Werribee Junction & Mambourin East

Precinct Structure Plan

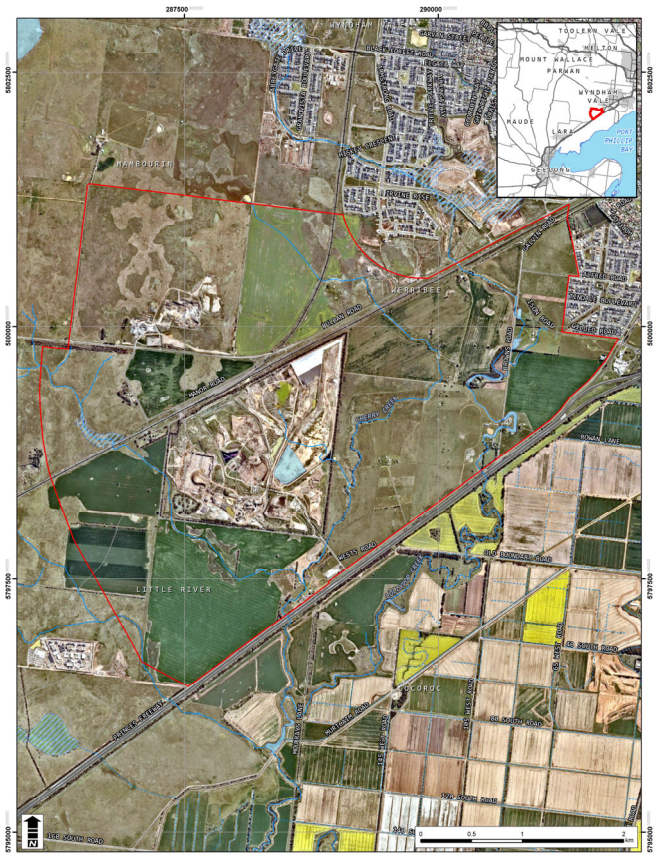
Cultural Values Assessment

Public Version

This report should be used for information purposes only and should not be used for any decision making.

The report was prepared to inform the Due Diligence process for Werribee Junction and Mambourin East.

When planing for these precincts progress to plan preparation, the report will need to be reviewed and updated, as required, to inform that process.



Authors: Dr Peter Mathews, Anna Light, David Mathews, and Joseph Brooke
Date of completion: 26 September 2023
Report prepared for: Victorian Planning Authority
Registered Aboriginal Party: Wadawurrung Traditional Owners Aboriginal Corporation

UNEARTHED HERITAGE

Revision History:

Revision	Revision Date	Details	Authorised	Comments
1	25 April 2022	Preliminary draft	David Mathews	
2	24 January 2023	Updated draft following CVA site visit and workshop	David Mathews	
3	30 August 2023	Final version following RAP and VPA review	David Mathews and WTOAC and VPA	
4	26 September 2023	Final version following RAP and VPA review with confirmation of redactions	David Mathews and WTOAC and VPA	

Acknowledgement of Wadawurrung Traditional Owners

We respectfully acknowledge First Australian peoples as the Traditional Custodians of this country and their continued connection to land, sea, and culture. We also acknowledge the Traditional Owners of the lands covered in this report, the Yaawangi and Worinyaloke balug clans of the Wadawurrung People, whose estates they are, and whose ancestors are mentioned, and we pay our respects to all their Elders, past, present, emerging, and future, and to all First Australian peoples.

Aboriginal and Torres Strait Islander people should be aware that this document contains names of deceased persons.

In addition, some quotations and references contain offensive, racist terms or views that should not have been acceptable in the colonial times when they were written, and certainly are not acceptable now.

Cover photo: The study area (courtesy NearMap)

Wadawurrung
Traditional Owners
Aboriginal Corporation

Office 3, 110 Creswick Road
Ballarat Central, VIC 3350
Australia
P (03) 4308 0420
F (03) 4308 0421

August 2023

Attn: Michael Prior (via email)

RE: Werribee Junction & Mambourin East Cultural Values Assessment (Unearthed Heritage)

Dear Michael,

Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) is a Registered Aboriginal Party (RAP) under the Aboriginal Heritage Act 2006 (Vic) and was established in 1998. WTOAC is governed by a Board of Directors of Wadawurrung Traditional Owners. Each director represents a family group of the Wadawurrung People.

The role of the Corporation is to protect and advance the aspirations of Wadawurrung People by managing their cultural heritage rights and interests while providing a representative voice for Traditional Owners in relation to the management of Wadawurrung Country.

The Wadawurrung Traditional Owners Aboriginal Corporation support the Cultural Values Assessment for the Werribee Junction & Mambourin East, written by Unearthed Heritage.

Moving forward, the Wadawurrung Traditional Owners Aboriginal Corporation look forward to working directly with the Victorian Planning Authority in the development of these documents as they be drafted internally within the Registered Aboriginal Party.

Yours sincerely,



Liam Murphy

Interim CEO

E: Liam@wadawurrung.org.au

Wadawurrung Statement of Significance

Statement of Significance

Since the beginning of the Dreaming, the great ancestor spirit *Bundjil*, the wedge-tailed eagle, created the land, waterways, flora, fauna, laws, and lore. The land of the Wadawurrung – including Djilang (Geelong) meaning 'tongue of the land' and Ballaarat (Ballarat) meaning 'resting place' – encompasses a vast area from the Great Dividing Range in the North to the coast in the South, from the Werribee River in the East and along the Surf Coast in the West.

Comugeen budj-o thalikiyu kin bil bend-ordi-ngadak. Ngarrwabil, boron, guli, bagurrk. Comugeen budjo bengadak ngarr-uk dja, ngubiyt, weagoon gobata gupma wurring-wurring baap beng-ordi-nganak, djarrima murrup-nhuk bengadak.

We deeply respect our people of the past. Elders, children, men, women. We deeply respect their knowledge of Country, water, life, their care of the traditions and of each other, we stand with their spirit.

Gobata Wadawurrung balug jumbuk didalbil murrup-nhuk bundjil monomeeth beek-o weagoon. Mutjak-ak noogie núnder durralully.

Great spirit *Bundjil* told us to take care of the great life within the land. To only take what you need without selfishness.

Bundjil establishes the law that connects us to Country and teaches us that if we look after Country, it will look after us. This knowledge is passed down from Elders in the oral tradition. For tens of thousands of years, the Wadawurrung People cared for Country – sustainably hunting and farming across their lands and waters – working in harmony with the seasons, with water and food available for their own needs and for trade. Their homes and campsites were usually located to water by a *yaluk* (river) or *buluk* (lake) and for a good *kuarka* (fishing place).

Today, Wadawurrung Traditional Owners continue strong connections to the land and accept the responsibility of looking after Country, practicing culture, upholding the dignity of their Ancestors, and passing on knowledge to future generations. Historical remnants of the daily life of past generations of the Wadawurrung People can be found on Country today and include shell middens, fish traps, artefact scatters, stone quarries, scarred trees, stone arrangements, burial, and other sacred sites.

All cultural heritage places within Wadawurrung Country are sacred in cultural terms as they are a tangible link to our past and a non-renewable resource of information about the lifestyle of our Ancestors. The cultural significance afforded to the heritage places by Wadawurrung Traditional Owners must be given a higher standing than the scientific ratings which are based on a European perspective without due regard to the values of Aboriginal culture.

Wunggurrwil gupma bengadak Wadawurrung wurring-wurring baap dja.
All people working together to make Wadawurrung Country and Cultural strong.

Abbreviations

ACHIA	Aboriginal Cultural Heritage Impact Assessment
ACHRIS	Aboriginal Cultural Heritage Register and Information System
FP-SR	First Peoples – State Relations
HA	Heritage Advisor
LDAD	Low Density Artefact Distribution
MESA	Mambourin East Study Area
PSP	Precinct Structure Plan
RAP	Registered Aboriginal Party
UHA	Unearthed Heritage Australia
VPA	Victorian Planning Authority
WJSA	Werribee Junction Study Area
WTOAC	Wadawurrung Traditional Owners Aboriginal Corporation

Executive Summary

This review of Wadawurrung culture, history, and lifeways is a first draft, and will be amended and augmented after further review and consultation. Please note that special attention is paid here to the Wadawurrung language group of the Kulin Nation, although some references have also been made to neighbouring language groups.

This report is a Cultural Values Assessment prepared for Victorian Planning Authority (VPA) to inform planning for Werribee Junction and Mambourin East Precinct Structure Plans (PSPs). The Registered Aboriginal Party (RAP) for the study area is the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC).

The Study Area

The Study Area encompasses *c*.1,714.98 hectares of land combining the 1,153.72 ha of the Werribee Junction Study Area (WJSA) in the south and the 561.26 ha of the Mambourin East Study Area (MESA) in the north. The Study area extends c. 5.6km southwest from the western outskirts of the Werribee township in the northeast and c. 4.5 km northwest from the Princes Highway in the south. The Study Area encompasses Lollypop Creek, Cheery Creek and several associated ephemeral tributaries.

Desktop Assessment

Following the desktop Assessment, the following observations can be made:

- Several assessments were undertaken in disturbed road and or reserve where the level of disturbance made subsurface testing unwarranted (Hernandez & Fitzgerald 2018; Privitera et al. 2021) or where excavation showed highly disturbed subsurface deposits (Rhodes & Pavlides 2000; Orr & Matic 2011; Whincop et al. 2010; Feldman & Whincop 2011), occasionally with isolated stone artefacts present in fill or disturbed contexts (Rhodes & Pavlides 2000; Orr & Matic 2011; Mathews et al. 2010; Feldman & Whincop 2011; Feldman et al 2011);
- Proximity to watercourses or swamp margins influenced potential for Aboriginal cultural material (Rhodes & Pavlides 2000; Orr & Matic 2011; Mathews et al. 2010; Feldman & Whincop 2011; Syme et al. 2010; Di Fazio & Young 2012)
- Localised evidence of alluvial deposits beneath 'basal' clay is suggested to represent deposition of sediments associated with ancient river channels predating human occupation (McAlister & Rhodes 2018)
- It is important to note that the recorded frequency of Wadawurrung places in the geographic region very much reflects investigation location and effort, rather than reflecting the past intensity of Wadawurrung occupation and archaeological deposition in the region, and future investigations of both tangible cultural material and intangible values will add to this understanding.
- The Wadawurrung People with their neighbours to the north and east are part of a larger group, the Kulin Nation.
- Evidence of the Wadawurrung People exists on their Country in the form of thousands of archaeological sites. These sites include rock shelters, quarries, hearths, mounds, burials, fish and eel traps, shell middens, stone arrangements, rock wells, scar trees, artefact scatters, and isolated artefacts.

