>(Donax)</em>; disturbed context</td>
<td>Coastal sandsheet adjacent to</td>
</tr>
<tr>
<td>7921-0878</td>
<td>Shell midden</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>Estuarine species <em>(Anadara)</em>; highly disturbed context</td>
<td>Levee adjacent to</td>
</tr>
<tr>
<td>7921-0879</td>
<td>Scarred tree</td>
<td>Surface</td>
<td></td>
<td>Q, C</td>
<td>1</td>
<td>Q, C</td>
<td>River Red Gum; 4 scars; axe marks</td>
<td>Levee adjacent to</td>
</tr>
<tr>
<td>7921-0911</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>400-500</td>
<td>S</td>
<td>1</td>
<td>Q, C</td>
<td>1 broken flake, 1 broken blade, 1 angular fragment</td>
<td>Inland sand sheet</td>
</tr>
<tr>
<td>7921-0912</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>980</td>
<td>1</td>
<td>Q</td>
<td>Q, Qz</td>
<td>1 unretouched flake</td>
<td>Inland sand sheet</td>
</tr>
<tr>
<td>7921-1077</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>700-800</td>
<td>2</td>
<td>Q, Qz</td>
<td>2 flakes; disturbed</td>
<td>Inland dune</td>
<td></td>
</tr>
<tr>
<td>7921-1347</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>100</td>
<td>3</td>
<td>Q, Qz</td>
<td>2 flake fragments, 1 flaked piece; found in imported fill</td>
<td>Coastal dune</td>
<td></td>
</tr>
<tr>
<td>7921-1366</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>450-700</td>
<td>5</td>
<td>Q, Qz, B</td>
<td>4 broken blades, 2 angular fragments</td>
<td>Coastal dune</td>
<td></td>
</tr>
<tr>
<td>VAHR</td>
<td>Place Name</td>
<td>Place Type</td>
<td>Surface / Subsurface</td>
<td>Depth (mm)</td>
<td>No. Artefacts</td>
<td>Raw Materials</td>
<td>Contents</td>
<td>Landform</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------</td>
<td>------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>7921-1378</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>650-700</td>
<td>1</td>
<td>Q</td>
<td>1 angular fragment</td>
<td>Inland Plain</td>
<td></td>
</tr>
<tr>
<td>7921-1394</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>1,320</td>
<td>1</td>
<td>FGS</td>
<td>1 flake</td>
<td>Coastal dune</td>
<td></td>
</tr>
<tr>
<td>7921-1433</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>1,000</td>
<td>1</td>
<td>Q</td>
<td>1 waste flake</td>
<td>Inland swamp</td>
<td></td>
</tr>
<tr>
<td>7921-1434</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>350</td>
<td>1</td>
<td>Q</td>
<td>1 waste flake</td>
<td>Inland swamp</td>
<td></td>
</tr>
<tr>
<td>7921-1440</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>100</td>
<td>1</td>
<td></td>
<td>1 angular fragment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7921-1444</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>800-1,000</td>
<td>2</td>
<td>Q</td>
<td>1 flake, 1 angular fragment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7921-1501</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>350-400</td>
<td>1</td>
<td>Q</td>
<td>1 angular fragment; highly disturbed context</td>
<td>Crest of a rise</td>
<td></td>
</tr>
<tr>
<td>7921-1505</td>
<td>Artefact scatter/Shell midden</td>
<td>Subsurface</td>
<td>300-450 650-800 950-1,200</td>
<td>1</td>
<td>S</td>
<td>1 backed blade</td>
<td>Mix of rocky shore (Mytilus, Turbo, Cellana) and sandy shore/estuarine (Ostrea); unworked burnt stone</td>
<td>Coastal dune</td>
</tr>
<tr>
<td>7921-1520</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>290-300</td>
<td>1</td>
<td>S</td>
<td>1 backed blade</td>
<td>Inland swamp</td>
<td></td>
</tr>
<tr>
<td>7921-1530</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>200-250</td>
<td>3</td>
<td>S</td>
<td>2 flakes, 1 blade</td>
<td>Inland plain</td>
<td></td>
</tr>
<tr>
<td>7921-1581</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>1,020</td>
<td>1</td>
<td>Q</td>
<td>1 flake</td>
<td>Low relief plateau</td>
<td></td>
</tr>
<tr>
<td>7921-1588</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>200-400</td>
<td>3</td>
<td>Q</td>
<td>2 flakes, 1 core</td>
<td>Coastal dune</td>
<td></td>
</tr>
<tr>
<td>7921-1595</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>700-900</td>
<td>3</td>
<td>Q, S</td>
<td>2 flakes, 1 angular fragment</td>
<td>Inland dune (Cranbourne Sands)</td>
<td></td>
</tr>
<tr>
<td>7921-1605</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>500-650</td>
<td>6</td>
<td>Q, S</td>
<td>5 angular fragments (Q), 1 backed microlith (S)</td>
<td>Inland dune near</td>
<td>Coastal dune</td>
</tr>
<tr>
<td>7921-1609</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>200/700</td>
<td>4</td>
<td>Q, Qz, S, C</td>
<td>3 flaked pieces, 1 core (C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7921-1610</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>600</td>
<td>1</td>
<td>S</td>
<td>1 flaked piece</td>
<td>Inland swamp</td>
<td></td>
</tr>
<tr>
<td>7921-1612</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>400</td>
<td>3</td>
<td>S, Qz, C</td>
<td>2 flakes, 1 core (C)</td>
<td>Sandy plain adjacent to</td>
<td>Sandy plain adjacent to</td>
</tr>
<tr>
<td>7921-1613</td>
<td>Artefact scatter</td>
<td>Subsurface</td>
<td>0-400</td>
<td>13</td>
<td>S, Qz</td>
<td>10 flakes, 1 angular fragment, 1 flat edge scraper, 1 unifical point (Qz)</td>
<td>Sandy plain adjacent to</td>
<td></td>
</tr>
<tr>
<td>7921-1619</td>
<td>LDAD</td>
<td>Subsurface</td>
<td>100-700</td>
<td>5</td>
<td>S, Q</td>
<td>2 flakes, 3 angular fragments</td>
<td>muddy</td>
<td></td>
</tr>
<tr>
<td>VAHR</td>
<td>Place Name</td>
<td>Place Type</td>
<td>Surface / Subsurface</td>
<td>Depth (mm)</td>
<td>No. Artefacts</td>
<td>Raw Materials</td>
<td>Contents</td>
<td>Landform</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
<td>------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>7921-1620</td>
<td></td>
<td>LDAD</td>
<td>Subsurface</td>
<td>750</td>
<td>1</td>
<td>S</td>
<td>1 flake</td>
<td></td>
</tr>
<tr>
<td>7921-1621</td>
<td></td>
<td>LDAD</td>
<td>Subsurface</td>
<td>600-700</td>
<td>4</td>
<td>Qz</td>
<td>2, flakes, 1 debitage, 1 blade flake</td>
<td></td>
</tr>
<tr>
<td>7921-1622</td>
<td></td>
<td>LDAD</td>
<td>Subsurface</td>
<td>400-690</td>
<td>2</td>
<td>S, Q</td>
<td>1 geometric microlith (S), 1 angular fragment (Q)</td>
<td>Sandy plain adjacent to</td>
</tr>
<tr>
<td>7922-0956</td>
<td>Artefact scatter</td>
<td>Surface</td>
<td>18+</td>
<td></td>
<td></td>
<td>S, Q</td>
<td>1 end scraper, 1 microblade, 1 geometric microlith, 1 multidirectional core</td>
<td>Inland dune</td>
</tr>
<tr>
<td>7922-0957</td>
<td>Scarred tree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unidentified species, 1 scar</td>
<td>Inland dune</td>
</tr>
<tr>
<td>7922-0958</td>
<td>Aboriginal historical place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S, Q</td>
<td>3 wells/waterholes referenced on 1872 parish plan; exact location uncertain</td>
<td></td>
</tr>
<tr>
<td>7922-0959</td>
<td>Aboriginal historical place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S, Q</td>
<td>Grave of a named Aboriginal person; coordinate possibly incorrect</td>
<td></td>
</tr>
<tr>
<td>7922-0960</td>
<td>Aboriginal historical place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S, Q</td>
<td>Grave of a named Aboriginal person; coordinate possibly incorrect</td>
<td></td>
</tr>
<tr>
<td>7922-1353</td>
<td>Object collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Private collection containing ground stone and flaked stone artefacts; history suggest not collected in geographic region</td>
<td></td>
</tr>
<tr>
<td>7922-1406</td>
<td></td>
<td>LDAD</td>
<td>Subsurface</td>
<td>160-700</td>
<td>5</td>
<td>C, Qz</td>
<td>2 flakes, 3 angular fragments</td>
<td></td>
</tr>
<tr>
<td>7922-1408</td>
<td></td>
<td>LDAD</td>
<td>Subsurface</td>
<td>160-700</td>
<td>5</td>
<td>C, Qz</td>
<td>Reburied location of 7922-1406</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2:** Aboriginal cultural heritage places located within the wider geographic region defined for CHMP 14493

