



SMEC INTERNAL REF. 30043113E

Detailed Flora and Fauna Assessment

Kennett River Tourism Infrastructure Improvements

Reference No. 30043113E

Prepared for Colac Otway Shire

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Time of Year

The on-site biodiversity assessment of the study site was undertaken in August 2021. This is considered a suboptimal time of year for conducting flora and fauna surveys as many ephemeral flora species are not flowering and visible, and many fauna species are less active than spring and summer months. To counteract the limitation of the on-site survey being undertaken on one suboptimal time of the year this assessment was supplemented by information from ecological database searches.

Ecological Limitations

This ecological assessment targets species of vascular plants (ferns, conifers and flowering plants). Non-vascular flora (e.g. mosses, liverworts, lichens) and fungi have not been considered as part of this assessment, except where listed threatened species are known or suspected to occur. Fish and aquatic invertebrates were only considered at desktop level. It was beyond the scope of this assessment to undertake detailed fauna survey methods such as fauna trapping.

Use of Databases

The Victorian Biodiversity Atlas (VBA) database can be used to search a defined geographical area to produce species lists of flora and fauna that have been previously recorded within the search area. The database lists are only as accurate as the quality and quantity of data that have been recorded and documented from the area. The use of the database in a desktop assessment has the following limitations:

- Location details for many records (typically older records) have a relatively low degree of accuracy (≤ 1 km). Thus, the database search may not include some records of species that were made within the site historically.
- These datasets are not exhaustive given many locations locally and across Victoria have low or in some instances no documented survey effort for one or more groups of flora and fauna. During site assessments, it is not uncommon to find species at locations for which there are few or no previous nearby database records.

Professional experience and judgement are used to assess the potential for previously unrecorded threatened flora and fauna to be present within the study site.

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Acronyms and abbreviations

Acronyms	Description
BCS	Bioregional Conservation Status
CaLP Act	<i>Catchment and Land Protection Act 1994</i>
CEMP	Construction Environmental Management Plan
CMA	Catchment Management Authority
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DBH	Diameter at Breast Height (taken 1.3 m from the ground)
DELWP	Department of Environment, Land, Water and Planning
DEPI	Department of Environment and Primary Industries (now DELWP)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVC	Ecological Vegetation Class
FFG Act	<i>Flora and Fauna Guarantee Act 1988 and Flora and Fauna Guarantee Amendment Act 2019</i>
GIS	Geographic Information System
Guidelines	<i>Guidelines for the removal, destruction or lopping of native vegetation</i> (DELWP 2017)
ha	Hectares
HIM	Habitat Importance Maps (DELWP 2017)
km	Kilometres
LGA	Local Government Authority
m	Metres
MNES	Matters of National Environmental Significance
NVIM	Native Vegetation Information Management tool
PMST	Protected Matters Search Tool (DAWE)
sp.	Species (one species)
spp.	Species (more than one species)
subsp.	Subspecies
VBA	Victorian Biodiversity Atlas (DELWP)
WONS	Weed of National Significance

Executive Summary

SMEC Australia Pty Ltd (SMEC) was commissioned by Colac Otway Shire (COS) to undertake a detailed flora and fauna assessment of the land within the proposed infrastructure to be improved at Kennett River, Victoria (the study site). The Kennett River Tourism Infrastructure Improvements project (the project) proposes to incorporate improvements to carpark, pedestrian, local road network and the Great Ocean Road, which forms part of a greater package of works that are being managed by Regional Development Victoria on behalf of the Federal Government. The proposed works will require some removal of native vegetation and fauna habitat present within the study site.

This report outlines the findings of the desktop and field assessment relating to ecological values within the study site, and provides information regarding likely permits, referrals and additional site visits required for the potential removal of native vegetation and fauna habitat.

Table E1 below provides a summary of the on-site findings within the study site in relation to the relevant environmental legislation and policy.

Table E1: Summary of project findings

Project Summary		
Site location	Kennett River, Victoria. Includes a section of Hawdon Avenue, Great Ocean Road, existing carpark and picnic area, café precinct and cleared area behind café.	
Local Government Authority	Colac Otway Shire	
Bioregion	Otway Ranges	
Catchment Management Authority	Corangamite Catchment Management Authority (CMA)	
EVCs recorded within the study site	<ul style="list-style-type: none"> • Shrubby Foothill Forest (EVC 45) • Swampy Riparian Woodland (EVC 83) • Coastal Headland Scrub (EVC 161) • Aquatic Herbland (EVC 653) • Tall Marsh (EVC 821) 	
Legislation	Assessment Result	Permit Requirement
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	<p>One listed community is present within and adjacent to the study site (salt-wedge estuary community), however is not anticipated to be impacted by the project works.</p> <p>EPBC Act-listed flora species are considered unlikely to occur within the study site.</p> <p>Two fauna species are considered to potentially utilise habitats</p>	<p>Referral not required.</p> <p>Ensure appropriate sediment and erosion controls are outlined within the project CEMP and employed during construction to avoid indirect impacts to the salt-wedge estuary and habitat for threatened fauna.</p> <p>If possible, time construction works along the eastern side of the Great Ocean Road outside of the breeding</p>