- Wadawurrung Country is resource-rich, with a wide variety of ecozones, including the coast, temperate rain forest, lakes and marshes, volcanic plains, heathlands and hill country, and open woodlands. The rich waterways and wide variety of native vegetation have provided for the Wadawurrung People in return for their caring for Country.
- For thousands of years the Wadawurrung People and their ancestors developed practices such as the use of fire in their management of the land that sustained them.
- Wadawurrung People participated in wider relationships with neighbouring Aboriginal Peoples, with whom they intermarried and shared in trade and ceremonies.
- The second Invasion had its beginnings after 1835, when European invaders began European settlements on the Bella-wein/Bellarine Peninsula and at Naarm/Melbourne.
- The years that followed saw huge inroads onto Wadawurrung lands by Europeans. By the end of 1836—just 1½ years after the initial land Invasion—European squatters had moved 40 kilometers inland from Djilang/Geelong and Naarm/Melbourne, and within four years all of Wadawurrung Country had been seized.
- The Wadawurrung People resisted the stealing of their Country, their food and water, their language and culture, leading to massacres of their people and the ushering in of an extended period of racism, marginalization, and discrimination.
- A third Invasion of Wadawurrung lands occurred in the 1850s, following the finding of gold on northern Wadawurrung estates from Ballaarat/Ballarat to Yarram Yarram/Beaufort.
- The declining numbers of Wadawurrung People were concentrated into 'reserves' and missions and moved around Victoria—often they were removed off Wadawurrung Country onto land traditionally owned by other First Peoples.
- The Wadawurrung Traditional Owners Aboriginal Corporation states the following concerning the contemporary Wadurrung People:
    - “The Wadawurrung are the seven family groups who are the sole descendants of John Robinson, [their] apical ancestor. According to John Robinson’s birth certificate, he was born in 1846 and lived until 1919. His final resting place is the Warrnambool Cemetery. John had two children (Emily and William) with his wife Esther in Skipton. In 1892 John left Esther and walked to Woolsthorpe with Margaret Anne Matthews. He fathered another five children with Margaret after leaving Skipton. Descendants of John Robinson researched their ancestry and succeeded in 1997 to acquire enough information to be recognised as Traditional Owners. Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) was incorporated under the Aboriginal Councils and Associations Act 1976 to act on behalf of and represent the interests of all Wadawurrung people. The WTOAC was accorded Registered Aboriginal Party (RAP) status on 21st May 2009” (Anonymous 2019).

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1 Study Area

1.1 The project and the study area

This Aboriginal cultural heritage impact assessment (ACHIA) has been prepared for the Victorian Planning Authority (VPA) to inform and support planning for the Werribee Junction and the Mambourin East Precinct Structure Plans (PSPs)

The Study Area encompasses *c*.1,714.98 hectares of land combining the 1,153.72 ha of the Werribee Junction Study Area (WJSA) in the south and the 561.26 ha of the Mambourin East Study Area (MESA) in the north (Figure 1-1 & Figure 1-2). The Study area extends c. 5.6km southwest from the western outskirts of the Werribee township in the northeast and c. 4.5 km northwest from the Princes Highway in the south. The Study Area encompasses Lollypop Creek, Cherry Creek and several associated tributaries (seasonally flowing).

The primary purpose of this ACHIA is to document the known and potential Aboriginal cultural heritage values of the study area to assist in planning work and development designs within the study area. Post-contact/non-Indigenous heritage is not considered within this report.

The study area is located within the City of Wyndham local government area. The VPA has provided the following description of the PSPs:

1.2 Proponent

The proponent of this Aboriginal Cultural Values Assessment is the Victorian Planning Authority (VPA)

1.3 Registered Aboriginal Party (RAP)

The *Aboriginal Heritage Act 2006* establishes a system of Registered Aboriginal Parties (RAPs) that are given the responsibility of most Aboriginal heritage matters within their current registered area. Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) is the RAP for the Study Area. Pursuant to the *Aboriginal Heritage Act 2006* (Victoria), WTOAC were appointed a RAP in 2007.

1.4 Authors

This report was prepared by Unearthed Heritage Australia Pty Ltd. David Mathews, Anna Light Emeritus Professor Peter Mathews and Joseph Brooke, are the authors of this report.

David[1] has over 15 years of experience in heritage management and archaeology and is qualified as both a heritage advisor and an archaeologist and is on the FP-SR list of approved Victorian heritage advisors. David's previous archaeological experience also includes archaeological investigations of a similar scope and scale as this CHMP.

Anna Light is a Heritage Advisor in accordance with heritage advisor qualification requirements under Section 189 of the *Aboriginal Heritage Act* 2006. Anna gained a Bachelor of Arts (Archaeology, Honours, first class) from La Trobe University in 2001 and has provided heritage advice and services for 18 years.

Peter Mathews[2] is an Emeritus Professor of archaeology and a MacArthur Fellow with extensive experience in archaeology, linguistics and ethnohistory.

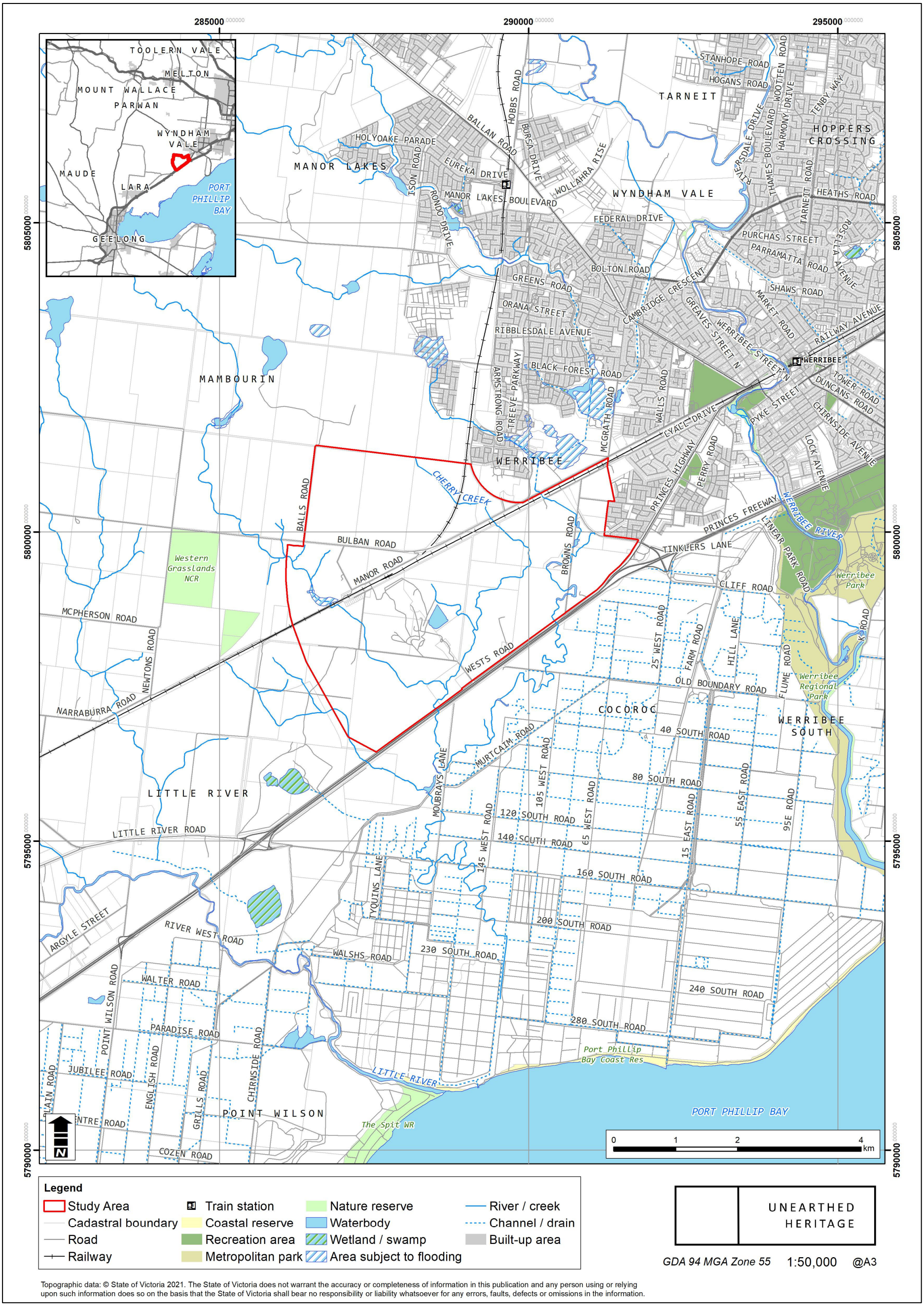
[1] Bachelor of Archaeology (Honours – first class) 2005, University of Calgary, Canada.
[2] Bachelor of Arts, Honours - first class (1975), University of Calgary, Canada.
MPhil (1979), Yale

Joseph[3] has over 14 years of experience in cultural heritage management and archaeology and is qualified as a heritage advisor and an archaeologist, and is on the FP-SR list of approved Victorian heritage advisors. Joseph is a full member of the Australian Association of Consulting Archaeologists Inc. Joseph's previous archaeological experience includes archaeological investigation of a similar scope and scale as this assessment.

This report focusses on Aboriginal heritage and has been prepared with consideration for requirements of the Victorian *Aboriginal Heritage Act 2006*.

PhD (1988), Yale

[3] Bachelor of Archaeology (Honours – first class) 2006, La Trobe University.