<table>
<thead>
<tr>
<th>Historical Reference Id</th>
<th>Historical Reference Name</th>
<th>Historical Reference Association</th>
<th>Period of Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5-3</td>
<td></td>
<td>12.1 Pre-contact food resources/areas where people continued to procure food</td>
<td></td>
</tr>
<tr>
<td>5.4-89</td>
<td></td>
<td>5.4 Properties/locations of Honorary Correspondents to the Board for the Protection of Aborigines</td>
<td>1872-1876</td>
</tr>
<tr>
<td>5.4-90</td>
<td></td>
<td>5.4 Properties/locations of Honorary Correspondents to the Board for the Protection of Aborigines</td>
<td>1862-1866</td>
</tr>
<tr>
<td>7.1-12</td>
<td></td>
<td>7.1 Land Reserved for General Aboriginal Population Use</td>
<td>1841-1878</td>
</tr>
<tr>
<td>9.2-10</td>
<td></td>
<td>9.2 Location of burial grounds outside formal cemeteries</td>
<td></td>
</tr>
<tr>
<td>9.3-29</td>
<td></td>
<td>9.3 Location of burials within cemeteries</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3:** Aboriginal historical references located within the geographic region defined for CHMP 14493
Silcrete and quartz appear to be equally dominant raw materials across the geographic region. Quartzite and chert appear sporadically in the regional assemblage.

Stone artefact types found across the geographic region include flakes, angular fragments, blades, scrapers and cores. Formal tools include bondi points, thumbnail scrapers, and geometric microliths.

Scars have been identified on Red Gums, Manna or Swamp Gum, Banksia and several unidentified tree species. The cultural status of two of these sites (VAHR 7921-0297 and 7921-0298) is uncertain.

Shell middens are generally found near the coastline or inland estuaries such as □□□□□□□. The coastal middens mostly contain a mix of rocky and sandy shore species, while the estuarine middens mostly contain either cockles (Anadara) or oysters (Ostrea).

The five registered Aboriginal historical places listed in Table 2 (VAHR 7921-0669, 7921-1446, 7922-0958, 7922-0959 and 7922-0960) and the six historical references listed in Table 3 have all been identified based on historical references and/or physical associations with archaeological sites. None of these historical references are immediately relevant to the Station Street, Bonbeach project area.

2.4 Historical and Ethnohistorical Accounts of Aboriginal Occupation

In this section the available ethnohistorical and historical information relating to Aboriginal people in the geographic region is briefly reviewed. This information will assist in formulating a model of Aboriginal subsistence and occupation patterns across the region. In conjunction with an analysis of the documented archaeological record of the region, the ethno-historical information also assists in the interpretation of archaeological sites in the wider area, and in predicting the potential location of archaeological site types within the project area.

Aboriginal peoples’ occupation of the geographic region likely extends over thousands of years. This occupation would have taken the form of temporary camps used on a seasonal basis, making use of diverse resources in the area. The landscape was undoubtedly well known to generations of people and it is probable that associations extended to spiritual attachments.

There are several problems concerned with correctly identifying and describing 19th century Aboriginal groups within the geographic region. This is largely a result of discrepancies in early European accounts and the difficulties early settlers had in understanding Aboriginal languages and social systems. Furthermore, the devastating effects on Aboriginal people of European presence, e.g. the loss of traditional lands and resources, spread of disease, social breakdown and removal of groups and individuals to reserves and mission stations compounded the difficulties associated with accurately recounting an early ethnohistory of the Aboriginal people of the Melbourne region (Barwick 1984: 13).

2.4.1 Social organisation

At the time of European colonisation, central and north eastern Victoria was occupied by a collection of peoples known as the Kulin, who shared certain cultural, social and language characteristics (Barwick 1998: 13, 28). The Kulin were in turn divided by distinctive language variations and organisational attributes, resulting in the definition of individual groups by contemporary observers as ‘tribes’. Today they are more consistently defined by ethnohistorians as groups linked by commonalities of language, or ‘language groups’. In contemporary Aboriginal society in the Melbourne region, the terms ‘tribe’, ‘people’ or ‘nation’ are more commonly used by Aboriginal people to demonstrate a traditional identity or allegiance, beyond the strictly academic term ‘language group’.
Each tribe 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, such as conducting rituals, to ensure ‘the perpetuation of species associated with the particular mythic beings associated with that territory’ (Berndt 1982:4). Unfortunately, there is no available information at this level of study regarding mythic associations with landscape features associated with the project area.

Traditionally, reconstructions of tribal boundaries have been based on language groups documented in the ethnographic and ethnohistorical literature. It is important to note, however, that these reconstructions do not necessarily reflect the spatial distribution of Aboriginal peoples prior to European settlement and instead provide an approximate guide to Aboriginal tribal boundaries during the contact period. During the early phase of European exploration, the few observations made of Aboriginal groups were generally limited to distant sightings of Aboriginal people and their fires (Sullivan 1981: 13). At the time of European contact, clans from two language groups, the Bun wurrung and the Woi wurrung (spelling according to Clark 1990: 364, although numerous variants exist) are believed to have occupied land in the geographic region.

The territories of two Bun wurrung Aboriginal clans probably extended into the project area:

- The Mayune balug clan – meaning ‘Mayune people’ (i.e. people associated with the locality of Mayune). This Bun wurrung clan was associated with Carrum Swamp, the upper Mornington Peninsula and the head of Western Port Bay (Clark 1990: 366-7).
- 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 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).

The Woi wurrung and Bun wurrung regularly met for social, ceremonial and trade purposes, which also included Kulin groups from elsewhere in Victoria, particularly after the establishment of Melbourne as a European settlement. William Thomas noted in 1840 that:

By what I can learn, long ere the settlement was formed the spot where Melbourne now stands and the flats on which we are now camped [on the south bank of the Yarra] was the regular rendezvous for the tribes known as Warorangs, Boonurongs, Barrabools, Nilunguons, Gouldburns twice a year or as often as circumstances and emergences required to settle their grievances, revenge deaths...(Thomas in Presland 1994: 35).

It is likely that the settlement of Melbourne acted as a focal point for these gatherings from the 1830s onwards, and previously they may have been held at more diverse locations throughout Kulin territory.

Intertribal relationships varied throughout the region. While the Bun wurrung were closely affiliated with Woi wurrung, they had a long-standing dispute with the Kurnai in Gippsland, with many references to periodic raids carried out by both groups. In 1840 a Bun wurrung group arrived at Yallock station (adjacent to Koo-Wee-Rup swamp) on their way to carry out a reprisal raid in Gippsland. The women, children and old men of the group remained at the station ‘hunting and fishing’ until the raiding party returned five weeks later (Gunson 1968: 6).

2.4.2 Lifestyle, environment and resources

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).

William Thomas, the Assistant Protector of Aborigines for Westernport, recorded most of the limited documented information regarding the lifestyle of the *Woi wurrung* peoples occupying the area around Port Phillip Bay and Westernport Bay. Other settlers and travellers such as Daniel Bunce (1856) and George Haydon (1846) have also contributed to a broader picture of Aboriginal life across the region in the decade following European settlement. In general, they observed clans living a hunter-gatherer lifestyle, moving within their lands to make use of seasonal plant and animal resources (e.g. Thomas noted that coastal clans used to travel by canoe to French Island in the centre of Westernport Bay to obtain eggs), trading opportunities and to meet ritual and kinship obligations.

A typical mobile Aboriginal encampment in the region was described by William Thomas, while travelling between Port Phillip Bay and Westernport in 1854:

> ...all are employed; the children in getting gum, knocking down birds etc; the women in digging up roots, killing bandicoots, getting grubs etc; the men in hunting kangaroos, etc, scaling trees for opossums etc. They mostly are at the encampment about an hour before sundown – the women first, who get fire and water, etc. by the time their spouses arrive... .

In warm weather, while on tramp, they seldom make a miam – they use merely a few boughs to keep off the wind, in wet weather a few sheets of bark make a comfortable house. In one half hour I have seen a neat village begun and finished (Thomas in Gaughwin and Sullivan 1984: 93-4).

Aboriginal groups tended to remain small for their day to day activities and while travelling, only coming together in large groups for particular ceremonies or to exploit abundant seasonal food resources. Early settlers noted that the river valleys were often used as travelling routes by Aboriginal people. E.S. Parker, an Assistant Protector of Aboriginal People, called these areas “their ordinary place of resort” where Aboriginal groups would utilise their most abundant sources of food (Parker in Cannon 1982: 693).

The effective exploitation of resource diversity within a group’s territory was integral to their success as hunter-gatherer communities. 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 such as drought.