	immediately adjacent to the study site including Hooded Plover and Australian Grayling. Project works are not anticipated to directly impact the habitats of these species (beach/dune habitat and Kennett River, respectively).	season of Hooded Plover (August-March) to minimise disturbance.
<i>Environmental Effects Act 1978</i>	A worst-case scenario of 0.467 ha of native vegetation is proposed for removal (including vegetation classed as 'past removals').	No further requirements as criteria for referral have not been triggered.
<i>Flora and Fauna Guarantee Act 1988</i>	Three protected flora species were recorded within the study site and are proposed for removal. Two fauna species, Rufus Bristlebird and Australian Mudfish, may occur in habitats within or adjacent to the study site, however, are unlikely to be impacted by project works.	An FFG Act permit will be required for the removal of protected flora. Avoid and minimise impacts to native vegetation and habitat for listed flora and fauna.
<i>Planning and Environment Act 1987</i>	Approximately 0.467 ha of native vegetation is proposed for removal (including past removals) for the proposed works. It is noted that some of this vegetation will be retained through the detailed design process. Three environmental overlays are applicable to the site; ESO2, SLO2 and EMO1.	A planning permit is required for the removal of native vegetation under Clause 52.17, SLO2 and EMO1. Avoid and minimise impacts to native vegetation throughout the detailed design and construction process. Secure vegetation offsets prior to vegetation removal on site.
<i>Marine and Coastal Act 2018</i>	The works occur within 200 m of the high tide water level, therefore a MACA Consent is required. GOR is the relevant land manager.	Submit a MACA Consent Application to GOR for endorsement. GOR will then submit the MACA to DELWP for approval. Works can only proceed under the conditions of the approved consent.
<i>Catchment and Land Protection Act 1994</i>	Two declared noxious weeds were recorded within the study site.	Prior to construction, a CEMP must be prepared for the project which outlines measures to prevent the spread of declared noxious weeds and pest animals during construction.
<i>Wildlife Act 1975</i>	Suitable habitat is available for fauna within the study site including wetland vegetation and coastal scrub.	If vegetation removal is proposed, an ecologist should be present during vegetation removal for wildlife pre-clearance checks and relocation if necessary.
<i>Water Act 1989</i>	One waterway lies adjacent to, and intersects the study site, Kennett River.	Consultation with Corangamite CMA is required due to the proximity of works to Kennett River.

Consultation is required with Southern Rural Water to incorporate the new toilet block facility into the existing license agreement.

Recommendations summary

SMEC recommends that COS undertakes the following next steps for the project:

- Avoid and minimise impacts to native vegetation throughout the entirety of the project (e.g. No-Go Zones, reconsidering construction boundaries);
- Obtain a planning permit for the removal of native vegetation;
- Secure offsets via a registered offset broker or COS's existing registered offsets prior to the removal of native vegetation;
- Submit a MACA Consent Application to GOR for endorsement and subsequent submission to DELWP;
- Prior to construction, develop a Construction Environmental Management Plan (CEMP) for the project to address:
 - Protection of native vegetation to be retained on site during construction
 - Appropriate risk management measures for weeds and pest animals (to comply with CaLP Act)
 - Implement control measures for erosion, toxicant laden and sedimentation runoff into Kennett River; and
- Ensure the CEMP highlights the sensitivity of Kennett River which is a listed ecological community under the EPBC Act and provides habitat for Australian Grayling, a threatened fish under the EPBC Act. Direct and indirect impacts must be avoided or mitigated throughout construction with appropriate management measures including No-Go Zone fencing and erosion and sediment controls;
- Timing of construction works along the eastern side of the Great Ocean Road should occur outside of the breeding season of Hooded Plover (August-March) to minimise possible noise disturbance;
- Engage a suitably qualified and licenced ecologist to capture and relocate fauna from vegetation if necessary, during the vegetation removal phase of the project; and
- Improve the overall quality and extent of retained native vegetation post-construction through on-site rehabilitation or revegetation works.

1 Introduction

1.1 Background

SMEC Australia Pty Ltd (SMEC) was commissioned by Colac Otway Shire (COS) to undertake a detailed flora and fauna assessment of the Kennett River Tourism Infrastructure project area, Kennett River, Victoria (the study site). The Kennett River Tourism Infrastructure Improvements project (the project) proposes to incorporate improvements to carparks, pedestrian access, local road networks and the Great Ocean Road at Kennett River, which forms part of a greater package of works that are being managed by Regional Development Victoria on behalf of the Federal Government. The proposed works will require some removal of native vegetation and fauna habitat present within the study site.

This detailed flora and fauna assessment was undertaken to identify ecological values which may be impacted by the project. This report provides results of the flora and fauna assessment, makes recommendations regarding considerations for design and discusses the likely environmental approvals and legislative requirements associated with potential impacts to flora and fauna values.

1.2 Scope of works

The scope of works and objectives for the detailed flora and fauna assessment are to:

- Undertake a desktop review of known or predicted ecological values within the study area;
- Conduct a site assessment to verify the results of the desktop review and assess the ecological values of the study site, including:
 - Mapping of native vegetation
 - Identifying the presence and extent of any threatened ecological communities
 - Identifying flora and fauna species occurring throughout the site
 - Assessing the likelihood of occurrence for rare or threatened flora and fauna species;
- Prepare a report outlining the results of the detailed flora and fauna assessment, including:
 - A description of the vegetation, flora and fauna and habitats of the study site
 - Identification of listed threatened ecological values within the study site
 - An outline of potential impacts of the project on ecological values; and
- Identify permit requirements and the assessment pathway under environmental legislation.

1.3 Proposed works

The proposed works include:

- Upgrading the existing carpark and service road; including improved vehicle turn-a-round area, designated disabled parking spaces, and footpath to/from the cafe;
- Landscaping and installation of more open space (over existing open space/road infrastructure);
- Installation of a new toilet block facility with associated wastewater treatment plant and filtration system;
- New right-hand turning lane from Great Ocean Road into Hawdon Avenue, Pavement Re-surfacing/replacement of Great Ocean Road and Hawdon Avenue;
- New pedestrian access across the Great Ocean Road and footpath to parking amenities; and
- New pedestrian access across Hawdon Avenue.

It is noted that water extraction from Kennett River will take place to service the toilet block facility. Water extraction is currently occurring under an industrial extraction license to service the Kennett River Holiday Park. The water extraction to service the new toilet block facility will be incorporated into this existing license and will not exceed the current capped limit. The extraction for both the Holiday Park and toilet block facility will be metered and monitored for compliance by Southern Rural Water.