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Figure 1-1 Location of the Study Area

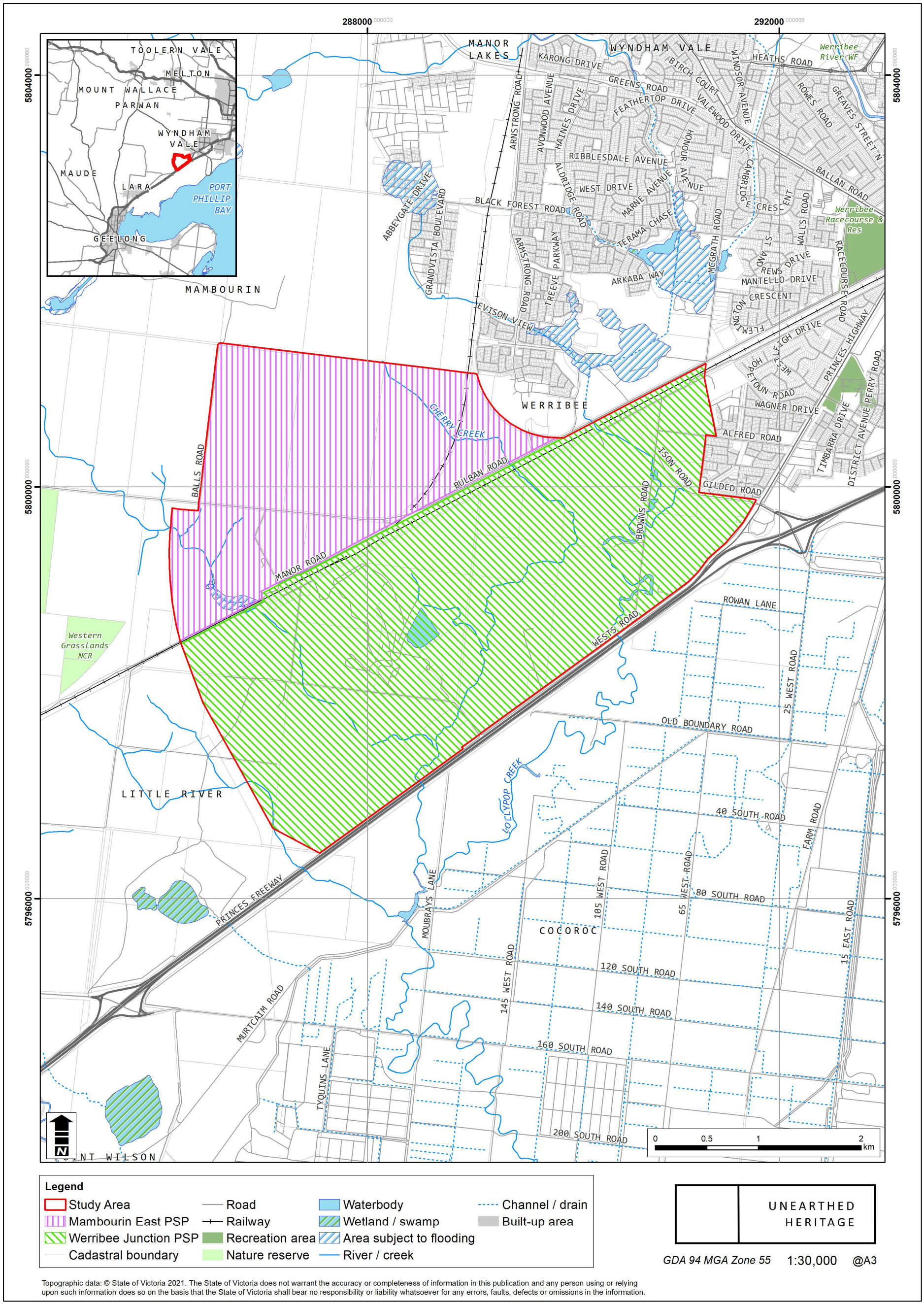


Figure 1-2 Location of the Werribee Junction Study Area and the Mambourin East Study Area



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Figure 1-3 Photomap of the Study Area

2 Legislative requirements

2.1 Aboriginal Heritage Act 2006

The Victorian *Aboriginal Heritage Act 2006* (the AH Act) and its Regulations (the Aboriginal Heritage Regulations 2018, or AH Regulations), is the primary piece of legislation providing protection for Aboriginal cultural heritage in Victoria.

The AH Act establishes a number of processes to protect Aboriginal cultural heritage, in particular how to manage cultural heritage for proposed developments. The principal method for this management is a CHMP, which includes a cultural heritage investigation and assessment of proposed development in an **activity area** and provides management conditions that must be followed to manage and mitigate impact on cultural heritage within the activity area. This process includes the involvement of and consultation with Registered Aboriginal Parties (RAPs), who are also responsible for the evaluation and approval or rejection of CHMPs for their prescribed area. This consultation is undertaken through meetings and through involvement in fieldwork in the identification and assessment of Aboriginal heritage, and subsequent development of management conditions.

The requirement for the undertaking of a CHMP is triggered by the AH Regulations (Regulation 7) when an activity includes a *high impact activity* and the defined activity area includes an *area of cultural heritage sensitivity*. These are further defined below.

2.1.1 High Impact Activities

The AH Regulations define numerous **high impact activities**, one of which is the subdivision of land into three or more lots (Regulation 46). As such, any properties that propose subdivisions into three or more lots would be classed as a high impact activity.

2.1.2 Areas of Cultural Heritage Sensitivity

Areas of cultural heritage sensitivity (CHS) are defined in the AH Regulations by a number of different spatial parameters intended to reflect where *Aboriginal cultural heritage places* (Places) are most commonly found. The study area includes the following areas of CHS; being:

- Registered cultural heritage places and land within 50 m of these (r. 25).
- Land within 200 m of a waterway and wetland (r. 26).
- Declared Ramsar wetlands (r. 29).
- Koo Wee Rup Plain (r. 34)

The AH Regulations state that an area that has been previously subject to **significant ground disturbance** is no longer an area of CHS. Significant ground disturbance is defined in r. 5 as disturbance of the topsoil layer by machine excavation or grading, but excludes ploughing.

2.1.3 Registered Aboriginal Parties

The AH Act establishes a system of Registered Aboriginal Parties (RAPs) that are given the responsibility of most Aboriginal heritage matters within their registered area, including being responsible for the evaluation of any CHMPs in that area. The RAP for the entirety of the study area is:

- Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC).

3 Consultation

3.1 Government consultation

A Notice of Intent to Survey was submitted to the Secretary to FP-SR and the RAP (Appendix C).

3.2 Aboriginal stakeholder consultation

The Registered Aboriginal Party (RAP) for the study area is:

- The Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC).

The notice of intent to carry out a survey was provided to the RAP on 20 February 2022, (see Appendix C). The approach to the CVA were discussed with the RAP during meetings and subsequent email correspondence.

The discussed scope of the CVA included a four day on-Country visit and a one day workshop.

4 Desktop Assessment

This section provides background information on the study area and the surrounding region. This information is presented to provide an understanding of the physical, historical, cultural and archaeological setting in which the study area is located. This information is useful in developing archaeological place prediction models. Anna Light, Peter Mathews and David Mathews undertook the background research for the desktop assessment. There were no obstacles encountered to undertaking the desktop assessment.

4.1 Aims of the Assessment

The aims of the desktop assessment were:

- To determine the level of previous Aboriginal heritage investigation of the study area and the surrounding region;
- To determine the presence of registered Aboriginal heritage places within the study area and the surrounding region;
- To determine the environmental context of the study area; and
- Review the historical and cultural setting of the study area and surrounding region.

The methods used to undertake the desktop assessment included:

- Reviewing appropriate sources, including Victorian government on-line information, and summarising relevant environmental background;
- Searching the Victorian Aboriginal Heritage Register (VAHR) and other research sources (for example, consultancy reports and academic research) for information relating to the study area and the geographic region
    - A VAHR search was undertaken
- Reviewing this information to identify and characterise Aboriginal site types likely to be present within the study area and to obtain relevant information to inform the assessment.

4.2 Environmental Context

This section provides an overview of the environmental context of the study area, with particular focus on factors that may have influenced past human behaviour and hence archaeological place formation processes and the distribution of Wadawurrung living cultural heritage places. The land-use history of the activity area is also reviewed as it assists in identifying any site formation processes that may have impacted the occurrence and/or location of Wadawurrung living cultural material and values.

Geographic Region

In order to allow for an understanding of broader environmental resources available to the Wadawurrung who utilised the study area, it is necessary to place geographical parameters on this desktop assessment to provide a meaningful context broad enough to capture regional environmental and Wadawurrung place distribution patterns, while remaining targeted so that these patterns are not missed. While the study area itself provides a large information sample given its size, the geographic region used for this assessment covers an area within a *c*.500m radius (as per Figure 4-1). This geographic region provides a view of immediately neighbouring accessible resources and variations regarding flora and fauna, geology, soils, geomorphology, the occupation by Wadawurrung people since deep time that may have led to the creation of Wadawurrung places, living cultural heritage meanings and obligations to such places and or corridors, whether today on the terrestrial

surface of this study area and the post-contact land-use history and activities that may have disturbed Wadawurrung places.

4.2.1 Geology and Geomorphology

The study area and the geographic region are situated across two bioregions, with the majority being located on the Victorian Volcanic Plan (VVP) and a small area in the east located on Otway Plain (OP) (ACHRIS 2022). The entirety of the MESA is located on the VVP and a small section at the east of the WJSA is situated on OP. The study area is located on the Western Plains geomorphological unit, and comprises two subunits, with the MESA comprised entirely of the 'Plains with poorly developed drainage and shallow regolith' (6.1.3) geomorphological unit (GMU) and the WJSA comprising mainly GMU 6.1.3 as above, with a small area of 'Terraces and floodplains, and coastal plains' (GMU 6.2.5) correlating with the OP Bioregion location (Figure 4-1).

GMU 6.1.3 ('Plains with poorly developed drainage and shallow regolith') is described as (VRO 2022a):

> "*The plains developed on the older Newer Volcanic lavas that formed in the Late Pliocene and during the Pleistocene, from about two million year ago and up to one million years ago, are generally characterised by thin regolith development and poorly developed drainage. In these landscapes, flow boundaries are obvious, and corestones ('floaters') are often seen at the surface. Shallow drainage lines have developed, often along the boundaries of lava flows. Discontinuous drainage lines may end in ephemeral wetlands and swamps. Examples of this landform occur in the region from Warrambine to Armytage, with the best examples immediately north of the Wingeel Swamp. Associated soil types are sodic and non-sodic texture contrast (moderately deep to deep) soils (Sodosols) and some gradational (shallow to moderately deep) soils (Dermosols), and gilgai (mound and rise ground surfaces) due to swelling and shrinking clay soils can lead to road and building foundation problems*."

GMU 6.2.5 ('Terraces and floodplains, and coastal plains') is located on sedimentary plains associated with the Moolap Sunkland (a shallow seaway during the late interglacial, 125 kya, and during the Holocene maximum, 6 kya) and comprising alluvium, alluvial terraces and floodplains (VRO 2022b).

In terms of geology, the plains are dominated by the Newer Volcanic Group basalt flows (Neo), dotted with numerous swamp and lake deposits (Qm1) and with linear stretches of colluvium (Qc1) associated with creeks (Figure 4-2). The MESA is almost entirely situated on the Newer Volcanic Group Basalt Flows (98.7%) with colluvium associated with Cherry Creek making up the remainder. To the south, WJSA is also dominated by the Newer Volcanic (76.6%), with Deutgam silt (Nxe) associated with the eastern extent of the WSJA and smaller areas of colluvium and swamp and lake deposits proximal to creeks and swamps.

The Study Area slopes down from the higher elevations of the MESA in the north (c. 50 m asl) to the lower and flatter plain of the WJSA in the south (c. 10 m asl) (Figure 4-3 shows the geographic region and study area overlain on a digital elevation model or DEM). Landforms within the geographic region can be divided into several useful analytical categories:

- Foothills
- Flat to gently undulating plain
- Stony rises
- Swamps
- Creeks and tributaries
- Creeks; and
- Floodplain.