The permanent section of Carrum Swamp (located west of the project area) 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 myrnnong and swamp rushes (Hibbins 1984: 11).

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. In this wider swamp basin, the land surrounding the major creek inlets would probably have formed other foci for semi-permanent or recurrent activity, partly through the occurrence of accessible elevated ground and the welling of floodwater into ephemeral swamps and waterholes.

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). 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).
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.

Prior to European settlement the geographic region would have contained a great number and variety of faunal species associated with the rivers, creeks and floodplains of the area. Some of the food resources that may have been utilised by Aboriginal people include wetland root crops such as Typha and Triglochin, dry land root crops such as Microseris lanceolata (murnong or yam-daisy), fresh water fish, eels and crustaceans, waterfowl and land mammals. With the demise of native habitat, the number and range of species that once existed has been greatly reduced; however, land mammal species once commonplace throughout the region would have included possum, native rats, bettong, wallaby, kangaroo and bandicoot. During the pre-European contact period the waterways would have supported black swans, ducks, ibis, quail, fish and crustaceans (LCC 1991: 107).

A large variety of plants were not only valued for their potential food resources, but also for their medicinal uses and their suitability for the manufacture of implements. Ephemeral swamp plants such as bull rushes and sedges were also an important source of food, as well as fibre for woven bags and decorative items. Detailed lists of plant and animal species available within the Port Phillip area can be obtained from Presland (2010), Gott and Conran (1991) and Zola and Gott (1992). Most of the following economic species would have been found in the immediate vicinity of the project area:

- **Themeda triandra** (Kangaroo Grass) – fishing nets, leaves and stem yielding fibre for string (Zola and Gott 1992: 58).
- **Convolvulus erubescens** (Pink Bindweed or Blushing Bindweed) – tough starchy roots were cooked and eaten (Gott and Conran 1991: 22).
- **Triglochin spp** (Water-ribbons) – bearing starch-sweet tubers that were cooked and eaten (Gott and Conran 1991: 9; Zola and Gott 1992: 12).
- **Poa labillardieri** (Common Tussock-grass) – the fibre from these tough grasses was used to make string for nets, and for bags, baskets and mats (Zola and Gott 1992: 58).
- **Phragmites australis** (Common Reed) – the tall straight flowering stems were used for spear-shafts, or cut into short lengths and used to make necklaces. The leaves were used to weave bags and baskets, and the non-starchy roots were also eaten (Gott and Conran 1991: 66; Zola and Gott 1992: 12).
- **Pteridium esculentum** (Bracken Fern or Austral Bracken) – young juicy stems were rubbed on to the skin to relieve stinging and itching from insect bites (Zola and Gott 1992: 56).
- **Xanthorrhoea australis** (Grass-tree) – soft bases and growing points of young leaves and succulent roots were eaten. The long flowering stalk produced nectar and also served as a butt-piece for spears. Pieces of flower stalk were also used to make fire sticks, and the leaves produce a hard, waterproof resin which was used to cement stone axe heads to wooden handles and spear tips to spears (Zola and Gott 1992: 59).
- **Acacia melanoxylon** (Blackwood) – the wood was used to manufacture spear-throwers, shields and clubs, while the bark was heated and infused with water to bathe rheumatic joints (Gott and Conran 1991: 50; Zola and Gott 1992: 53).
- **Eucalyptus camaldulensis** (River Red Gum): bark used to manufacture bark shelters, canoes and shields (Zola and Gott 1992: 14, 55).
2.4.3 Post-contact history

After the establishment of Melbourne and the rapid dispersal of pastoralists around Port Phillip in search of quality grazing and water for stock, the *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 local woodlands, swamps and billabongs 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.

The development of Melbourne and its hinterland during the mid-19th century resulted in not only the rapid loss of traditional lands and resources, but also the spread of diseases including venereal disease and alcoholism (Caldere & Goff 1991: 3), social breakdown and the removal of Aboriginal groups and individuals to reserves and mission stations. 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.

The close proximity of the mass of urban settlers to these Aboriginal groups inevitably caused problems for the Colonial administration, and consequently a Government Mission was set up in 1837 on an 895-acre site at South Yarra, close to an established camping area on the site of the Botanical Gardens. George Langhorne was responsible for its management. Rather than resolving Aboriginal grievances, the objective of the mission was to ‘civilise’ Aboriginal people, and those who decided to live at the mission were provided with rations in exchange for agricultural endeavours. Children were also provided with rations for attending school classes. *Woi wurrung* people were mainly associated with the mission, although a few *Bun wurrung* individuals and members of other language groups were noted as being affiliated to the mission in 1838 (Clark and Heydon 1998:27). The mission was short-lived, and alternative locations were sought away from the ‘influence’ of Melbourne.

Various reserves were subsequently established as refuges for Aboriginal people around Port Phillip and Westernport by Assistant Protector William Thomas during the period 1839-1843, in an attempt to move the remaining Aboriginal people further away from Melbourne. These included Arthurs Seat, Merri Creek, Mordialloc Creek and the Westernport Protectorate Station on Dandenong Creek at Nerrr Nerre Warren (Clark and Heydon 1998:28; Barwick 1998:31). Thomas hoped that the stations would encourage Aboriginal people to take up an agricultural lifestyle, but he spent most of his time unsuccessfully trying to keep Aboriginal people out of Melbourne. One of the major problems was the way in which the *Woi wurrung* and *Bun wurrung* were frequently treated as the same group, leading to internal dissent and dissatisfaction. The Westernport Protectorate Station, for instance, was located on *Woi wurrung* land which was not acceptable to the *Bun wurrung*, who were treated like strangers.

It is difficult to measure the Port Phillip Aboriginal population in the 1830s and 1840s, however it is clear that disease, starvation, murder and forced removal rapidly continued the population slide begun by smallpox and other plagues that occurred in the 1820s (Butlin 1983). An 1839 census of Aboriginal people living in and around Melbourne by Assistant Protector E.S. Parker recorded 140 “Waverong” (*Woi wurrung*) people and only 12 “Boonmoorong” (*Bun wurrung*) people (Lakic & Wrench, 1994: 110-113). In 1847 an influenza epidemic further depleted their population. By 1866 most of the remaining Aboriginal people in the Port Phillip region, including *Bun wurrung* and *Woi wurrung*, were removed from their lands to Coranderrk Aboriginal Station near Healesville (Clark & Heydon, 1998).

Despite this official interference, a few *Bun wurrung* were able to live outside of Aboriginal Missions with some dignity into the 1870s. Thomas managed to secure 832 acres of land on Mordialloc Creek
on the northern rim of Carrum Swamp in 1852 at a location where Aboriginal people had camped since the earliest European settlement in 1835. Thomas spent years trying to ‘defend the interests of the Bunurong’, who had strong attachments to the Mordialloc Reserve, by preventing its cancellation under pressure from settlers. Despite his efforts the Mordialloc Reserve was eventually revoked and sold in 1863, with most of the residents moved to Coranderrk Aboriginal Station. The remainder, by now quite elderly, continued to live in camps at Mordialloc and Cranbourne, where the last (Jimmy Dunbar) died in 1877 (Barwick 1998: 35, 52 and 66).

### 2.5 Previous Studies

In the past 25 years, the broader Melbourne region has been the subject of numerous cultural heritage assessments, commissioned by both public and private agencies involved in housing developments and various associated infrastructure projects including (for example) wastewater facilities, roads, schools and golf clubs. As a consequence, archaeologists working with Aboriginal community groups have achieved reasonably extensive survey coverage. However, while this has resulted in the documentation of many Aboriginal archaeological sites across metropolitan Melbourne, these archaeological assessments have mostly involved only fairly superficial examinations of the majority of geographic region. The currently known distribution of Aboriginal cultural heritage places across the geographic region needs to be considered in the context of these limitations.

Nonetheless, several archaeological investigations have been carried out within the geographic region which are relevant to CHMP 14493. This previous research consists of regional studies which assist in characterising the general pattern of archaeological site distribution across a broad region; and localised studies, generally undertaken for cultural resource management purposes, which may assist in developing an understanding of archaeological sensitivity and the extent and scope of prior investigation in a relatively limited area or environment.

The following review has been limited to investigations incorporating landforms similar to those contained within and immediately adjacent to the project area.

#### 2.5.1 Regional studies

The following studies have examined the archaeology of the geographic area defined for CHMP 14493 within a regional, rather than a localised context.