1.4 Study site and study area

This report refers to two definitions describing the area assessed for the project; study site and study area.

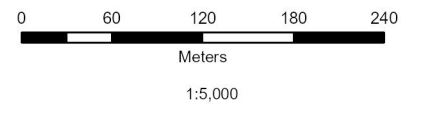
The study site refers to the area surveyed on-ground by SMEC ecologists, as shown on Figure 1.

The study site covers 1.93 ha and encompasses: approximately 525 m of the Great Ocean Road and road reserves; approximately 175 m section of Hawdon Avenue; a cleared grassy area behind the existing café and an existing service road, carpark and picnic area adjacent the Kennett River.

Vegetation within the study site includes both remnant patches and cleared areas comprising manicured lawns and ornamental plantings. Kennett River lies to the north of the study site and then crosses beneath a road bridge along the Great Ocean Road. Kennett River Coast Reserve lies to the immediate east of the study site, and the township of Kennett River and the Kennett River Caravan Park abut the study site to the west and south. The study site is low lying and generally flat, falling gradually to the north towards the Kennett River and rising towards the hills located to the west.

The study site occurs within the Otway Ranges bioregion, the Colac Otway Shire Local Government Authority (LGA) and Corangamite Catchment Management Authority (CMA) area.

The study area refers to a 10 km buffer area of the study site and was assessed by desktop only. The study area provides ecological context when discussing findings within the study site. The study area consists largely of forested hills to the west and north of the study site which forms part of the Great Otway National Park, a reserve that encompasses 103,185 ha of tall eucalypt forest, temperate rainforest, coastal scrub, dunes and beaches. The Kennett River Coastal Reserve and Southern Ocean form the eastern extent of the study area.



LEGEND

- Study Site
- Major Road
- Minor Road
- River
- Stream

Key Map



SOURCES:
 1. Roads and Waterways © DELWP 2021
 2. Basemap © Nearmap, World Topographic Map: Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS
 World Hillshade: Esri, USGS

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PROJECT: Kennett River Tourism Infrastructure Improvements – Flora and Fauna Assessment
PROJECT NO: 30043113E
FIGURE NO: 1
FIGURE TITLE: Site Overview
CREATED BY: JZ15939
DATE: 2/09/2021
VERSION: DRAFT 1
PAGE SIZE: A3

2 Methods

2.1 Desktop review

The following resources were investigated as part of the desktop assessment:

- Protected Matters Search Tool (PMST), maintained by the Department of Agriculture, Water and the Environment (DAWE), for Matters of National Environmental Significance (MNES) relevant to the study area, including (DAWE 2021a):
 - Wetlands of international importance (Ramsar)
 - Listed threatened ecological communities
 - Listed threatened species
 - Listed migratory species
 - Listed marine species;
- Victorian Biodiversity Atlas¹ (VBA), maintained by the Department of Environment, Land, Water and Planning (DELWP), for flora and fauna species recorded within the study area (DELWP 2021a);
- DELWP's NatureKit mapping, for Ecological Vegetation Classes (EVCs) (extant and pre-1750s) and location risk mapping (DELWP 2021b);
- The Native Vegetation Information Management (NVIM) system for biodiversity information relevant to the study site, including (DELWP 2021c):
 - Crown land, parks and reserves
 - Victorian bioregions
 - Catchment Management Areas
 - Native vegetation extent
 - Native vegetation condition
 - Modelled remnant vegetation patches and scattered trees;
- The Victorian online planning schemes (DELWP 2021d) and VicPlan (DELWP 2019e) tools for;
 - Local government areas relevant to the study site
 - Planning zones, overlays and schedules to overlays;
- Information provided by COS;
- Key environmental legislation and government policies; and
- Aerial imagery of the study area.

2.2 Site assessment

A site assessment of the study site was undertaken by two SMEC ecologists on 17 August 2021. A detailed flora and fauna assessment was conducted which involved:

¹ VBA data has been obtained from DELWP online resources, available at:

<https://www.data.vic.gov.au/data/group/spatial-data>

- Identifying and mapping patches of native vegetation according to the relevant Ecological Vegetation Class (EVC) benchmarks (DELWP 2021f);
- Identification of threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Flora and Fauna Guarantee Act 1988* (FFG Act);
- Mapping of large trees in patches and scattered native trees (by measuring the circumference (cm) of trees at 1.3 m above the ground, according to the relevant EVC benchmark); and
- Identifying flora and fauna species occurring on site, including habitat for threatened species.

Spatial data for large and scattered trees relied on previously recorded survey data (accuracy <0.1 m). Further detailed site information was collected by site assessors' mobile phones using the ArcGIS Collector app, which is of standard GPS accuracy (± 4 m).

3 Results

3.1 Site summary

The study site comprised a combination of fragmented patches of native vegetation, particularly of wetland habitat, amongst large areas of non-native lawn species. The vegetation was modified due to previous clearing and ongoing maintenance. The area east of the Great Ocean Road was dominated by native coastal scrub vegetation.

3.2 Flora

3.2.1 Species summary

The VBA database contains records of 646 flora species previously identified within the study area (DELWP 2021a). These records include 441 native species and 205 introduced species (including 17 native species occurring outside of their natural range). During the site assessment 66 flora species were observed, including 35 native and 31 introduced species. A full list of the species recorded during the site assessment is detailed in Appendix A.

3.2.2 Noxious weeds

A total of three noxious weed species listed under the *Catchment and Land Protection Act 1994* (CaLP Act) were identified within the study site, including one species also listed as a Weed of National Significance (WONS) (Table 1) (DAWE 2021e). Throughout the study site, cover abundance of noxious weeds was sparse, comprising <1% cover.

Table 1: Noxious weeds recorded within the study site.