Table 4-1: Geomorphological units within the Geographic Region

Geomorphological Units (Tier 3)	GMU Tier 1 Description	GMU Tier 2 Description	GMU Tier 3 Description	Lithology	Area (ha)	Area (%)
6.1.3	Western Plains (WP)	Volcanic plains	Plains with poorly developed drainage and shallow regolith (Wingeel)	Basalt	2150.26	79.67%
6.2.5	Western Plains (WP)	Sedimentary plains (Plains on unconsolidated (sedimentary) deposits	Terraces and floodplains, and coastal plains (Barwon River, Moolap sunklands, Cape Otway)	Alluvium	548.70	20.33%
Total					**2698.96**	**100.00%**

Table 4-2: Geomorphological units within the Study Area

Geomorphological Units (Tier 3)	GMU Tier 1 Description	GMU Tier 2 Description	GMU Tier 3 Description	Lithology	Area (ha)	Area (%)
6.1.3	Western Plains (WP)	Volcanic plains	Plains with poorly developed drainage and shallow regolith (Wingeel)	Basalt	1466.12	85.49%
6.2.5	Western Plains (WP)	Sedimentary plains (Plains on unconsolidated (sedimentary) deposits	Terraces and floodplains, and coastal plains (Barwon River, Moolap sunklands, Cape Otway)	Alluvium	248.86	14.51%
Total					**1714.98**	**100.00%**

Table 4-3: Geomorphological units within the WJSA

Geomorphological Units (Tier 3)	GMU Tier 1 Description	GMU Tier 2 Description	GMU Tier 3 Description	Lithology	Area (ha)	Area (%)
6.1.3	Western Plains (WP)	Volcanic plains	Plains with poorly developed drainage and shallow regolith (Wingeel)	Basalt	11.79	1.02%
6.2.5	Western Plains (WP)	Sedimentary plains (Plains on unconsolidated (sedimentary) deposits	Terraces and floodplains, and coastal plains (Barwon River, Moolap sunklands, Cape Otway)	Alluvium	1141.93	98.98%
Total					**1153.71**	**100.00%**

Table 4-4: Geomorphological units within the MESA

Geomorphological Units (Tier 3)	GMU Tier 1 Description	GMU Tier 2 Description	GMU Tier 3 Description	Lithology	Area (ha)	Area (%)
6.1.3	Western Plains (WP)	Volcanic plains	Plains with poorly developed drainage and shallow regolith (Wingeel)	Basalt	561.26	100.00%
Total					**561.26**	**100.00%**

Table 4-5: Geological units within the Geographic Region

ID	Name	Description	Lithology	Geological History	Area (ha)	Area (%)
Neo	Newer Volcanic Group - basalt flows (Neo): generic	Olivine tholeiite, quartz tholeiite, basanite, basaltic icelandite, hawaiite, mugearite, minor scoria and ash, fluvial sediments: tholeiitic to alkaline; includes sheet flows and valley flows and intercalated gravel, sand, clay	alkali basalt (major [proportion]); tholeiitic basalt (major [proportion]); tuff (minor [proportion]); scoria (minor [proportion]); alluvium (minor [proportion])	Miocene to Holocene (lava flow [process] - eruption centre [environment]; water [process] - fluvial [environment])	2113.41	78.30%
Nxe	Deutgam Silt (Nxe): generic	Silt, minor sand and gravel	silt [material] (major [proportion]); sand (minor [proportion]); gravel [material] (minor [proportion])	Pliocene to Pleistocene (channelled stream flow - fluvial [environment])	480.55	17.80%
Qc1	Colluvium (Qc1): generic	Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting	diamictite (dominant); rubble (significant); clay [lithology] (significant); silt [material] (significant); sand (significant); gravel [material] (significant)	Pliocene to Holocene (sheet flow - colluvial)	36.69	1.36%
Qhw	Waste deposits (Qhw): generic	Clayey silt containing organic and non-organic material; land fill of various kinds.	fill (all)	Holocene to Holocene (human agents - terrestrial)	42.17	1.56%
Qm1	Swamp and lake deposits (Qm1): generic	Grey to black carbonaceous mud, silt, clay, minor peat: generally unconsolidated; rare dolomite	mud (major [proportion]); silt [material] (significant); clay [lithology] (significant); peat (minor [proportion]); dolostone (rare)	Pleistocene to Holocene (detrital deposition still water - swamp/marsh/bog)	26.13	0.97%
Total					**2698.96**	**100.00%**

Table 4-6: Geological units within the Study Area

ID	Name	Description	Lithology	Geological History	Area (ha)	Area (%)
Neo	Newer Volcanic Group - basalt flows (Neo): generic	Olivine tholeiite, quartz tholeiite, basanite, basaltic icelandite, hawaiite, mugearite, minor scoria and ash, fluvial sediments: tholeiitic to alkaline; includes sheet flows and valley flows and intercalated gravel, sand, clay	alkali basalt (major [proportion]); tholeiitic basalt (major [proportion]); tuff (minor [proportion]); scoria (minor [proportion]); alluvium (minor [proportion])	Miocene to Holocene (lava flow [process] - eruption centre [environment]; water [process] - fluvial [environment])	1437.56	83.82%
Nxe	Deutgam Silt (Nxe): generic	Silt, minor sand and gravel	silt [material] (major [proportion]); sand (minor [proportion]); gravel [material] (minor [proportion])	Pliocene to Pleistocene (channelled stream flow - fluvial [environment])	240.79	14.04
Qc1	Colluvium (Qc1): generic	Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting	diamictite (dominant); rubble (significant); clay [lithology] (significant); silt [material] (significant); sand (significant); gravel [material] (significant)	Pliocene to Holocene (sheet flow - colluvial)	35.62	2.08
Qm1	Swamp and lake deposits (Qm1): generic	Grey to black carbonaceous mud, silt, clay, minor peat: generally unconsolidated; rare dolomite	mud (major [proportion]); silt [material] (significant); clay [lithology] (significant); peat (minor [proportion]); dolostone (rare)	Pleistocene to Holocene (detrital deposition still water - swamp/marsh/bog)	1.01	0.06
Total					**1714.98**	**100.00**

Table 4-7: Geological units within the WJSA

ID	Name	Description	Lithology	Geological History	Area (ha)	Area (%)
Neo	Newer Volcanic Group - basalt flows (Neo): generic	Olivine tholeiite, quartz tholeiite, basanite, basaltic icelandite, hawaiite, mugearite, minor scoria and ash, fluvial sediments: tholeiitic to alkaline; includes sheet flows and valley flows and intercalated gravel, sand, clay	alkali basalt (major [proportion]); tholeiitic basalt (major [proportion]); tuff (minor [proportion]); scoria (minor [proportion]); alluvium (minor [proportion])	Miocene to Holocene (lava flow [process] - eruption centre [environment]; water [process] - fluvial [environment])	883.33	76.56%

ID	Name	Description	Lithology	Geological History	Area (ha)	Area (%)
Nxe	Deutgam Silt (Nxe): generic	Silt, minor sand and gravel	silt [material] (major [proportion]); sand (minor [proportion]); gravel [material] (minor [proportion])	Pliocene to Pleistocene (channelled stream flow - fluvial [environment])	240.79	20.87%
Qc1	Colluvium (Qc1): generic	Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting	diamictite (dominant); rubble (significant); clay [lithology] (significant); silt [material] (significant); sand (significant); gravel [material] (significant)	Pliocene to Holocene (sheet flow - colluvial)	28.58	2.48%
Qm1	Swamp and lake deposits (Qm1): generic	Grey to black carbonaceous mud, silt, clay, minor peat: generally unconsolidated; rare dolomite	mud (major [proportion]); silt [material] (significant); clay [lithology] (significant); peat (minor [proportion]); dolostone (rare)	Pleistocene to Holocene (detrital deposition still water - swamp/marsh/bog)	1.01	0.09%
Total					**1714.98**	**100.00**

Table 4-8: Geological units within the MESA

ID	Name	Description	Lithology	Geological History	Area (ha)	Area (%)
Neo	Newer Volcanic Group - basalt flows (Neo): generic	Olivine tholeiite, quartz tholeiite, basanite, basaltic icelandite, hawaiite, mugearite, minor scoria and ash, fluvial sediments: tholeiitic to alkaline; includes sheet flows and valley flows and intercalated gravel, sand, clay	alkali basalt (major [proportion]); tholeiitic basalt (major [proportion]); tuff (minor [proportion]); scoria (minor [proportion]); alluvium (minor [proportion])	Miocene to Holocene (lava flow [process] - eruption centre [environment]; water [process] - fluvial [environment])	554.23	98.78%
Qc1	Colluvium (Qc1): generic	Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting	diamictite (dominant); rubble (significant); clay [lithology] (significant); silt [material] (significant); sand (significant); gravel [material] (significant)	Pliocene to Holocene (sheet flow - colluvial)	7.04	1.25%
Total					**561.26**	**100.03%**