**Mornington Peninsula Regional Study (Sullivan 1981)**

An Aboriginal archaeological study of the Mornington Peninsula was undertaken by Sullivan (1981). Sullivan’s project area was divided into three zones: the northern hills and plains, the uplands, and the south west peninsula. The northern hills and plains zone was sample surveyed by Sullivan with 290.9 hectares examined with effective survey coverage calculated at 2.3 percent of the entire zone (Sullivan 1981: 62–3). While 328 Aboriginal sites had been registered to date on the Mornington Peninsula, of which 289 of these were identified during Sullivan’s survey, only 15 of these were situated within the northern hills and plains (Sullivan 1981: 57, 64). These Aboriginal cultural heritage places comprised 14 stone artefact scatters and one shell midden, with most sites located in association (less than 500 metres) with swamps and sources of water (Sullivan 1981: 71-73). On a regional basis Sullivan argued that the results of the survey indicated that Aboriginal people exploited shellfish and other resources on the Port Phillip Bay and south western peninsula coastal margin, potentially from base camps in the adjacent hinterland. In comparison the Westernport coastline was less intensively utilised, with sites instead concentrated around swamps in the hinterland. Sullivan (1981: 96) argued that the nature of sites on the Mornington Peninsula was consistent with the ethnohistorical data, which pointed to the regular movement of Aboriginal people between the south west Peninsula (Bass Strait coastline) and large swamps in the Westernport plains.
The Melbourne Metropolitan Area (Presland 1983)

Presland undertook an archaeological study of the Melbourne Metropolitan area in 1983. Presland divided the project area into five landscape units consisting of Flat Plains, Undulating Plains, Low Hills, Hills and Coastal Margin.

The current geographic region is located in landscape unit 5 – Coastal Margin (Presland 1983: 49). The Coastal Margin Unit comprised 116 square kilometres, however, only 1.79 percent of the Coastal Margin unit was considered suitable for surveying (featuring more than 50 percent visibility). Although no pedestrian surveys were undertaken within the coastal unit one site was recorded on the shoreline of Port Phillip.

Presland argued that the results of the study reflected the general use by Aboriginal people of all landscape units present in the project area. He concluded that the limited survey coverage and lack of literature information on specific aspects of Aboriginal life did not allow for the definition of any clear patterns of subsistence behaviour and Aboriginal occupation (Presland 1983: 69-74).

Port Phillip Bay Coastline (Ellender and Weaver 1991)

An Aboriginal heritage study of the Port Phillip Bay foreshore was undertaken in 1989-91 (Ellender and Weaver 1991), though it should be noted that the report for this survey remains in draft form. The Port Phillip Bay project area was divided into three zones: the east coast, the west coast, and the west coast hinterland. The east coast zone encompassed the Frankston foreshore, and the results for this zone are discussed below.

The majority of the east coast, extending from the Yarra River to Frankston was surveyed by two people examining a 20m wide transect. Survey coverage varied between 75 and 100 percent with visibility ranging between 20-40 percent, although estuarine/creek landforms had poor surface visibility (ten percent). Ellender and Weaver located a total of 38 Aboriginal sites on the east coast, including 28 shell middens, six rock wells and four scarred trees. Site types appeared to have close associations with specific landforms. All of the scarred trees were located on estuarine/creek landforms such as creek banks and alluvial floodplains. The rock wells were all associated with rocky shorelines and while shell middens were located on both rocky and sandy shore coasts, 75 percent were associated with rocky shores.

Within the rocky shore coastline all middens were located, or had originally been located, on the top of cliffs and bluffs on the immediate foreshore. Some of these middens had slumped from their original location to the base of cliffs and bluffs to beach level. The sandy shore middens were located in fore dunes derived from eroded bluffs and within a low-lying sandy wetland area in the Seaford/Carrum area. The scarred trees were located in association with Kananook Creek and the former Carrum Swamp.

All shellfish species identified within the shell middens were locally available, with the majority of species associated with rocky shore environments. Several identified species were also associated with muddy and sandy environments. The most commonly represented shellfish species were *Mytilus planulatus* (Common Mussel), *Cellana tramoserica* (Limpet), and *Subninella undulata* (Turbo).

Ellender and Weaver (1991) argued that the results of the survey supported a pattern of coastal exploitation involving basecamps situated further inland around watercourses, with Aboriginal use of the coast characterised by brief visits to specifically exploit shellfish resources. The establishment of rock wells at Half Moon Bay and Black Rock were thought to have enhanced the exploitation of shellfish resources at these locations. The absence of stone artefacts from the sites was difficult to interpret due to the previous collection of stone artefacts from sites in the region.

Ellender and Weaver (1991) proposed a site predictive model for the east coast of Port Phillip Bay that highlighted the likely presence of small, single layered shell middens generally associated with rocky shores. *Mytilus planulatus* (Common Mussel) was predicted to be the most common shellfish
species found in the shell middens, although other shell species would also be present. Rock wells were also predicted to occur where fresh water and appropriate geological conditions occur (i.e. cliff faces with rock platform at their base). Other site types such as scarred trees and artefact scatters were predicted to occur adjacent to waterbodies further inland.

**Aboriginal Archaeological Sensitivities Study of the Waterways and Floodplains Greater Melbourne (du Cros and Rhodes 1998)**

A study of Aboriginal archaeological sensitivities of the waterways and floodplains of greater Melbourne was undertaken by du Cros and Rhodes (1998). The study noted that the Port Phillip Bay coastline had been drastically altered through developmental processes for foreshore recreational activity. It was noted that some cultural material still remained regardless of these developments (du Cros and Rhodes 1998: 19). The Port Phillip Bay study also noted that scarred trees all occurred on creek or river terraces and that this was probably related to avoidance of these areas during farm clearance (du Cros and Rhodes 1998: 19).

### 2.5.2 Localised studies

The following report summaries focus on studies which have identified evidence for the presence of Aboriginal cultural heritage within the geographic region defined for CHMP 14493, with a particular focus on locations defined as area of cultural heritage significance under the provisions of the *Aboriginal Heritage Act 2006* (Vic).

By way of overview, it is clear that post 1830s urban development throughout the geographic region has resulted in a significant amount of disturbance throughout the landscape, commonly to depths of about 400 millimetres. This has resulted in the loss of many sites throughout the region, as indicated by the large number of archaeological reports in which no Aboriginal cultural heritage places were identified as a result of archaeological survey and excavation (Table 4).

#### Hyett (2005)

Hyett (2005) conducted an archaeological investigation of the . The pedestrian survey was hindered by poor ground surface visibility. No Aboriginal cultural heritage places were identified during the field survey. A program of subsurface testing was recommended before the commencement of any ground disturbing works.

Subsequently Hyett (2008) undertook a cultural heritage management plan for the . This assessment comprised a complex assessment involving the excavation of 22 shovel test probes. Two Aboriginal cultural heritage places were identified during the assessment. While these sites were determined to be of low significance, the CHMP recommended the salvage excavation of the sites prior to the commencement activities.

#### Griffin and Nicolson (2006)

Griffin and Nicolson (2006) conducted a subsurface testing programme at . The testing programme utilised eight mechanical transects measuring a total of 405 metres and 45 shovel test pits. The test pits were excavated to a maximum depth of 1.3 metres. A total of two Aboriginal stone artefacts were recorded. One was a silcrete flake from a shovel test pit at a depth of 700 millimetres and the second was a quartz flake. The two artefacts were considered to be part of the same site, VAHR 7921-0743. The site was considered to be of low scientific significance. It was recommended that the developer seek a Consent to Disturb and undertake a monitoring program during construction works.