Scientific Name	Common Name	Listing ²
<i>Cirsium vulgare</i>	Spear Thistle	CaLP (C)
<i>Genista monspessulana</i>	Montpellier Broom	WONS, CaLP (C)
<i>Oxalis pes-caprae</i>	Soursob	CaLP (R)

3.2.3 FFG Act-listed protected flora

Three flora species listed as protected under the FFG Act were recorded within the study site (Table 2).

Table 2. FFG Act-listed protected flora species recorded at the study site.

Scientific Name	Common Name	Number to be impacted
<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle	20
<i>Acacia</i> sp.	Wattle	2
<i>Acacia verticillata</i>	Prickly Moses	10

² C = Listed as Regionally Controlled under the CaLP Act within the North East CMA area

R = Listed as Restricted under the CaLP Act within the North East CMA area

P = Listed as Regionally Prohibited under the CaLP Act within Victoria


3.2.4 Ecological Vegetation Classes (EVCs)

DELWP's NatureKit map indicates that 39 EVCs (extant mapping) occur within the study area (DELWP 2021b). The site assessment identified five EVCs within the study site, which are presented below with their corresponding areas (ha) recorded within the study site and Bioregional Conservation Status (BCS) for the Otway Ranges Bioregion:

- Shrubby Foothill Forest (EVC 45) – endangered (0.009 ha).
- Swampy Riparian Woodland (EVC 83) – endangered (0.092 ha);
- Coastal Headland Scrub (EVC 161) – vulnerable (0.406 ha);
- Aquatic Herbland (EVC 653) – no BCS in Otway Ranges bioregion (0.023 ha); and
- Tall Marsh (EVC 821) – Depleted (0.059 ha).

These EVCs³ are described further in Table 3 and displayed in Figure 2 (Appendix E).

Table 3: Vegetation descriptions.

Vegetation Type	Description	Photograph
EVC 45: Shrubby Foothill Forest Habitat zones: HZ5	<p><i>Shrubby Foothill Forest</i> occurs on ridges and mainly on southern and eastern slopes in association with Damp Forest or Wet Forest on moderately fertile soils and at a range of elevations. The overstorey is a medium eucalypt forest to 25 m tall over an understorey characterised by a distinctive middle stratum dominated by a diversity of narrow-leaved shrubs and a paucity of ferns, graminoids and herbs in the ground stratum.</p> <p>This EVC was highly modified within the study site. Canopy species were absent but native shrubs and groundcovers were present. Native ground covers included Austral Bracken (<i>Pteridium esculentum</i> subsp. <i>esculentum</i>), Common Tussock-grass (<i>Poa labillardierei</i>) and Small-leaf Bramble (<i>Rubus parvifolius</i>). Weed cover was approximately 60%, including Blue Periwinkle (<i>Vinca major</i>) and Kikuyu (<i>Cenchrus clandestinus</i>).</p>	

³ General vegetation descriptions were obtained from the DELWP EVC benchmark descriptions, available at: <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>

Vegetation Type	Description	Photograph
<p>EVC 83: Swampy Riparian Woodland</p> <p>Habitat zone: HZ11</p>	<p>This EVC consists of woodland to 15 m tall generally occupying low energy streams of the foothills and plains. The lower strata are variously locally dominated by a range of large and medium shrub species on the stream levees in combination with large tussock grasses and sedges in the ground layer.</p> <p>A small patch of Swampy Riparian Woodland occurred approximately 30 m south of Kennett River. It was dominated by Swamp Gum (<i>Eucalyptus ovata</i>), with Woolly Teatree (<i>Leptospermum lanigerum</i>) and Sweet Bursaria (<i>Bursaria spinosa</i> subsp. <i>spinosa</i>) dominating the shrub layer. The ground layer was dominated by Bidgee Widgee (<i>Acaena novae-zelandiae</i>). Introduced species such as Sweet Pittosporum (<i>Pittosporum undulatum</i>) and Kikuyu were common throughout the patch.</p>	
<p>EVC 161: Coastal Headland Scrub</p> <p>Habitat zone: HZ4, HZ6-10, HZ12-13</p>	<p>Coastal Headland Scrub consists of scrub or low shrubland to 2 m tall on steep, rocky coastal headlands often associated with cliffs exposed to the stresses of extreme salt-laden winds and salt spray from the south west. Occurs on shallow sands along rocky sections of the coast.</p> <p>Within the study site, Coastal Headland Scrub was dominated by dense Coast Teatree (<i>Leptospermum laeuvigatum</i>) and Coast Beard-heath (<i>Leucopogon parviflorus</i>). Native ground covers were typically absent. Weeds were common on the edge of the patch.</p>	
<p>EVC 653: Aquatic Herbland</p> <p>Habitat Zone: HZ1</p>	<p>Aquatic Herbland is a semi-permanent to seasonal wetland vegetation, treeless (or nearly so), dominated by herbaceous aquatic species (typically with at least rootstocks tolerant of dry periods).</p> <p>A small patch of Aquatic Herbland occurred in the centre of the study site amongst cleared vegetation and was dominated by Slender Knotweed (<i>Persicaria decipens</i>). Other native species such as Tall Sedge (<i>Carex appressa</i>) and Common Reed (<i>Phragmites australis</i>) were present. Weeds comprised approximately 20% cover of total</p>	