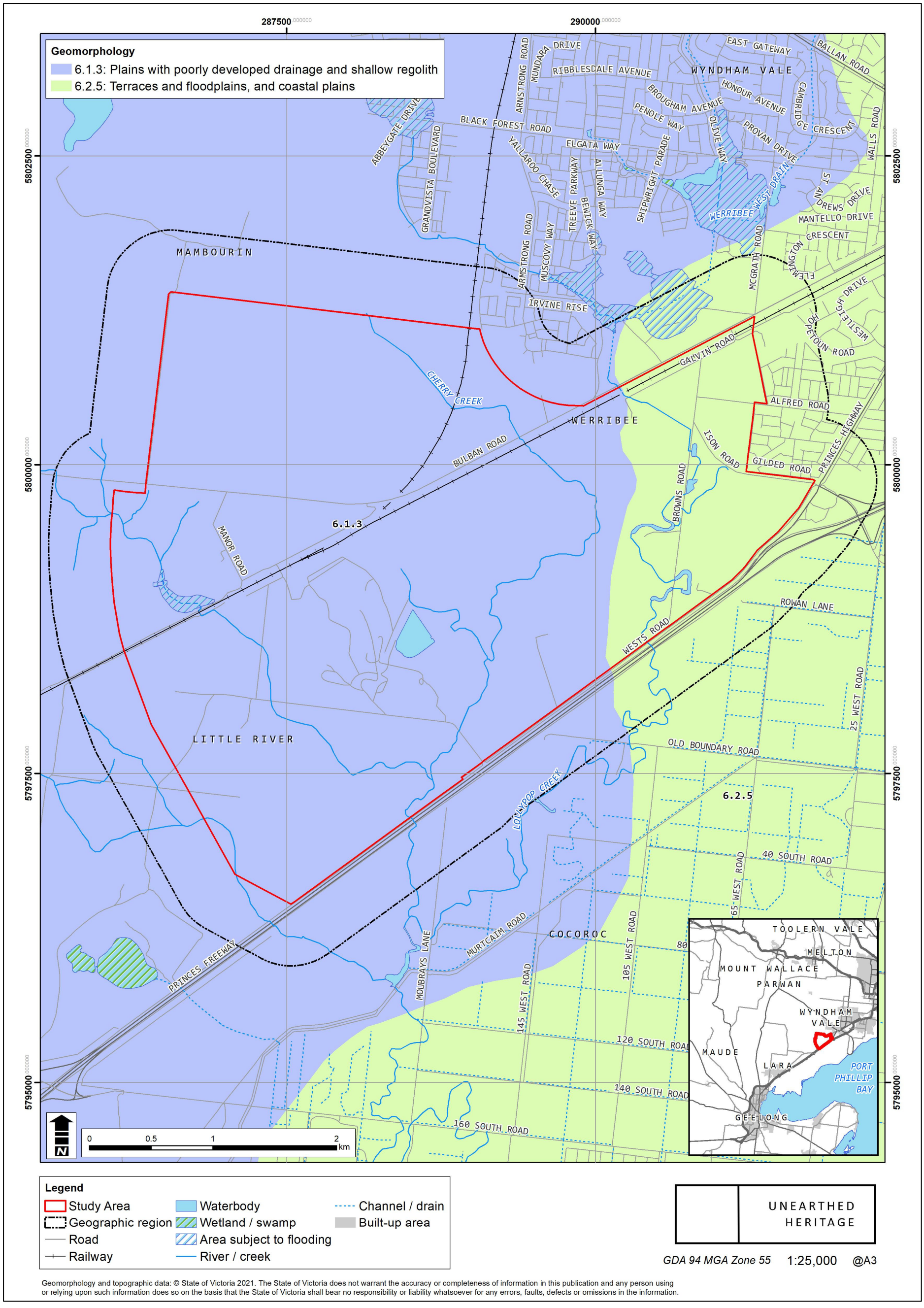


Figure 4-1 Geomorphology of the Study Area and geographic region

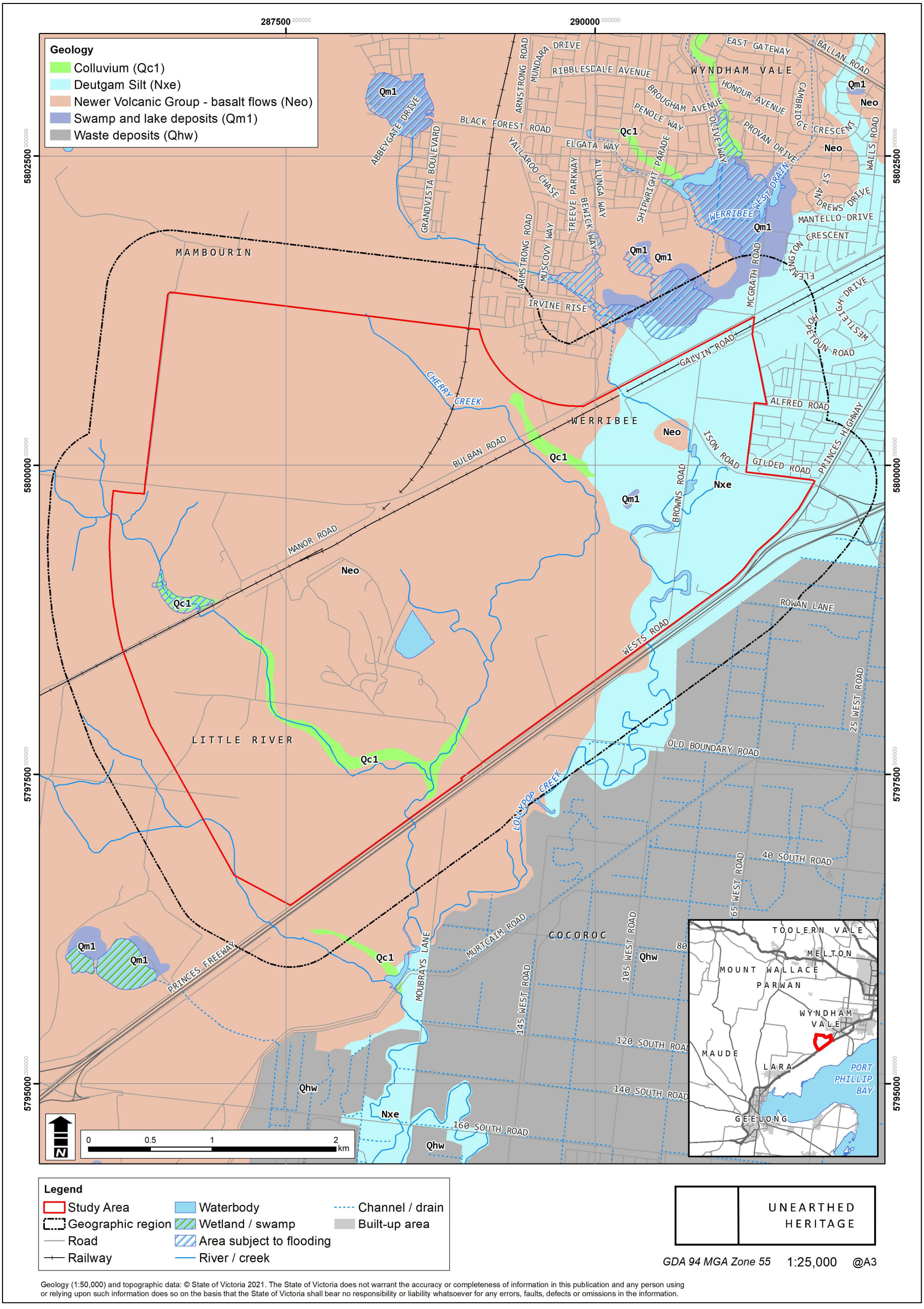
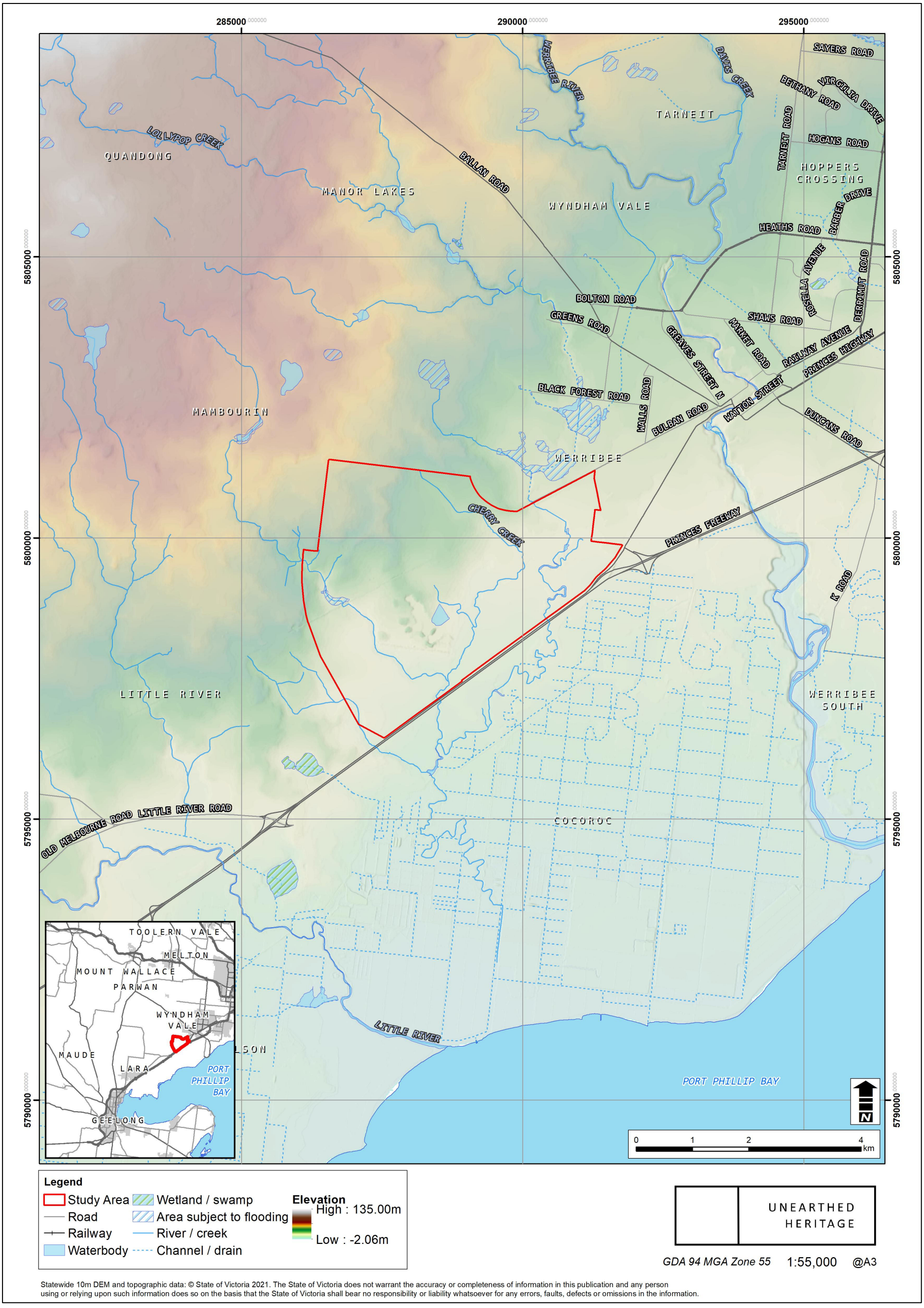


Figure 4-2 Geology of the Study Area and geographic region



Statewide 10m DEM and topographic data: © State of Victoria 2021. The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

Figure 4-3 Digital Elevation Model (DEM) of the Study Area

4.2.2 Flora and Fauna

Prior to European settlement and land-use, both the geographic region and the Study Area would have been dominated by Plains Grasslands and Chenopod Shrublands (Ecological Vegetation Class (EVC) 132), with small areas of Wetlands (EVC 125) and Plains Woodland or Forests (EVC 55) occurring in the east (Figure 4-5, Table 4-9, Table 4-10, Table 4-11, Table 4-12).

Plains Grasslands and Chenopod Shrublands (EVC 132) is described as primarily treeless and dominated by grass and herb species and associated with cracking basalt soils prone to waterlogging (DELWP 2022).

Plains Grassy Woodland (EVC 55) is described as being an open, eucalypt woodland with species, primarily Biyal / River Red Gum, growing up to 15 m tall on poorly drained, fertile soils on flat or gently undulating plains at low elevations (DELWP 2022). The understorey would have comprised shrubs, species-rich grasses and herbs.

Wetland environments would have been associated with treeless shrubland (EVC 125).

In the south of the geographic region is the northern boundary of the Ramsar listed 'Port Phillip Bay (Western Shoreline) and Bellarine Peninsula' site which includes over 150 km^2 of significant wetlands and contain at least 330 recorded indigenous marine flora species (including the endangered Spiny Rice-Flower) (DELWP 2018, DELWP 2022) (Figure 4-4). The wetlands supported fauna such as shorebirds, waterbirds, and marine mammals (dolphins and seals) (DELWP 2018). The WJSA includes c. 150 m^2 of this RAMSAR site and the MESA includes c. 44 m^2 of this RAMSAR site.