#### Nicholson et al. (2008)

CHMP 10041 was prepared due to the planned works to , west of the Frankston rail line creek crossing. As a result of the standard assessment, three Aboriginal cultural heritage places were identified. Those places include one scarred tree (VAHR 7921-0879) and two shell middens.
(VAHR 7921-0877 and 7921-0878). No excavation or complex assessment of the project area was undertaken as part of CHMP 10041.
<table>
<thead>
<tr>
<th>Report No.</th>
<th>Title</th>
<th>Author</th>
<th>Date</th>
<th>Finds</th>
<th>Closest station</th>
</tr>
</thead>
<tbody>
<tr>
<td>4102</td>
<td></td>
<td>M Schiltz</td>
<td>2008</td>
<td>Determined that shell material subject to site monitoring works was not cultural. No finds</td>
<td>Seaford</td>
</tr>
<tr>
<td>11036</td>
<td></td>
<td>C Tucker</td>
<td>2009</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Kananook</td>
</tr>
<tr>
<td>10353</td>
<td></td>
<td>John Howell-Meurs</td>
<td>2008</td>
<td>Poor surface visibility. Highly disturbed to variable depths. No finds</td>
<td>Kananook</td>
</tr>
<tr>
<td>10940</td>
<td></td>
<td>N Dudley</td>
<td>2010</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td>11762</td>
<td></td>
<td>Ashley Matic</td>
<td>2011</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Seaford</td>
</tr>
<tr>
<td>11837</td>
<td></td>
<td>Laurinda Dugay-Grist</td>
<td>2011</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Seaford</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Renee McAlister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12396</td>
<td></td>
<td>Jen Burch</td>
<td>2012</td>
<td>Poor surface visibility. Partially disturbed. No finds</td>
<td>Seaford</td>
</tr>
<tr>
<td>12437</td>
<td></td>
<td>Andrea Murphy</td>
<td>2013</td>
<td>Poor surface visibility 1%. Highly disturbed. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Andrew Morris</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alexander Timms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12936</td>
<td></td>
<td>Ashley Matic</td>
<td>2014</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Seaford</td>
</tr>
<tr>
<td>13034</td>
<td></td>
<td>Jen Burch</td>
<td>2014</td>
<td>Poor surface visibility. No finds</td>
<td>Frankston</td>
</tr>
<tr>
<td>13366</td>
<td></td>
<td>John Stevens</td>
<td>2015</td>
<td>Poor surface visibility 10%. Highly disturbed to 500mm. No finds</td>
<td>Leawarra</td>
</tr>
<tr>
<td>13488</td>
<td></td>
<td>Laurinda Dugay-Grist</td>
<td>2015</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Seaford</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alex Cowled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Renee McAlister</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13836</td>
<td></td>
<td>Laurinda Dugay</td>
<td>2015</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alex Wisniowiecka</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13837</td>
<td></td>
<td>Laurinda Dugay</td>
<td>2015</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alex Wisniowiecka</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13907</td>
<td></td>
<td>Lauren Hardiman</td>
<td>2016</td>
<td>Poor surface visibility 0%. Highly disturbed. No finds</td>
<td>Frankston</td>
</tr>
<tr>
<td>13929</td>
<td></td>
<td>Ashley Matic</td>
<td>2015</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td>13969</td>
<td></td>
<td>Jeremy Hill</td>
<td>2015</td>
<td>No standard assessment (limited visibility). Disturbed to 600mm</td>
<td>Mordialloc</td>
</tr>
<tr>
<td>13971</td>
<td></td>
<td>Keith W Patton</td>
<td>2016</td>
<td>Poor surface visibility 0%. Highly disturbed. No finds</td>
<td>Frankston</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jenny Fiddian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report No.</td>
<td>Title</td>
<td>Author</td>
<td>Date</td>
<td>Finds</td>
<td>Closest station</td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td>--------</td>
<td>------</td>
<td>-------</td>
<td>-----------------</td>
</tr>
<tr>
<td>13972</td>
<td></td>
<td>Sarah Myers Dr Sarah Mirams Tom Mallett</td>
<td>2016</td>
<td>No standard assessment (limited visibility). Highly disturbed to 600mm. No finds</td>
<td>Aspendale</td>
</tr>
<tr>
<td>14002</td>
<td></td>
<td>Laurinda Dugay Alex Wisniowiecka</td>
<td>2016</td>
<td>Poor surface visibility. Subsurface disturbed, introduced sands, displaced sands, utilities. No finds</td>
<td>Leawarra</td>
</tr>
<tr>
<td>14015</td>
<td></td>
<td>Laurinda Dugay Alex Wisniowiecka</td>
<td>2016</td>
<td>Poor surface visibility. Subsurface disturbed, introduced sands, modern rubbish, bitumen. No finds</td>
<td>Frankston</td>
</tr>
<tr>
<td>14062</td>
<td></td>
<td>Anita Barker</td>
<td>2016</td>
<td>Poor surface visibility &lt;5%. Highly disturbed to 200mm (Utilities to &gt;500mm). No finds</td>
<td>Chelsea</td>
</tr>
<tr>
<td>14221</td>
<td></td>
<td>Andrea Murphy Tom Rymer</td>
<td>2016</td>
<td>Poor surface visibility. Highly disturbed. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td>14273</td>
<td></td>
<td>Ashley Matic</td>
<td>2016</td>
<td>Poor surface visibility &lt;1%. Highly disturbed to about 400mm. No finds</td>
<td>Edithvale</td>
</tr>
<tr>
<td>14310</td>
<td></td>
<td>Matthew Barker</td>
<td>2016</td>
<td>Poor surface visibility 5-10%. Highly disturbed to 440mm. No finds</td>
<td>Chelsea</td>
</tr>
<tr>
<td>14341</td>
<td></td>
<td>Edward East</td>
<td>2016</td>
<td>Surface visibility &lt; 1%. Subsurface highly disturbed. No finds</td>
<td>Frankston</td>
</tr>
<tr>
<td>14352</td>
<td></td>
<td>Matthew Barker John Young</td>
<td>2016</td>
<td>Poor surface visibility 1-2%. Highly disturbed to 400mm. No finds</td>
<td>Mordialloc</td>
</tr>
<tr>
<td>14368</td>
<td></td>
<td>Matthew Barker John Young</td>
<td>2016</td>
<td>Poor surface visibility &lt;5%. Highly disturbed to 350mm. No finds</td>
<td>Carrum</td>
</tr>
<tr>
<td>14390</td>
<td></td>
<td>Michael Lever</td>
<td>2016</td>
<td>Poor surface visibility. Undisturbed sandy deposits. No finds</td>
<td>Edithvale</td>
</tr>
</tbody>
</table>

Table 4: Previous studies within CHMP 14493 geographic region in which no Aboriginal cultural heritage places were identified (highlighted studies are located within one kilometre of the project area)
TerraCulture Heritage Consultants prepared CHMP 10192 with regard to the proposed works at the Station Street, Bonbeach Level Crossing Cultural Heritage Desktop Assessment (Hyett 2008). Surface visibility across the property was poor, hampering survey of the property. No Aboriginal cultural heritage places were identified following the standard assessment. During the complex assessment 22 shovel test probes were excavated, with eight of them showing evidence for disturbance. One shovel test probe was found to contain three silcrete artefacts, and a quartz artefact was recovered from another shovel test probe. The places are registered as VAHR 7921-0911 and 7921-0912 respectively.

Four-Unit Development (Dugay-Grist et al. 2011)

CHMP 12243 was prepared by Grist Archaeology Heritage Management with regard to the proposed four-unit development at Station Street, Bonbeach. The property is located approximately 690 metres to the east of Mordialloc Station in a suburban context. Poor surface visibility hampered the standard assessment and no cultural places were identified. During the complex assessment that followed two stone artefacts were recovered from a test pit and shovel test probe. These have been registered as VAHR 7921-1434 and 7921-1433. Dugay-Grist et al. (2011: iii) found that there was a general level of disturbance across the property to depths of 300 millimetres.

Residential Development (Dugay-Grist and Maher 2011)

CHMP 11806 was prepared with regards to the proposed multi-unit development of Station Street, Bonbeach. The property is located approximately 590 metres to the south of Mordialloc Station, west of the Frankston rail line in a sand dune context. As the desktop assessment indicated that Aboriginal cultural heritage places might be located within the property a standard and complex assessment of the property was undertaken. Poor surface visibility hampered the surface survey and no cultural places were identified during the standard assessment. During the complex assessment, however, one cultural heritage place (VAHR 7921-1347), comprising of two silcrete flakes, was identified. Due to the high levels of ground disturbance across the property, Dugay-Grist and Maher (2011: iv) argue that the flakes were not in situ. Disturbance was found to depths of 300to 1100millimetres. The artefacts were recovered at depths of 700to 800 millimetres.

Proposed Multi-Residential Development, Cultural Heritage Management Plan (Hislop 2012)

Excavations at were carried out by Hislop ahead of a multi-residential development (2012). The study area is located on the southern periphery of the former Carrum Swamp. The excavations comprised 18 machine test probes targeting a small rise within the project area, however the testing strategy was re-evaluated following evidence of disturbance across the rise.

The soil profile for the study area comprised upper layers of disturbance, to a depth of approximately 25 centimetres, underlain by deep sandy deposits to an excavated depth of 255 centimetres (Hislop 2012: 51).

Two previously unrecorded Aboriginal cultural heritage places were identified during the subsurface testing program. IA1 (7921-1378 [VAHR]), comprises one artefact identified at 65to 70 centimetre depth within fine grey sand deposits. 2 (VAHR 721-1377), comprises five stone artefacts located at 45 to 70 centimetre depth in a similar grey fine sand deposit (Hislop 2012: 65-67).

Residential Development (McAlister 2012)

CHMP 12315 was prepared by Heritage Insight in 2012 on behalf of Trinco Pty Ltd with regard to the residential development of Station Street, Bonbeach. A desktop assessment of the region near the proposed works suggested that artefact scatters were the most likely Aboriginal cultural heritage place to be identified through archaeological research. Due to the likelihood of evidence of past
Aboriginal land use being present in the project area, a standard and complex assessment were undertaken of the property prior to redevelopment. The standard assessment was hampered by poor surface visibility (less than one percent) and no Aboriginal cultural heritage places were identified (McAlister 2012: ii). Due to the poor visibility a complex assessment was undertaken in which one square metre test pit and 10 shovel test pits were excavated (McAlister 2012: ii). Although there was significant ground disturbance throughout the property, one Aboriginal cultural heritage place, comprised of an isolated mudstone flake, was identified (VAHR 7921-1440). The mudstone flake was recovered from a disturbed context and is not considered to be in situ (McAlister 2012: ii).