Vegetation Type	Description	Photograph
	<p>vegetative cover and species included Clustered Dock (<i>Rumex conglomeratus</i>) and Curled Dock (<i>Rumex crispus</i>).</p>	
<p>EVC 821: Tall Marsh Habitat Zone: HZ2-3</p>	<p>Tall Marsh occurs on Quaternary sedimentary geology of mainly estuarine sands, soils are peaty, silty clays, and average annual rainfall is approximately 600 mm. It requires shallow water (to 1 m deep) and low current-scour and can only tolerate very low levels of salinity. Closed to open grassland/sedgeland to 3 m tall, dominated by Common Reed and Cumbungi. Small aquatic and semiaquatic species occur amongst the reeds, however they are generally not visible during inundation.</p> <p>This community occurred within the south-eastern wetland that forms part of the man-made wetland system adjacent to the café carpark.</p> <p>Tall Marsh comprised a dense cover of Common Reed. Sparse Tall Sedge occurred on the outside of the patch and weeds were spread throughout, including Kikuyu, Blackberry (<i>Rubus polyanthemus</i>) and Curled Dock.</p>	
<p>Non-native vegetation</p>	<p>Patches of non-native vegetation occurred were native trees and understorey species were absent. These patches were dominated by introduced grasses such as Toowoomba Canary-grass (<i>Phalaris aquatica</i>), Paspalum (<i>Paspalum dilatatum</i>) and Cocksfoot (<i>Dactylis glomerata</i>).</p>	

3.2.5 Habitat Hectares assessment

A total of 13 habitat zones were identified during the site assessment. The results of the Habitat Hectares assessment are detailed in Table 4 below.

Table 4: Habitat Hectares results.

EVC #	45	83	161	653	821
EVC Name	Shrubby Foothill Forest	Swampy Riparian Woodland	Coastal Headland Scrub	Aquatic Herbland	Tall Marsh
Habitat Zone #	HZ5	HZ11	HZ4, HZ6-10, HZ12-13	HZ1	HZ2-3
Bioregion	OtR	OtR	OtR	OtR	OtR
Large Trees	0	0	N/A	N/A	N/A
Canopy Cover	0	1	N/A	N/A	N/A
Understorey	5	5	5	5	5
Weeds	4	2	4	7	0
Recruitment	3	1	1	3	0
Organic Litter	0	2	0	4	2
Logs	0	0	N/A	N/A	N/A
Subtotal (out of max. 75)	12	11	10	19	7
Multiplier for treeless EVCs	N/A	N/A	1.36	1.36	1.36
Subtotal	12	11	13.60	25.84	9.52
Patch Size	1	1	1	1	1
Distance to Core	3	3	3	3	3
Neighbourhood	4	4	4	4	4
Subtotal (out of max. 25)	8	8	8	8	8
Final Habitat Score (total out of 100)	20	19	21.60	33.84	17.52

3.2.6 Large trees and scattered trees

A total of two scattered trees were recorded within the study site. These trees have been previously endorsed for removal by DELWP under the *Procedure to rely on the road safety exemption*, however are no longer proposed for removal. An additional tree that has already been removed was also part of this endorsement.

Table 5: Scattered trees recorded.

Tree ID	Scientific Name	Common Name	Circumference (cm)
1	<i>Eucalyptus globulus subsp. bicostata</i>	Southern Blue-gum	179.0
2	<i>Eucalyptus globulus subsp. bicostata</i>	Southern Blue-gum	116.2

3.2.7 Current Wetlands

DELWP's Current wetland layer occurs across much of the northern extent of the study site (2021c, Figure 2). Any area mapped as a Current wetland is treated as native vegetation and if removal of areas of a Current wetland are proposed, offsets must be acquired accordingly.

The boundary of a wetland in the Current wetlands layer represents the maximum extent of inundation. Wetlands in modified areas are still considered to exist unless there is evidence that part or all of a wetland is very unlikely to support any wetland values in the future because (DELWP 2018):

- It is not technically possible or feasible (e.g. the area has been completely built over); or

- Existing approved uses will continue such that the management of the wetland will not change (e.g. water cannot be returned to the wetland, water extraction will not stop etc.).

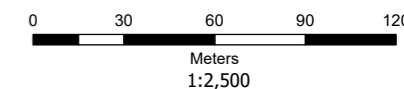
3.2.8 Native Vegetation Impacts

A total of 0.436 ha of native vegetation is proposed for removal (including areas mapped as a Current wetland). One scattered tree has already been removed and was endorsed for removal by DELWP under the *Procedure to rely on the road safety exemption*, bringing the total removal for the site to 0.467 ha. The remaining two scattered trees that form part of this endorsement are no longer proposed for removal and have therefore not been included in this total.

It should be noted that if there is overlap of mapped native vegetation and the 'Current Wetland' layer, offsets will only be required once (i.e. there is no 'doubling up' of offset requirements).

Table 6: Vegetation for removal.

EVC	Extent of proposed current removal (ha)
EVC 45: Shrubby Foot-hill Forest	0.009
EVC 161: Coastal Headland Scrub	0.057
EVC 653: Aquatic Herbland	0.024
EVC 821: Tall Marsh	0.036
Current Wetland (DELWP spatial layer)	0.310
Subtotal	0.436
Past removals	0.031
Total	0.467



LEGEND

- Study Site
 - Major Road
 - Minor Road
 - + Rail
 - River
 - Stream
 - Past Removal
 - Vegetation to be removed
 - Current Wetlands
 - Small Scattered Tree
 - ★ Acacia sp
- Ecological Vegetation Classes**
- EVC 45: Shrubby Foothill Forest
 - EVC 83: Swampy Riparian Woodland
 - EVC 161: Coastal Headland Scrub
 - EVC 653: Aquatic Herbland
 - EVC 821: Tall Marsh