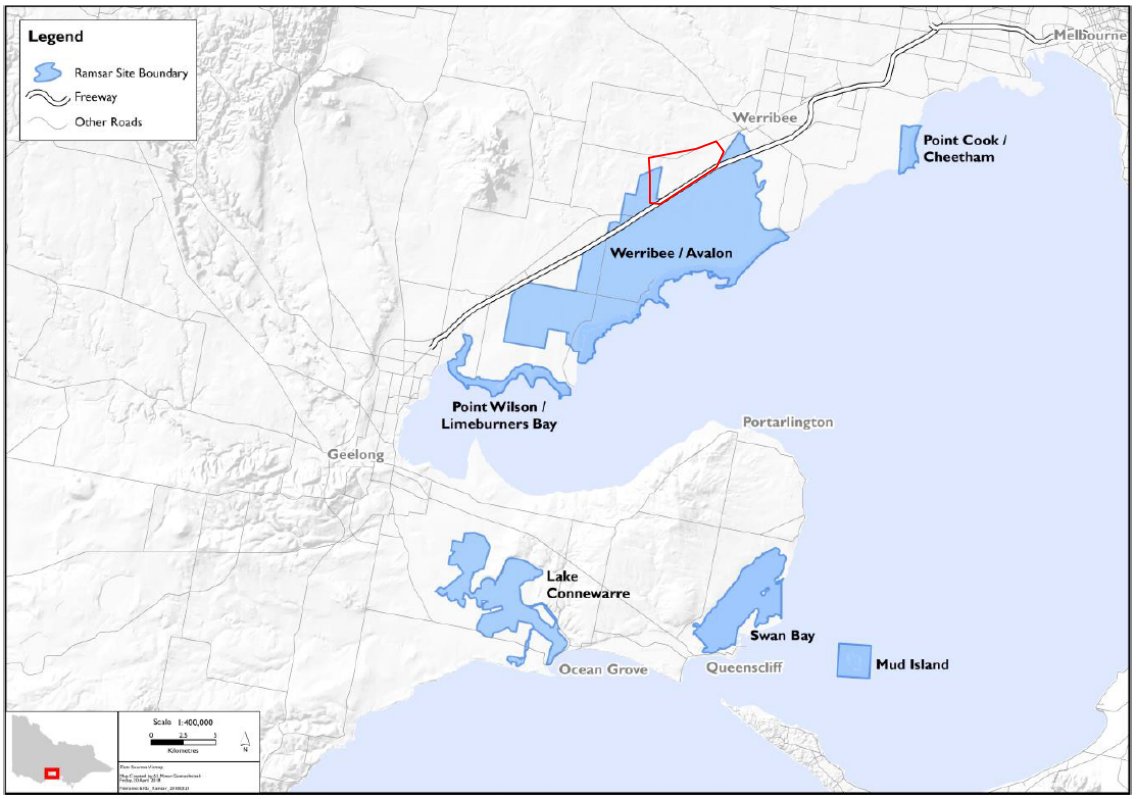


Figure 4-4 Map of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site. Source: DELWP 2018: 14) (study Area roughly marked in red).

The broad range of vegetation in the region historically provided Wadawurrung people in the area access to a range of plant and animal food resources, including Go-yin / swamp wallabies, Goim /

eastern grey kangaroos, Bu / bandicoots, Yurn / quolls, Mon.ngarrk / echidnas, amphibians and reptiles which would have populated the area (BWVP 2022). Waterways and swamp areas would have provided further food sources, such as Buniya / eels, fish, birds and eggs. Coastal margins, c. 5.5 km south of the Study Area, would have provided access to fish and shellfish. All of these have been noted by early explorers and settlers travelling or settling in the region as well as the collection of plant foods such as Murnongs, grasses and seeds.

The vegetation itself would have also provided many resources to Wadawurrung people, such as wood and bark for tools, plant material for medicinal purposes, and fibres for netting and bags.

Table 4-9: EVC units within the geographic region (DELWP 2022)

EVC Code	Group Name	EVC Name	Sub-group	Area (ha)	Area (%)
0055	Plains Woodlands or Forests	Plains Grassy Woodland	Freely-draining	275.81	10.22%
0125	Wetlands	Plains Grassy Wetland	Freshwater	27.31	1.01%
0132	Plains Grasslands and Chenopod Shrublands	Plains Grassland	Clay soils	2395.83	88.77%
Total				**2698.96**	**100.00%**

Table 4-10: EVC units within the Study Area (DELWP 2022)

EVC Code	Group Name	EVC Name	Sub-group	Area (ha)	Area (%)
0055	Plains Woodlands or Forests	Plains Grassy Woodland	Freely-draining	108.40	6.32%
0132	Plains Grasslands and Chenopod Shrublands	Plains Grassland	Clay soils	1606.58	93.68%
Total				**27535.35**	**100.00%**

Table 4-11: EVC units within the WJSA (DELWP 2022)

EVC Code	Group Name	EVC Name	Sub-group	Area (ha)	Area (%)
0055	Plains Woodlands or Forests	Plains Grassy Woodland	Freely-draining	108.40	9.40%
0132	Plains Grasslands and Chenopod Shrublands	Plains Grassland	Clay soils	1045.31	90.60%
Total				**1153.71**	**100.00%**

Table 4-12: EVC units within the MESA (DELWP 2022)

EVC Code	Group Name	EVC Name	Sub-group	Area (ha)	Area (%)
0132	Plains Grasslands and Chenopod Shrublands	Plains Grassland	Clay soils	561.26	100.00
Total				**561.26**	**100.00%**

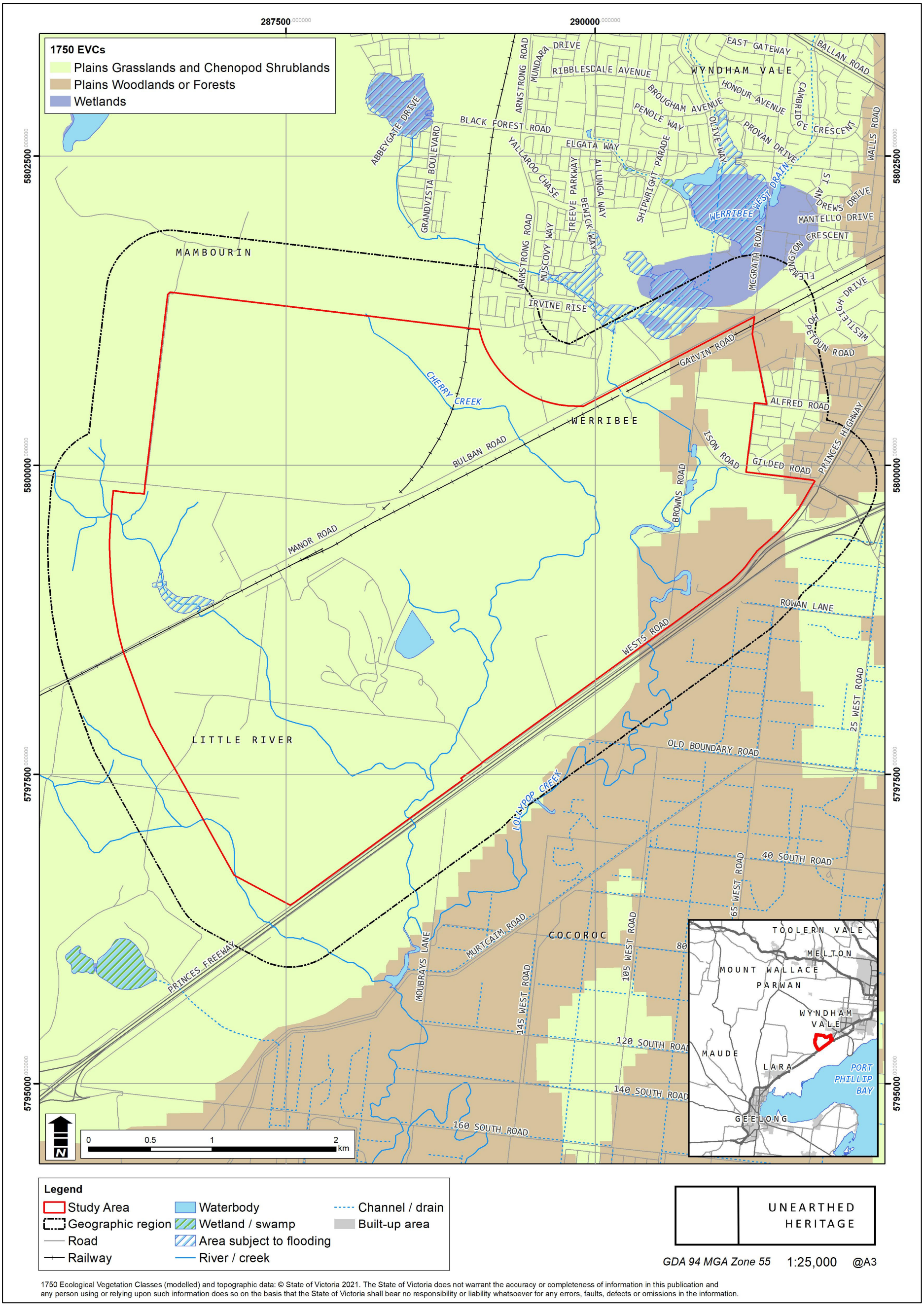
4.2.3 Climate

In the study region, summer average maximum and minimum temperatures are *c*.26.6° and 11.9° Celsius, respectively, while in winter the average maximum and minimum are 14.7° and 5.2° Celsius, respectively (BOM 2021). The average annual rainfall is *c*.454.8 mm (BOM 2021).

While these climatic conditions would have placed no strictures on Wadawurrung occupation, they would have clearly led to differential seasonal occupation across different parts of the landscape. Additionally, during the long period of Wadawurrung and Kulin Nation residency of the broader region (at least *c*.37,000 years BP), climatic conditions have varied significantly, including colder and drier conditions that would have seen the drying up of Nerm / Port Phillip Bay, and warmer and wetter

periods that would have provided different challenges and opportunities for occupation (Mulvaney and Kamminga 1999).

The current coastline of Nerm / Port Phillip Bay (and Coriayo / Corio Bay) and the Bella-wein / Bellarine Peninsula formed *c*. 6 kya after the sea settled to its current level (rising above current level then falling 1-2 m to contemporary level). During the Pleistocene ice age, low sea levels allowed a land mass to extent across what is now Nerm / Port Phillip Bay . Between *c*.18-6 kya as the climate warmed, this land mass was submerged and the current bay formed (Bird 2011: 4).