**Proposed Residential Development at** [Location] (Ward 2012)

CHMP 11904 was prepared by ACHM Pty Ltd on behalf of Fraser Gehric with regard to the residential development at [Location]. The property is located approximately 170 metres to the west of the Frankston rail line. As the desktop assessment indicated that Aboriginal cultural heritage places might be found on the property a standard and complex investigation was undertaken. Poor surface visibility hampered the standard assessment and no cultural places were identified during the survey. One cultural heritage place, VAHR 7921-1366, was identified during the complex assessment. Despite this, the sub-surface testing program found that there was widespread sub-surface disturbance across the property.

(Thomas and Compton 2013)

CHMP 12693 was prepared by Wandri Archaeology Cultural Heritage Management on behalf of Frankston City Council with regard to planned works to the [Location]. A desktop assessment of the region indicated that the project area, which is located on the coast, would likely contain artefact scatters and shell middens. Due to the high probability of Aboriginal cultural heritage places existing within the property a complex assessment was undertaken in which one 0.5 x 0.5 metre test pit and 22 shovel test pits were excavated across the site. Excavations found that the southern extent of the property had been subject to extensive disturbance, while the northern extent was relatively undisturbed. One Aboriginal cultural heritage place (VAHR 7921-1501) was identified in the northern extent of the site. It is comprised of a low density artefact scatter and shell midden. The midden is located between depths of 330 millimetre and 800 millimetre. The CHMP recommended that the midden be retained and protected.

**Proposed** [Location] (Nichols 2014)

TerraCulture prepared CHMP 13118 with regard to the construction of a new facility at the [Location]. The property is located on the foreshore, approximately 360 metres from Mordialloc Station. One Aboriginal cultural heritage place, VAHR 7921-1444, was already known to be within the project area prior to standard and complex assessment. No new places were identified during the standard assessment, with poor surface visibility hampering the survey. Following archaeological excavation at the property, one additional flake was found at VAHR 7921-1444. No new cultural heritage places were identified. Disturbance varied throughout the property, with disturbance in some places found to depths of 400 millimetres, and with no evidence for disturbance at other locations.

**Residential Development** (Mitchell 2014)

Alpha Archaeology Pty Ltd prepared CHMP 13201 with regard to the proposed residential development at [Location]. The property is located approximately 540 metres to the east of the Frankston railway line. Due to limited visibility and existing buildings on the property, a standard assessment was not undertaken. Nevertheless, a complex assessment was undertaken which included the excavation of a one square metre test pit and nine 0.4 x 0.4 metre shovel test pits. One Aboriginal cultural heritage place (VAHR 7921-1530) was found as a result. The place comprised of three silcrete flakes recovered from depths between 200 and 250 millimetres.
Pragmatic Cultural Heritage Services prepared CHMP 12961 on behalf of Susan & Des Roberts with regard to residential subdivision at Station Street, Bonbeach. The property is located approximately one kilometre north east of Chelsea Railway Station. No Aboriginal cultural heritage places were identified during the standard assessment. During the complex assessment which followed one Aboriginal cultural heritage place (VAHR 7921-1520) was identified. VAHR 7921-1520 comprises of a single silcrete backed blade that was found within a former dune landform. The site was widely disturbed up to depths of 300 millimetres, below which the sub-surface deposits appeared to be intact.

Biosis prepared CHMP 13878 on behalf of Nik Konidaris with regard to the subdivision and residential development of Cranbourne-Frankston Sands formation. Desktop assessment of the region suggested that stone artefacts could be recovered from deep sandy deposits, despite disturbance commonly occurring up to 300-340 millimetres depth (Oataway 2015: iii). Poor ground visibility hampered survey of the property. As a consequence, a complex assessment of the property was undertaken. One Aboriginal cultural heritage place, comprising of one quartz artefact recovered from a depth of about 1m, was identified during the complex assessment. The place has been registered as VAHR 7921-1581. Disturbance was found to be limited to a depth of about 400 millimetres, with deposits at greater depths considered to be stratigraphically intact.

A CHMP was prepared for land situated on the edge of the former Cranbourne-Frankston Sands formation. An investigation of the property consisted of surface and subsurface components, although the surface survey was hampered by poor surface visibility due to grass cover and residential developments (Burch 2016: iii). No Aboriginal cultural heritage material was identified during the survey; however, one area of cultural heritage sensitivity was identified in the front yard. A subsequent complex assessment phase comprised two test pits and six shovel test pits. One Aboriginal archaeological site was discovered during the complex assessment: Bragge LDAD (VAHR 7921-1588). The LDAD consists of three artefacts distributed across a 4.2m area and identified between 200 and 400 millimetres depth within very dark greyish brown compact dry silty sand (Burch 2016: 37).

CHMP 13955 was prepared by Andrew Long and Associates on behalf of Elena Rinidis with regard to the residential development of Cranbourne-Frankston Sands formation. The property is located in archaeologically sensitive unnamed dune deposits (Qrm). A desktop assessment of the region suggested that archaeological sites would most likely be identified in elevated sand bodies with stone artefact scatters and low density artefact scatters being the likely place types to be identified within the property. No Aboriginal cultural heritage places were identified in the project area, with poor surface visibility (less than five percent) hampering survey efforts. During complex assessment of the property one artefact scatter comprising of three stone artefacts was identified. The place is registered as VAHR 7921-1595.

Benchmark Heritage Management prepared CHMP 14108 on behalf of Godfrey Maranda with regard to the residential subdivision and development of Cranbourne-Frankston Sands formation. Baker and Young (2016: vi) determined that the most likely Aboriginal cultural heritage places to be found within the property are stone artefact scatters and low density artefact distributions. During complex assessment, one isolated silcrete flake was recovered from a depth of 600 millimetres (Barker and Young 2016: viii). The place was registered as VAHR 7921-1610. Several of the test pits excavated
indicated that the stratigraphy of the project area had been subject to at least partial disturbance (Barker and Young 2016: viii).

**Proposed Multi-Storey Apartment Building (Barker and Young 2016)**

In 2016 CHMP 14151 was prepared by Benchmark Heritage Management Pty Ltd on behalf of Peninsula Blue Development Pty Ltd with regard to the construction of a multi-storey apartment building at Station Street, Bonbeach. A desktop assessment of the region suggested that Aboriginal cultural heritage places were likely to be located in elevated sand dune deposits above the Kananook Creek catchment, with stone artefact scatters and low density artefact distributions being the most likely places identified. Although no Aboriginal cultural heritage places were identified during a standard assessment of the property, one place, VAHR 7921-1609, was found during archaeological excavation. VAHR 7921-1609 is comprised of several stone artefacts, recovered from depths of 200 millimetres and 700 millimetres. Raw materials used were quartz, silcrete, chert and crystal quartz. It was clear from excavations that the property had been subject to significant disturbance, which resulted in an inconsistent stratigraphic profile across the property.

**Residential Development (Burch 2016)**

In 2016 Jem Archaeology prepared CHMP 14180 on behalf of Alex Bernshteyn with regard to the residential development of Station Street, Bonbeach. The property is located east of Kananook Creek and within the Koo Wee Rup Plain. It was Burch’s (2016: iii) assessment that the most likely sites to be found in the area would be comprised of low and high density stone artefact scatters. As there was potential to identify Aboriginal cultural heritage places within the study area, a standard and complex assessment of the property was undertaken. Following the survey, in which no Aboriginal artefacts were identified, a total of two test pits and fifteen STPs were excavated (Burch 2016: iii). Two Aboriginal cultural heritage places were identified during the complex assessment, VAHR 7921-1612 and VAHR 7921-1613. VAHR 7921-1612 is a low density artefact distribution, and VAHR 7921-1613 is a high density artefact distribution. These sites were comprised of silcrete, quartzite and chert artefacts, with silcrete being the dominant raw material in both cases. The artefacts were recovered in depths of up to 40 centimetres.

**Residential Development (Matic and van der Walt 2016)**

CHMP 14384 was prepared by Pragmatic Cultural Heritage Services with regard to the residential development planned at Station Street, Bonbeach. The project area is located approximately 160 metres to the west of the rail line. A desktop assessment indicated that low density artefact distributions would be the most likely place found within the property (Matic and van der Walt 2016: iv). Although most of the property was found to be disturbed following a standard assessment, some areas had potential to retain intact sub-surface deposits with archaeological artefacts. Following a complex assessment, in which sub-surface testing was undertaken, one Aboriginal cultural heritage place (VAHR 7921-1622) was identified. VAHR 7921-1622 comprises of two stone artefacts that were found at depths of 400 and 500 millimetres in sandy deposits.