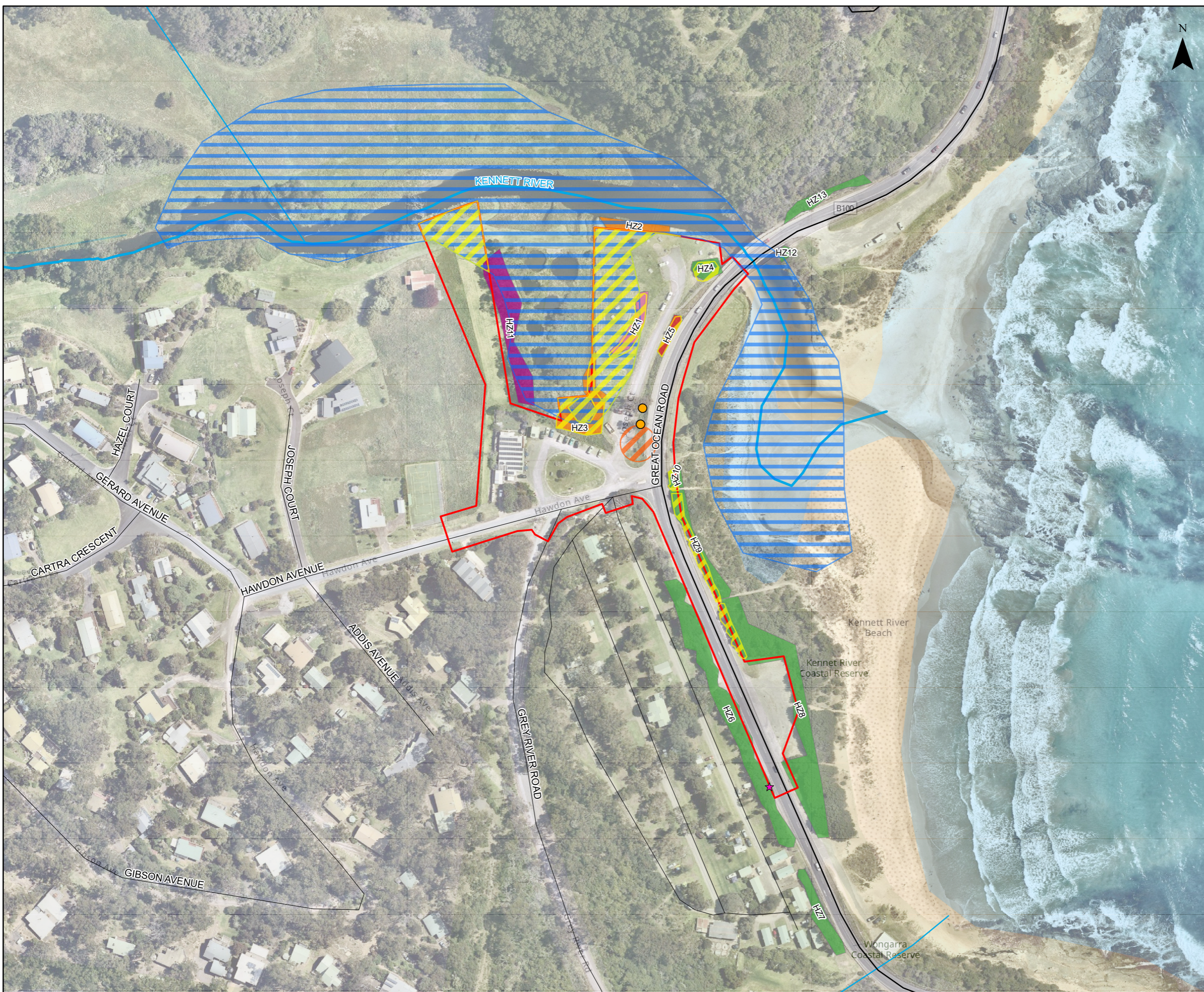
Key Map



SOURCES:
 1. Roads and Waterways © DELWP 2021
 2. Basemap © Nearmap, World Topographic Map: Esri Community Maps Contributors, Vicmap, Esri, HERE, Garmin, METI/NASA, USGS
 World Topographic Map: Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS
 World Hillshade: Esri, USGS
 World Hillshade: Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

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PROJECT: Kennett River Tourism Infrastructure Improvements – Flora and Fauna Assessment
PROJECT NO: 30043113E
FIGURE NO: 2
FIGURE TITLE: Ecological Values
CREATED BY: JZ15939
DATE: 1/10/2021
VERSION: DRAFT 1
PAGE SIZE: A3



3.3 Threatened flora

The VBA contains records of 11 rare or threatened flora species (DELWP 2021a) (three of which occur outside of their natural range), listed under the FFG Act (DELWP 2021g) and previously recorded in the study area. The PMST lists an additional seven EPBC Act-listed flora species with potential to occur due to species' modelled distributions, for which there are currently no records within the study area (DAWE 2021a).

The locations of previous records for flora within the study area are provided in Figure 3 (Appendix E). The likelihood of occurrence of threatened flora species is provided in Appendix A.

3.3.1 EPBC Act-listed species

No species listed as threatened under the EPBC Act have previously been recorded within the study area. No EPBC Act-listed flora were observed within the study site during the site assessment. Based on the absence of recent historical records for the study area, habitat types present and general poor condition of vegetation in the study site, all EPBC Act-listed flora species are considered unlikely to occur within the study site.

3.3.2 FFG Act-listed species

A total of 11 FFG Act-listed threatened flora species have been previously recorded within the study area (DELWP 2021a). Of these species, one FFG Act-listed species was recorded as present during the site assessment, Giant Honey-myrtle. However, this was a planted specimen and occurred outside of its natural range. One species is considered to as possible to occur within the study site, Dwarf Silver-wattle (*Acacia nanodealbata*). There are multiple records within the study area. The species is a conspicuous shrub and was not recorded during the site assessment and is not considered present. Dwarf Silver-wattle will not be impacted by the proposed project works.

Due to lack of recent historical records and lack of suitable habitat present, it is considered unlikely for other FFG Act-listed threatened flora to occur within the study site.

3.4 Threatened floristic communities

3.4.1 EPBC Act

A search of the PMST database (DAWE 2021a) identified three threatened ecological communities listed under the EPBC Act with potential to occur within the study area:

- Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community (hereafter the salt-wedge estuary community) – endangered;
- Giant Kelp Marine Forests of South East Australia – endangered; and
- Subtropical and Temperate Coastal Saltmarsh – vulnerable.

One of these communities, the salt-wedge estuary community, is considered to be present within the study site. Further explanation of this community is provided below.