1750 Ecological Vegetation Classes (modelled) and topographic data: © State of Victoria 2021. The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

Figure 4-5 Modelled 1750s EVCs of the study area and the geographic region

5 Wadawurrung Country Context

5.1 Wadawurrung Healthy Country Plan

In December 2020 the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) approved the release of their *Paleert Tjaara Dja – let's make Country good together 2020-2030: Wadawurrung Country Plan*.

The core Principles of the *Wadawurrung Healthy Country Plan* (WTOAC 2020, 5) are:

> *Wadawurrung are a proud first nations people committed to working with our members, neighbours, government agencies, land and water managers and the broader community as we protect and heal Country together for all people.*
> Paleet Tjaara Dja – Let's make Country good together 2020-2030 – *Wadawurrung Country Plan invites a respectful working, learning and committed sharing together approach based on cultural knowledge and practices.*
> *The principles that guide our partnerships in Caring for Country are:*
> 1. *Respect and Acknowledgement for Wadawurrung Traditional Owners and our cultural, ancestral, spiritual and historical connections to Country.*
> 2. *Wadawurrung people's right to access and care for Country as an expression of our cultural obligation, responsibilities, connectedness, our well-being and as our economic basis.*
> 3. *Country is interconnected, alive with dreaming and creation stories, imprinted with our cultural values and social history – there is no separation between cultural and natural resources and people.*
> 4. *Free, prior and informed consent requires genuine engagement from the beginning of decision-making or project planning in a way that is relevant to us, providing timely information and processes that support cultural governance.*
> 5. *We seek partnerships that are genuine, are of benefit to Wadawurrung people, are in the spirit of reconciliation, that address past negative impacts and enable self-determination and real outcomes.*
> 6. *Providing appropriate and equitable resourcing for Wadawurrung people to participate in their obligation of care and management of Country.*
> 7. *Open and honest relationships that sustain effective working partnerships.*
> 8. *Wadawurrung Traditional Owners are the holders of cultural knowledge.*
> 9. *Respect for and appropriate protection of our intellectual and cultural property rights in sharing information.*

With these Principles in mind, the *Wadawurrung Healthy Country Plan* has identified 'Our Values – Building Blocks'. Thus, "These are the important things that we want to look after," and they include Values set out in Table 5-1.

Table 5-1 Wadawurrung Country Values

	Values	Code
'Our Values – Building Blocks' **"These are the important things that we want to look after"**	• Wadawurrung culture and people	i.
	• Enterprise and employment	ii.
	• Wadawurrung cultural sites and places	iii.
	• Bush tucker, medicines and resources	iv.
	• *Yulluk* – Waterways, Rivers, estuaries and wetlands	v.
	• Inland Country	vi.
	• Coastal Country	vii.
	• *Warre* - Sea Country	viii.
	• Native Animals	ix.

Further, the *Wadawurrung Healthy Country Plan* has identified 'Threats to Our Values'. Thus, "There are lots of threats that stop our values from being healthy but some are worse than others", and these are detailed in Table 5-2.

Table 5-2 Wadawurrung Country Threats

	Threats	Code
'Threats to Our Values' **"There are lots of threats that stop our values from being healthy but some are worse than others"**	• Urban Development	a.
	• Lack of Capacity	b.
	• Lack of Recognition	c.
	• Vandalism	d.
	• Inappropriate Visitation	e.
	• Lack of coordination between land managers	f.
	• Location of windfarms	g.
	• Water extraction	h.
	• Sea level rise	i.
	• Drought	j.
	• Cinnamon fungus	k.
	• Weeds	l.
	• Foxes and Cats	m.
	• Rabbits	n.
	• Rising sea temperatures, and	o.
	• Bushfires	p.

The Wadawurrung Healthy Country Plan has additionally identified 3 Programs and 18 Strategies to "… focus on to reduce the worst threats and improve the health of our values." These Programs and Strategies are detailed in Table 5-3.

Table 5-3 Wadawurrung Country Plan Programs and Strategies

Programs	**Strategies**	**Code**
Gobata bengadak tjarra **(Us supporting Us – Cultural Strengthening)**	o Culture and Language Strengthening Program o Keeping Place – A safe place for our cultural resources, for Wadawurrung to come together on country and practice culture o Cultural Centre – For Sharing, Education and Enterprise o Wadawurrung cultural education and language o Elders Support Services	A
Gobata Dja baap Ngubiyt **(Taking Care of Country and Waters)**	o Caring for Country Team o Cultural Values Management o *Dja* and *Yulluk* – Country and Water Acquisition & Management o Co-management o Cultural Burning o Representation on Planning Committees o Cultural Heritage Management (Physical artefacts)	B
Wurrguurrwilwa Wadawurrung Corporation **(Strengthening Wadawurrung Corporation)**	o Employment and mentoring o Enterprise development and support o Recognition and Respect for Wadawurrung People, Treaty o Engagement with Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) Members o Structural reform of Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) o Partnerships and Stakeholder Engagement	C

With this mind, the key concerns of a Cultural Values Assessment rotate around Wadawurrung values and concerns about Country including its health and resilience to manage threats. These values and concerns can be assembled around the themes of Country – *Dja*, Water – *Yulluk*, Places, Shelter, Language, Pathways, Plants, Animals (and Birds) and the Rhythms that influence human and animal relationships with Wadawurrung Country. These are concerns and values are summarised in Table 5-4, cross-mapped against the Values, the Threats and the 3 Programs, to aid the cultural values discussions and the formulation of Recommendations to this Cultural Values Appraisal.

Table 5-4 Wadawurrung Cultural Values Themes

Theme	Essential Scope of Theme	Texture of Theme	Values Code	Threats Code	Program Code
Country - *Djɑ*	The substance and layers of Country	The tangible and intangible fabric of Country including humans, Sky Country, night and day landscapes, below Country, Wind Country,	i, iii, vi, vii, viii	a, c, d, e, h, p	B
Water - *Yulluk*	Water systems of Country	The permanent, ephemeral, saline, freshwater systems, wetlands, dams and lakes, creeks and rivers, bays and seas	v, vi, vii, viii	a, d, h, l, o, p	B
Places	Places of Country	The human tangible and intangible-valued gathering and activity places including points, settlements, landmarks, harvesting, aquaculture, key landmarks and hills, etc.	i, iii, vi, vii	a, d, e, g, p	B
Shelter	Homes and Habitats in Country	The residencies, homes, workplaces and lifestyle places of humans including houses, community facilities, and their orientations and fabrications	i, vi, vii	a, d	B
Language	The voice of Country	Wadawurrung language, place names, stories, images, designs, inspirations, etc.	i, vi, vii	c, d	A
Pathways	Routes through Country	Human, animal and infrastructure corridors and movement routes including tracks, roads/streets, trade routes, and corridors	i, vi, vii	c, d	B
Plants	The vegetative residents of Country	Vegetation species, communities and their habitats, and noxious species	iv, vi, vii	a, e	B
Animals	The animal residents of Country	Animal and bird species, communities and their habitats, including permanent and transient and migratory species and habitats, and noxious species	iv, vi, vii, ix	a, d, e, g, m, n	B
Rhythms	The seasonal patterns and character of Country	The seasonal patterns and character of Country including weather, droughts, floods, bushfires, cultural burning, climate change variables, *Phytophthora cinnamomi*, etc	i, vi, vii	a, d, e, l, j, k, o, p	B

6 Recommendations

The collaboration with WTOAC at this early planning stage creates an opportunity to explore both shorter-term input into planning documents as well as establishing protocol for long-term future-thinking development programs and community relationships.

Note that none of these recommendations negate the requirement to adhere to the legislative requirements associated with the *Aboriginal Heritage Act* 2006 and the *Aboriginal Heritage Regulations 2018,* approved Aboriginal Cultural Heritage Management Plans (CHMPs) or impact the necessity or otherwise for the conduct of a CHMP.

All bookings with WTOAC should be sent to rap@wadawurung.org.au and then the bookings will then be delegated to the right person for the job.

Theme	Theme	Recommendations	Agent Responsible
Country - *Dja*	**The substance and layers of Country**		
		1. It is recommended that the Wadawurrung Traditional Owners Aboriginal Corporation's (WTOAC) *Paleert Taara Dja: Wadawurrung Country Plan* (2020) and video be essential preliminary reading/listening resources for all consultants and contractors for issuance as part of their engagement in future planning and design for the subject area.	VPA & WTOAC
		2. It is recommended that staff involved in the design and construction phases of this project be party to Wadawurrung Cultural Awareness Training to ensure respect and appreciation of this tract of Country and Wadawurrung tangible and intangible values in this study area.	VPA & WTOAC
		3. It is expected that all Cultural Heritage Management Plan (CHMP) recommendations pertinent to or arising from any future CHMP for works within the subject area are complied with in accordance with the respective CHMP recommendations.	
Water - *Yulluk*	**Water systems of Country**		
		4. It is recommended that all waterways be subject to rejuvenation and revegetation programs.	VPA
		5. It is recommended that suitable hydraulic engineering measures be taken to ensure the quality of cultural flows during any construction phases to protect and ensure the health of water systems and the habitats adjacent to such watercourses.	VPA
		6. It is recommended that all unnamed waterways be named by Wadawurrung and that currently names waterways be renamed by Wadawurrung.	VPA

		7. It is recommended that no impact is permitted within 100 m of current or prior waterways.	VPA
Places	**Places of Country**		
		8. It is recommended that WTOAC be invited to consult as to design, art treatments, location, and materiality of infrastructure and other design elements in the study area.	VPA & WTOAC
		9. It is recommended that TOs be employed within the planning framework (e.g. art vegetation planning, physical construction, etc.	VPA & WTOAC
Shelter	**Homes and Habitats in Country**		
		10. It is recommended that the stony rises (see Figure 9.1) should be reserved as a passive recreational venue only with a priority upon indigenous vegetation restoration and renourishment, be guided by the 'Outer Zone' recommendations in the *Bruce's Creek Masterplan* (2009) section 3.2.1 and Table 6 with vegetation drawn from Table 2.	VPA
	The voice of Country		
		11. It is recommended that existing named watercourses and currently unnamed watercourses be named/renamed by Wadawurrung, with WTOAC invited to propose Language-informed names, including where dual-naming opportunities are possible.	VPA & WTOAC
		12. It is recommended that WTOAC be afforded the opportunity to Language-name any new suburb/place names to be established within the Study Area	VPA & WTOAC
		13. It is recommended that WTOAC be afforded the opportunity to review and or Language-name any new primary roadways and shared pathways within the Study Area	VPA & WTOAC

		14. It is recommended that a co-design approach with the WTOAC is employed in the Study Area towards achieving integrated planning outcomes through the streamlined PSP preparation process.	VPA & WTOAC
Pathways	**Routes through Country**		
		15. It is recommended that previous travel routes across Country which may exist outside of current *area of cultural heritage sensitivity* mapping be considered as sensitive.	VPA
		16. There is a need to recognise in future planning and design activities within the Study Area that culturally-relevant visual connectivities to Wourdi Youang are paramount in Wadawurrung relationships to the Study Area, and that all road, shared pathway, and landscape design activities needs to prioritise, respect and offer uninterrupted vantage points as much as possible to Wourdi Youang in future planning and design activities within this Study Area.	VPA
		17. It is recommended that where pathway opportunities (bike/pedestrian) that WTOAC is invited to design heritage trails/interpretive signage with flora and fauna information (art/sculpture) and QR codes to hear information and/or stories from TO voices as per oral tradition.	VPA & WTOAC
Plants	**The vegetative residents of Country**		
		18. It is recommended that wetlands be created to provide appropriate habitat for local fauna.	VPA
		19. It is recommended that the lone tree in Location 11 be retained as it represents a utilised bird habitat in an otherwise cleared location.	VPA
Animals	**The animal residents of Country**		
		20. It is recommended that consideration should be given to constructing habitat zones (such as wetlands) to conserve, protect and encourage residency for existing local fauna.	VPA

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Appendix A Glossary of terms

Activity Area: The area to be used or developed for an activity (CHMP)

Alluvium: Sediment laid down by flowing water

Chert: A fine-grained stone composed of cryptocrystalline silica. It exhibits a range of textures and colours. Chert is easy to work and retain a sharp edge for an extensive period of time before re-sharpening is required. It has a low to medium fracture toughness and is hence used for flaked stone artefacts.