**Subdivision and Residential Development (Jones 2016)**

CHMP 14253 was prepared by Andrew Long and Associates with regard to the residential subdivision and development of Station Street, Bonbeach. As the desktop assessment concluded that it would be likely that Aboriginal cultural heritage places may be located within the proposed development, standard and complex assessments were undertaken. Surface visibility of less than five percent hampered the survey and no cultural heritage places were identified during the standard assessment. However, one Aboriginal cultural heritage place (VAHR 7921-1620) was identified during complex assessment. There was widespread disturbance across the property, with historic artefacts recovered to depths of up to 800 millimetres.
2.6 Land Use History

2.6.1 Regional history

The first European activity recorded in Port Phillip Bay was associated with sealing. Sealing bases were well established on Bass Strait islands and along the coast of Van Diemen’s Land (Tasmania) by the early 1790s. As seal numbers were depleted in these areas, attention shifted to the seal colonies along the Victorian coast, which were exploited from the early 1800s to 1820s (Townrow 1997: 7-8, 15).

The first detailed survey of the Port Phillip region was conducted in 1802-03 when Acting Lieutenant John Murray, in the Lady Nelson, explored the Port Phillip coastline. Following Murray's favourable report of the region, and in an attempt to prevent French settlement, Lieutenant Colonel David Collins arrived from England in 1803 to establish the first large-scale colonisation of the area. Over four hundred people, comprised of convicts, troops, and some free settlers, were landed at Sullivans Bay near Sorrento. However, the colony was unsuccessful mainly due to the lack of readily available fresh drinking water, and in 1804 the settlement was transferred to Van Diemen’s Land (Dingle 1984: 21). Another problem which beset the colony was the escape of convicts. The most famous, William Buckley, remained at large for 32 years living with the Wada wurrung people near Corio Bay (Morgan 1852: 63, 87).

Another unsuccessful British colony was later established at Corinella in Westernport in 1826 when it was mistakenly believed that the French were once again interested in establishing a colony in southern Australia. It too was abandoned a year later and the garrison returned to Sydney (Dingle 1984: 21). In 1834, Edward Henty sailed from Van Diemen’s Land with a consignment of sheep and squatted in the Portland region. Permanent settlement of the Port Phillip area occurred the following year after the then village of Melbourne was established in 1835 by John Batman acting on behalf of the Port Phillip Association (Dingle 1984:21). When news of the arrival of Batman’s party and the Port Phillip Association’s ‘treaty’ for land reached the escaped convict William Buckley, Buckley decided to make himself known and acted as interpreter between Aboriginal people and Europeans until 1837 (Morgan 1852: 87-94).

In 1836, a census of the European population of the settled district around Melbourne was estimated at 142 men and 35 women, with livestock numbers calculated at 26,500 sheep, 100 cattle and 57 horses (Dingle 1984: 21). The first government sale of Melbourne allotments took place in June 1837. However, many settlers squatted on land around Melbourne Town and the settled district prior to applying for a government licence (Curr 1883: 3).

2.6.2 History of Bonbeach

The area between the Mordialloc and Kananook Creeks was identified as swampy land by the early European visitors to the area, and was inundated in places by ‘several feet’ of water even in the drier months (Bruton n.d.: 3); as such it was avoided by most, bar hunters and travellers making their way to the Mornington Peninsula (Brown-May and Swain 2005: 114). In 1861 the swamp was gazetted as the ‘Mordialloc Farmers Common’, however by the 1870s the area was opened to selectors. Many selectors chose to run cattle on their lands, and there was hope the rich soils would allow for the cultivation of crops; the reality, however, was that most were unable to improve or build on the land due to the regular flooding of the area (Brown-May and Swain 2005: 114).

In the 1870s the Lands Department developed a scheme to drain the swamp by constructing two main channels that would allow Dandenong Creek and Eumemmering Creek to join Mordialloc and Kananook Creeks, thus eliminating the accumulation of water in the swamp. This proved inadequate, and in 1878 the minister for Public Lands, J.B. Patterson, recommended a canal be cut directly into Port Phillip Bay; this was constructed in 1879 as ‘Patterson’s Cut’ (later Patterson River) and exits into the bay at Carrum (Brown-May and Swain 2005: 114).
This too did not completely alleviate the flooding, and further works were carried out in the 1890s and 1920s by the Carrum Trust; however, flooding continued to occur until the 1950s. In the 1960s yet more works were carried out to reduce the number of floods, including the construction of flood gates and pumps and the raising of outfall drain levels, which finally eliminated much of the flooding the area had been prone to (Brown-May and Swain 2005: 114).

Bonbeach is a small bayside suburb located between Chelsea and Carrum on Port Phillip Bay. It is part of the narrow coastal ridge that became popular as a beach resort in the early decades of the 20th century. The land between the sea and the Frankston railway line was first settled by holiday-makers in tents or holiday shacks, and gradually by more permanent residents. It was not until 1926 that Bonbeach had its own railway station. From 1906 until the late 1940s sand was quarried on the east side of the railway line and used in the manufacture of glass. In 1948 Australian Glass Manufacturers sold this land in residential blocks and Bonbeach’s permanent population spread from the coastal strip across to the eastern side of the railway line.

2.6.3 Frankston rail line

The rail line from Caulfield to Mordialloc opened in December 1881 and extended to Frankston in August 1882. The Frankston line was electrified in three stages between March and August 1922.7

Installation of powered signalling on the line began in 1933 with the section from Caulfield to Glenhuntly, and the remainder of the line was converted in a number of stages from 1958 to 1986. Amplification of the line from Caulfield to Moorabbin to three tracks was announced in 1984, at a cost of $10 million to save ten minutes on travel times from Frankston. Work began in July that year and was due for completion by the end of 1985. However, it did not enter service until June 1986, with three track working commencing in July the same year.

The current bridge over the Patterson River was provided in 1974, replacing the previous trestle bridge.

More recently, the line has been upgraded as part of the Bayside Rail Project. The upgrade includes station refurbishments, track, signal and electrical upgrades.

The Frankston rail corridor has largely been cleared of native vegetation and has been subjected to a mix of agricultural, residential, industrial and rail uses since the 1830s. Due to the highly modified nature of the rail corridor, sections of the project area will contain a high level of previous ground disturbance which will affect the likelihood of identifying intact Aboriginal cultural heritage material in these areas. Many of the areas adjacent to the rail corridor contain residential housing estates, and activities such as scraping and levelling have been undertaken across this land, further impacting the potential to locate intact Aboriginal cultural heritage.

The Frankston line has continued to be subject to ongoing maintenance upgrades. Ground disturbance associated with these maintenance activities tends not to be limited to the precise location of such excavations, but extends to the surrounds during mechanical extraction, dumping, and redeposition of soils. Given the extensive nature of development across the site it is likely that large sections of the rail corridor have been subjected to significant ground disturbance in relation to the construction of the Frankston line, associated parking and landscaped areas.

2.6.4 Station Street, Bonbeach level crossing project area

Recent high-resolution aerial photography using Nearmap8 and Google Maps with street-view9 was assessed to determine the current status of ground surfaces within the Station Street, Bonbeach

7 http://vicsig.net/infrastructure/line/frankston - accessed 6 October 2016
level crossing project area. The purpose of the assessment was to investigate the current land use within the project area and, based on the outcomes of the assessment, determine whether there is evidence for the presence of undisturbed or only lightly disturbed ground surfaces and/or subsurface deposits that may have a potential to contain Aboriginal cultural heritage.

As outlined in Section 1.3, the project area encompasses the full width of the Frankston line rail reserve between its start and end points, as well as the full width of the road reserves encompassing Station Street to the east and Nepean Highway to the west (Map 3). These ground surfaces include:

- cut and embanked rail lines
- modified land surfaces within the rail corridor adjacent to the constructed rail line
- constructed sealed roadways, nature strips and median strips
- concrete kerbing and landscaped areas

In addition to the desktop assessment, the northernmost two-thirds of the project area was inspected by a representative from Andrew Long and Associates on 18 January 2016. The site inspection was carried out to assess the general condition and archaeological potential of the project area. At that time the project area could be readily observed as having undergone varying forms of significant ground disturbance undertaken by mechanical means. Previous ground disturbing activities associated with the project area including the construction and ongoing maintenance of the Frankston rail line, Nepean Highway and Station Street were confirmed.