3.4.1.1 Assemblages of species associated with open-coast salt-wedge estuaries of western and central Victoria ecological community

This ecological community is described as "...the assemblage of native plants, animals and micro-organisms associated with the dynamic salt-wedge estuary systems that occur within the temperate climate, microtidal regime (< 2 m), high wave energy coastline of western and central Victoria. The ecological community currently encompasses 25 estuaries in the region defined by the border between South Australia and Victoria and the most southerly point of Wilsons Promontory." (EPBC Act listing advice, DoEE 2018).

The listing advice states that this ecological community occurs at Kennett River, with dimensions including 1.2 km in length (from the river mouth upstream) and covering an area of 1.5 ha. This would incorporate the entirety

of the river that lies adjacent to, and intersects, the study site. The key threats to the salt-wedge estuary community include (DoEE 2018):

- Climate change;
- Land use and associated decline in water quality including:
 - Eutrophication (excessive plant and algal growth) and algal blooms causing altered levels of dissolved oxygen
 - Direct and indirect pollution of estuaries from land use activities
 - Land use activities resulting in increased rates of erosion, runoff and sediment entering the waterways of the ecological community
 - Acid flows (from exposed acid sulphate soils) and blackwater events (from high levels of organic matter);
- Modification of flow regimes;
- Invasive species;
- Disease (pathogens and parasites); and
- Extractive and recreational activities.

Impact assessment

While the works are located outside of the boundaries of the ecological community, there is a potential risk for pollutant-laden run-off to enter Kennett River from the new carpark (both-during construction and during the operational phases). To avoid this risk, the carpark has been designed to direct all run-off flows to the south towards the stormwater treatment wetlands. Additionally, stringent erosion and sediment controls will be in place for the duration of construction activities to avoid run-off entering the river system.

A new outfall drain is also proposed to service a new toilet block facility. Wastewater will be treated through a comprehensive wastewater treatment tanks and filtration system (onsite), with clean water discharged onto grassed natural ground (with minimal quantities seeping into the water table). There will be no direct discharge of treated water into Kennett River. Additionally, the proposed water extraction to service the facility will not exceed the current permitted volumes that are already in place to service the Holiday Park. The toilet block facility is not anticipated to change the current conditions of water quality or flow regimes of Kennett River and therefore is not likely to impact the threatened community.

Based on the nature of the proposed works, significant impacts to the salt-wedge estuary community are not anticipated. A significant impact assessment against the significant impact criteria under the EPBC Act (DoE 2013) has been completed in Table 7.

Table 7: Significant impact assessment of the salt-wedge estuary community

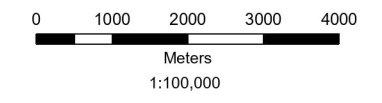
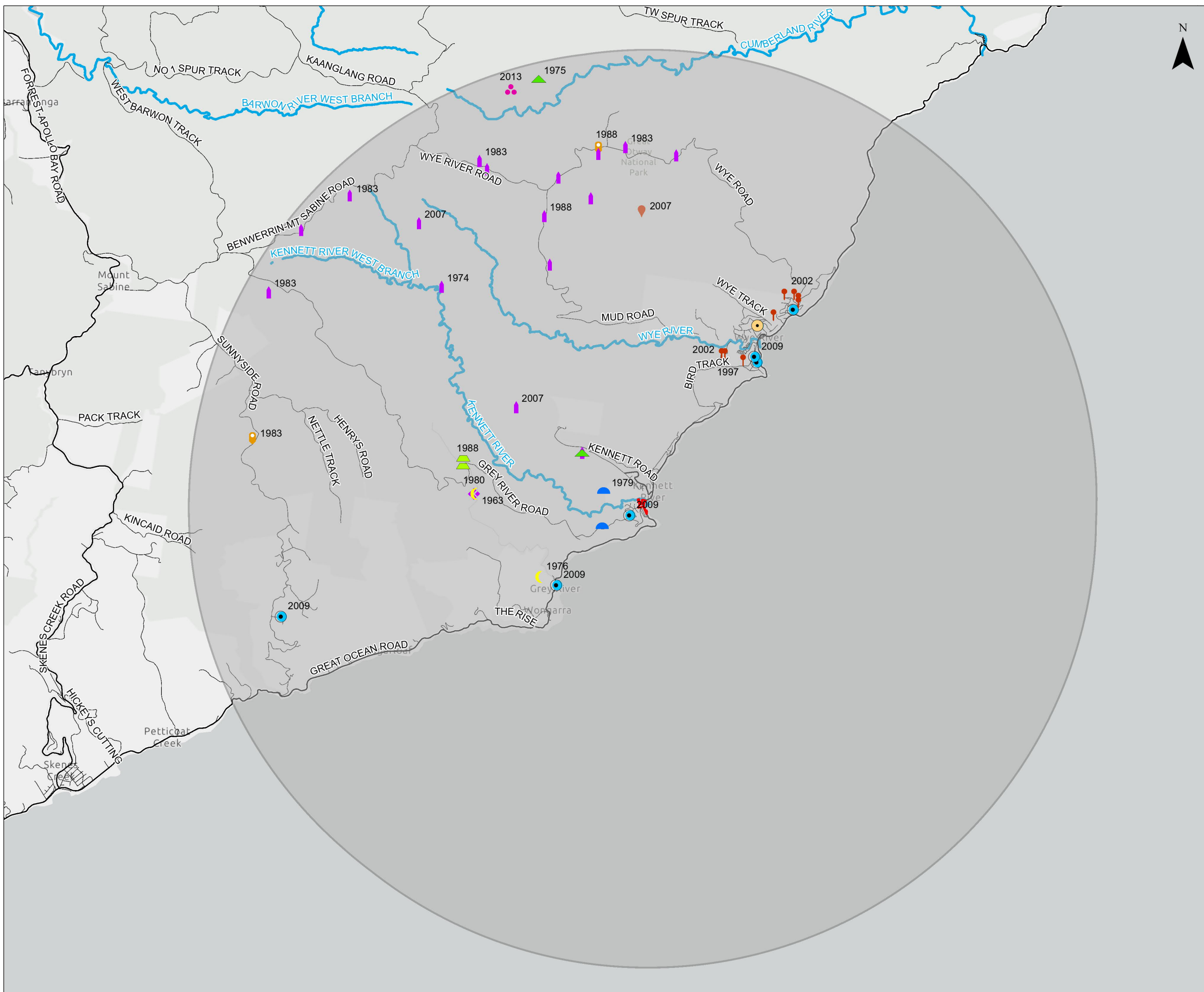
Criteria	Response
An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:	
Reduce the extent of an ecological community.	Criterion not met. The proposed works are located outside of the ecological community and will not reduce the extent of the ecological community.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.	Criterion not met.