Devonian: A geological period spanning from about 419 million years ago to about 359 million years ago.

Exposure: Refers to the percentage of the sub-surface exposed, through actions such as erosion or in excavated areas.

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

Granite: Hard **i**gneous rock with that is granular in texture, mainly consisting of mica, feldspar and quartz.

Holocene: The Holocene epoch forms part of the late Quaternary period and extends from about 11,000 years ago to the present day.

Igneous: A rock of volcanic origin

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

Quartz: The second most abundant mineral on earth made up of a crystalline structure of SiO_4.

Scarred trees: Tree scars from Aboriginal cultural traditions are distinct from naturally occurring scars by their generally oval and/or symmetrical shape, and sometimes presence of steel or stone axe marks on the scar's surface. The size and shape of scars depends on the intended use of the bark removed. Bark was used for a variety of dishes and containers, shields, canoes, and construction of bark-slab huts.

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 (to 60cm).

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. Silcrete ranges in texture from very fine grained, to quite coarse grained. At one extreme it is cryptocrystalline with very few clasts, with almost the appearance of chert. It is used for flaked stone artefact production, sometimes after heat treatment to increase the ease and predictability of its flaking.

Silurian: A geological period that spans between about 443 million years ago to 419 million years ago.

Study area: The area subject to this investigation – i.e. the Parwan Station PSP

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

Appendix B Notice of Intention to Carry out a Survey

Notice of Intention to carry out a survey for Aboriginal cultural heritage for the purposes of the *Aboriginal Heritage Act 2006*

This form has been prepared for use by a person intending to carry out a survey for Aboriginal cultural heritage ('Survey') to complete the notification provisions pursuant to s.34A of the *Aboriginal Heritage Act 2006* (the 'Act').

For clarification on any of the following please contact Victorian Aboriginal Heritage Register (VAHR) enquiries on 1800-762-003.

SECTION 1 – Person intending to carry out survey (applicant)

Applicant (*natural person or body corporate seeking to carry out survey*):	Unearthed Heritage Australia Pty Ltd
ABN/ACN:	68632149181
Contact name:	David Mathews
Postal Address:	PO Box 446 Castlemaine VIC 3450
Telephone Number	0427 757 300 Fax number:
Mobile:	0427 757 300
Email Address:	david@unearthedheritage.com.au

SECTION 2 –Survey supervisor

Name: David Mathews, Joseph Brooke, Eyad Malaeb, Maddie Steele

Provide a description of the supervisor's qualifications and experience relevant to surveys for Aboriginal cultural heritage:

Joseph – B.Arch (Hons) 2006, and 14 years experience
David M – BArch (Hons) 2004, and 15 years of experience
Eyad Malaeb – Barch (Hons) 2019, and 4 years of experience
Maddie Steele – BArch (Hons) 2015 and 6 years of experience

SECTION 3 – Description of proposed activity and Survey location

Project Name: Werribee Junction & Mambourin East Precinct Structure Plan

List the relevant municipal district/s (ie, Local Council or Shire): City of Wyndham

Clearly identify the proposed **activity** for which the survey relates (ie, cultural heritage or due diligence assessment, preliminary Aboriginal heritage test, research):

Aboriginal cultural heritage impact assessment for PSP

Clearly identify the **location** (such as listing cadastral information, attaching a copy of a title search, or indicating the street address):

Werribee Junction & Mambourin East Precinct Structure Plan - Various properties – please see attached map

Attach a map (to scale, with a north arrow and indicating the municipal district - if any) that clearly identifies the survey area.

- Please ensure the map refers to existing roads and features, rather than proposed roads and features, and includes their names.
- Please ensure the map has the survey area outlined on it.

- The map should have a legend; at least three readily identifiable geographical locations (such as road intersections, parcel boundaries, or road/river crossings) and should state the map's projection.

SECTION 4 – Expected start and finish date for the survey

Start date 15 / 03 / 2022 *Finish date* 01 / 09 / 2022

SECTION 5 – List any relevant registered Aboriginal party (if any)

This section is to be completed only where there is a registered Aboriginal party in relation to the survey area

Wadawurrung Traditional Owners Aboriginal Corporation

SECTION 6 – Signature of applicant

I certify that to the best of my knowledge and belief that the information supplied is correct and complete.

Signed: *Date:* 20 / 02 / 2022

[**applicant**]

SECTION 7 – Notification checklist

☐ Ensure appropriate attachment/s are completed and attached to this notification (see section 3 of this form).

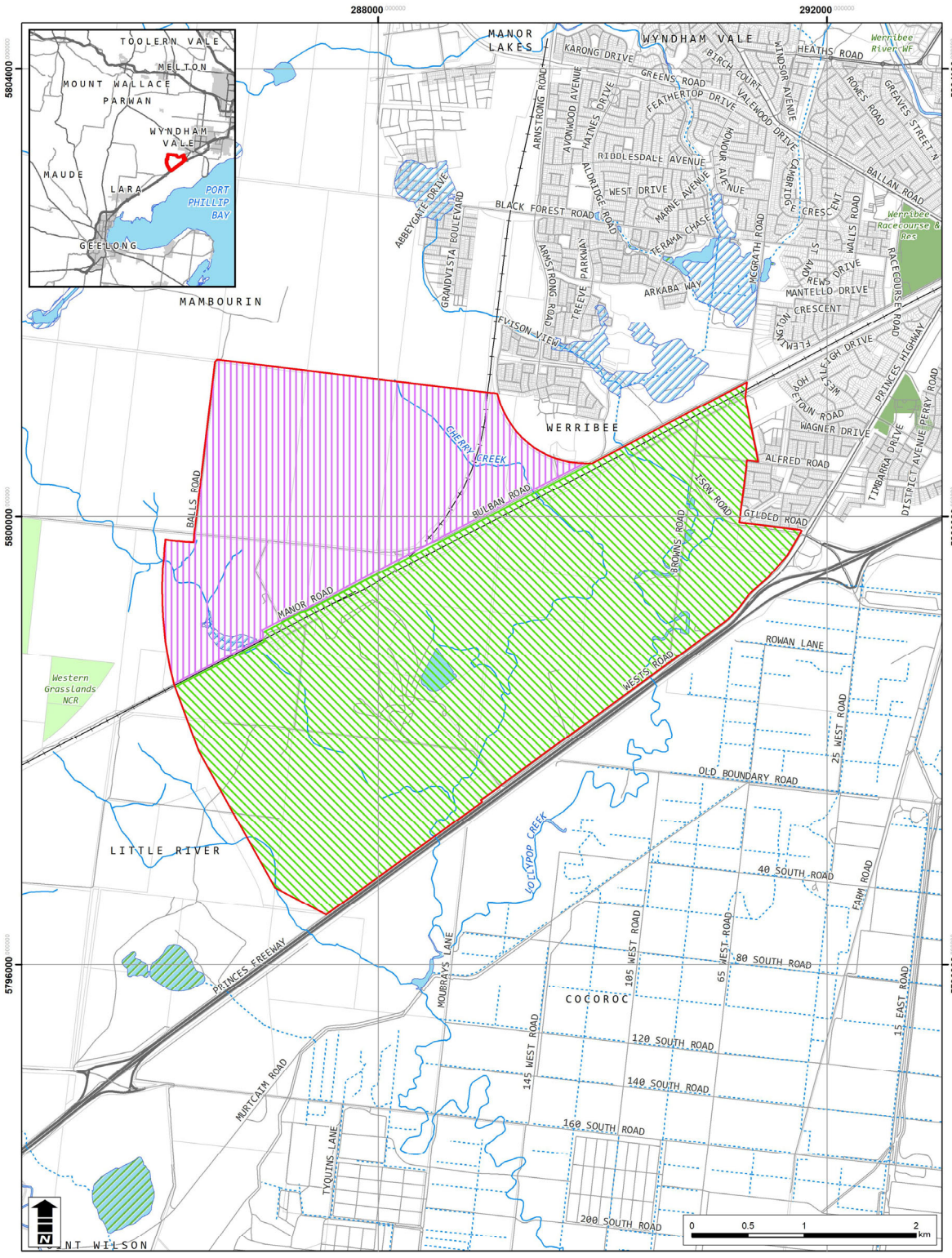
Please ensure this notice and all attached items are sent to the:

Director Heritage Services
Aboriginal Victoria
Department of Premier and Cabinet
GPO Box 4912
MELBOURNE VIC 3001

OR **Email: vahr@dpc.vic.gov.au**

Notes:

- **Ensure that any relevant registered Aboriginal party is also notified. A copy of this notice may be used for this purpose. (A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to participate in the survey).**
- **In addition to notifying the Director Heritage Services and any relevant registered Aboriginal party, a Sponsor must also notify any owner and/or occupier of any land within the survey area. A copy of this notice may be used for this purpose.**
- **A copy of any documentation relevant to the survey must be given to the Secretary for recording on the Victorian Aboriginal Heritage Register within 30 days of producing the final report relating to the survey, or within 12 months of submitting this application, whichever is earlier.**
- **Relevant documentation means any site records, photographs, maps and plans relating to the survey and a copy of any final report.**
- **The applicant must notify the Secretary if the survey did not occur within 12 months of submitting this application.**



Legend

Study Area	Road	Waterbody	Channel / drain
Mambourin East PSP	Railway	Wetland / swamp	Built-up area
Werribee Junction PSP	Recreation area	Area subject to flooding	
Cadastral boundary	Nature reserve	River / creek	

UNEARTHED HERITAGE

GDA 94 MGA Zone 55 1:30,000 @A3

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