At the completion of the site inspection, the intersecting area of cultural heritage sensitivity was identified as having been subject to significant ground disturbance resulting from the construction and maintenance of the Frankston rail corridor and adjacent roadways. This constitutes significant ground disturbance as defined by regulation 4 of the Aboriginal Heritage Regulations 2007 (Vic), and the Practice Note Regarding Significant Ground Disturbance prepared by Aboriginal Victoria. 10

2.7 Summary

By comparing the results of the background research and the archaeological investigations previously undertaken within the geographic region, the following conclusions can be drawn regarding the nature of Aboriginal cultural heritage within the Bonbeach level crossing project area:

- There has been no formal archaeological investigation of the project area.
- Ethnographic observations indicate that the project area is located within the traditional lands of the Bun wurrung language group. The closest documented Aboriginal clans to the project area were the Mayune balug and the Ngaruk willam.
- Fifty-one registered Aboriginal cultural heritage places and six historical references are situated within the wider geographic region defined for CHMP 14493. These are clustered:
  - within or near [insert location]; and the [insert location];
  - within one kilometre of [insert location]; and
  - within 2.5 kilometres of [insert location] township.
- There are no Aboriginal cultural heritage places situated within the project area or the wider geographic region defined for this desktop assessment.

- Registered Aboriginal cultural heritage places are generally located on coastal dunes, inland dunes and plains, and along the margins of the former Carrum Swamp. However, cultural heritage places tend to occur in higher densities between Mordialloc and Frankston, and for this reason the coastal dunes and inner swamp and lagoon deposits associated with the former Carrum Swamp are considered to have a low to moderate or moderate archaeological sensitivity.

- Places containing stone artefacts (artefact scatters and LDADs) are the most commonly occurring Aboriginal cultural heritage place within the wider CHMP geographic region. They occur on all major landforms across the region. Ninety-three percent of these places have artefact densities that warrant their designation as LDADs.

- The Frankston rail line between Mordialloc and Frankston is situated on elements of the Eastern Plains and Coast geomorphic units. Landforms include swamp and lagoon deposits associated with the former Carrum Swamp, which are separated from the Port Phillip Bay coastline by an outer sandy coastal dune barrier and segments of an inner sandy barrier dating to the Pleistocene. Major waterways within this section of the geographic region include Mordialloc and Kananook creeks.

- Many of the CHMPs previously prepared within the wider CHMP 14493 geographic region between Mordialloc and Frankston did not identify any Aboriginal cultural heritage, an observation that was largely attributed to evidence for significant prior disturbance across the region.

- Most the Aboriginal cultural heritage places situated between Mordialloc and Frankston (especially around Frankston) were recorded during the preparation of small, residential CHMPs which in many instances identified the heritage as having been found in disturbed contexts.

- The area around [redacted] has been identified as a highly sensitive location based on the identification of archaeological sites and historical references, which collectively characterise the area as a culturally significant place for Melbourne’s Aboriginal community, and for the descendants of the Bun wurrung language group in particular.

- The project area has been cleared of native vegetation and has been used for agricultural, residential, industrial and rail purposes probably since the 1840s. Due to the highly modified nature of the rail corridor and adjacent road reserve, the project area is considered contain a high level of previous ground disturbance.

- Previous investigations indicate that there is a high level of previous disturbance within the Frankston rail corridor, affecting the likelihood of identifying intact Aboriginal cultural heritage material in these areas. Many of the areas adjacent to the rail corridor contain residential housing estates, and activities such as scraping and levelling have been undertaken across this land, further impacting the potential to locate intact Aboriginal cultural heritage.
3 RELEVANT LEGISLATION AND POLICY

When is a cultural heritage management plan (CHMP) required?

Regulation 6 of the *Aboriginal Heritage Regulations 2007* (Vic) (the Regulations) requires a mandatory CHMP for an activity if:

(a) all or part of the activity area for the activity is an area of cultural heritage sensitivity; and

(b) all or part of the activity is a high impact activity.

Is this activity area an area of cultural heritage sensitivity?

Yes – the Bonbeach project area includes land defined as an area of cultural heritage sensitivity based on its proximity to the Victorian coastline (Port Phillip Bay) and the Patterson River, and being located within a dune:

23 Waterways

(1) Subject to subregulation (2), a waterway or land within 200 metres of a waterway is an area of cultural heritage sensitivity.

(2) If part of a waterway or part of the land within 200 metres of a waterway has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

28 Coastal Land

(1) Subject to subregulation (2), land within 200 metres of the high-water mark of the coastal waters of Victoria or any sea within the limits of Victoria is an area of cultural heritage sensitivity.

(2) If part of the land specified in subregulation (1) has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

37 Dunes

(1) Subject to subregulation (2), a dune or a source bordering dune is an area of cultural heritage sensitivity.

(2) If part of a dune or part of a source bordering dune has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

(3) In this regulation—

*dune* includes an inland, riverine, lacustrine or coastal dune.

The project area is located within 200 metres of the high-water mark of the coastal waters of Victoria and occurs with an area defined geologically as ‘coastal dune deposits’ and as such is in an area of cultural heritage sensitivity.

According to regulation 4 (Definitions):

*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.

The recent assessment of high resolution aerial photography and the site inspection conducted in January 2016 both identified clear evidence for ground disturbance by machinery across the entire project area that would have occurred during the construction and ongoing maintenance of the
Frankston rail line and the Station Street and Nepean Highway sealed roadways and adjacent nature strip, median strips, kerbing and associated landscaping. On this basis, areas within the project area previously identified as areas of cultural heritage sensitivity under regulations 23, 28 and 37 are no longer areas of cultural heritage sensitivity.

Is this activity a high impact activity?

Yes – LXRA intends to remove the Station Street/Bondi Road, Bonbeach level crossing by constructing infrastructure to lower the Frankston railway line under Station Street/Bondi Road.

43 Constructing specified items of infrastructure

(1) The construction of any one or more of the following is a high impact activity if the construction would result in significant ground disturbance—

(d) rail infrastructure, other than—

(i) a railway track with a length of less than 100 metres; or
(ii) a railway track siding with a length of less than 100 metres; or
(iii) a cutting with a length of less than 100 metres; or
(iv) a tunnel with a length of less than 100 metres; or
(v) a bridge with a span of less than 100 metres; or
(vi) a platform with a length of less than 100 metres; or
(vii) a service road with a length of less than 100 metres.

Do any exemption provisions of the Act and Regulations apply?

No known exemptions (regulations 7-19) apply to the proposed activity.
4 CONCLUSION

According to the criteria and definitions listed above, and based on the project area as defined for this assessment, the *Aboriginal Heritage Regulations 2007* (Vic) does not require the mandatory preparation of an approved CHMP for the removal of the level crossing at Station Street, Bonbeach. The principal basis for this determination is the fact that significant ground disturbance has previously occurred within the activity area, thereby removing the area of cultural heritage sensitivity.
5 REFERENCES


Bruton, W. n.d. Local History: Carrum to Cheltenham, Standard Newspapers, Cheltenham

Barker, A. 2016, Residential Subdivision. CHMP 14062.


Barker, M. and Young, J. 2016, Proposed 6 lot Residential Subdivision and Construction of 6 Townhouses, CHMP 14108, Benchmark Heritage Management Pty Ltd.


Burch, J. 2014, Four Dwellings, CHMP 13034, Jem Archaeology.

Burch, J 2016, Three Dwellings, CHMP 14180, Jem Archaeology.


Dugay-Grist, L. and Maher, M. 2011, Multi-Unit Development, CHMP 11806, Grist Archaeology Heritage Management.

Dugay-Grist, L. and McAlister, R. 2011, Residential Subdivision, CHMP 11837, Grist Archaeology Heritage Management.

East, E. 2016, Housing Subdivision, Cultural Heritage Management Plan number: 14341, U.C.A. Pty Ltd.


Hardiman, L. 2016, *Proposed Development at [Redacted]*, CHMP 13907, Alpha Archaeology Pty Ltd.

Hill, J. 2015, *Proposed Development at [Redacted]*, CHMP 13969, Alpha Archaeology Pty Ltd.


Matic, A and van der Walt, A 2016, Residential Development, CHMP 14384, Pragmatic Cultural Heritage Services Pty Ltd.


Mitchel, J. 2014, Proposed Residential Development at, CHMP 13201, Alpha Archaeology Pty Ltd.


Murphy, A. and Morris, A. 2013, Residential Subdivision, CHMP 12437, Archaeology at Tardis.

Murphy, A. and Rymer, T. 2016, Subdivision of Land, CHMP 14221, Archaeology at Tardis.

Myers, S., Mirams, S. and Mallett, T. 2016, Housing Subdivision and Construction of Four Dwellings, CHMP 13972, Archlink Archaeologists and Heritage Advisors Pty Ltd.

Nichols, H. 2014, Proposed Coastal Resource Centre, Mordialloc, CHMP 13118, TerraCulture Heritage Consultants Pty Ltd.


Oataway, K 2015, Victoria, CHMP 13878, Biosis.


Stevens, J 2015, CHMP 13366, Urban Colours Cultural Resource Managers.


Thomas, K and Compton, S 2013, CHMP 12693, Wandri Archaeology Cultural Heritage Management.


Wackett, L. and McKeagney, J. 2010, CHMP 11105, TerraCulture Heritage Consultants Pty Ltd.