Criteria	Response
	The proposed works will not fragment the ecological community.
Adversely affect habitat critical to the survival of an ecological community.	<p>Criterion not met.</p> <p>The works have been designed to avoid run-off from the carpark from directly entering Kennett River. All flows will be diverted south towards the existing stormwater treatment wetlands prior to entering the river.</p> <p>There will be no direct discharge of water from the toilet block facility into Kennett River. All wastewater will be treated with clean water discharged onto grassed natural ground. There will be no change to the water extraction limit under the current license held by the Holiday Park.</p> <p>Furthermore, stringent erosion and sediment controls will be employed for the duration of construction to avoid run-off from earthworks entering the river.</p>
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.	<p>Criterion not met.</p> <p>The project has been designed to maintain consistency with existing conditions, with all surface flows from the carpark directed into the stormwater treatment wetlands.</p> <p>Treated water from the toilet block will not be discharged to Kennett River and water extraction will remain capped at the current level. There are no groundwater impacts associated with the project.</p>
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.	<p>Criterion not met.</p> <p>Project works are not anticipated to cause a change in species composition. Flora and fauna species mentioned in the listing advice include microscopic organisms, macrophytes, zooplankton, macroinvertebrates and fish. Habitat conditions (i.e. water quality) for these species will not be impacted by project works.</p>
<p>Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:</p> <ul style="list-style-type: none"> • assisting invasive species, that are harmful to the listed ecological community, to become established, or • causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community. 	<p>Criterion not met.</p> <p>The project works will not assist invasive species or introduce chemicals or pollutants into the river beyond the current conditions.</p> <p>Mitigation measures will be employed throughout construction to prevent pollutants or toxicant laden run-off entering Kennett River.</p>
Interfere with the recovery of an ecological community.	Criterion not met.


















Criteria	Response
	The proposed work will not interfere with the recovery of the ecological community. Following the completion of works, existing conditions are likely to be improved due to the upgraded drainage scheme.

3.4.2 FFG Act

The vegetation within the study site is not synonymous with any FFG Act-listed threatened floristic communities.



LEGEND

-  Study Site
-  Study Area
-  Major Road
-  Minor Road
-  River
- THREATENED FLORA SPECIES**
-  Bristly Shield-fern
-  Brooker's Gum
-  Dwarf Sickle-fern
-  Dwarf Silver-wattle
-  Giant Honey-myrtle
-  Grey Jockey
-  Madeira Moss
-  Satinwood
-  Skirted Tree-fern
-  Slender Tree-fern
-  Southern Blue-gum
-  Sticky Wattle



SOURCES:
 1. Roads and Waterways © DELWP 2021
 2. Basemap © Nearmap, Light Gray Base: Vicmap, Esri, HERE, Garmin, METI/NASA, USGS
 World Topographic Map: Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS
 Light Gray Reference: Vicmap, Esri, HERE, Garmin, METI/NASA, USGS
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PROJECT: Kennett River Tourism Infrastructure Improvements – Flora and Fauna Assessment
PROJECT NO: 30043113E
FIGURE NO: 3
FIGURE TITLE: Threatened Flora Species
CREATED BY: JZ15939
DATE: 3/09/2021
VERSION: DRAFT 1
PAGE SIZE: A3

3.5 Fauna

3.5.1 Species summary


The VBA database contains records of 349 fauna species from within the study area (DELWP 2021a). These records include 333 native species and 16 introduced species. During the site assessment a total of 26 native and two introduced fauna species were recorded, all of which were birds. No threatened fauna species or introduced fauna species were observed during the site assessment.



A full list of the fauna species recorded during the site assessment is detailed in Appendix B.




3.5.2 Fauna habitats and surrounding landscape

Four broad habitat types were identified during the site assessment within and adjacent the study site including woodland (including scattered trees and ornamental plantings), aquatic habitats (wetlands and Kennett River), coastal scrub and modified grassland. Habitat attributes and the fauna species identified during the site assessment are summarised below in Table 8.

Table 8: Fauna habitat descriptions

Habitat	Description	Photograph
Woodland	<p>Remnant woodland vegetation within the study site was scarce, with one small patch of Riparian Woodland (EVC 83) located adjacent the Kennett River and two scattered remnant trees along the service road. Additional non-remnant woodland habitat was available in the form of ornamental plantings of trees and shrubs adjacent the caravan park and café.</p> <p>Woodland habitat within the study site is not likely to provide an important habitat resource for fauna considering the small size of the patches and disturbances including a cleared understory and proximity to the road and cleared areas. No hollow-bearing tree are present within the study site.</p> <p>Woodland habitat within the study site is likely to be used by common bird species for foraging and roosting behaviour. The cleared or grassy understory offers little refuge for native ground-dwelling fauna. Species observed within this habitat during the site assessment included New Holland Honeyeater (<i>Phylidonyris novaehollandiae</i>), Crimson Rosella (<i>Platycercus elegans</i>), Australian King-parrot (<i>Alisterus scapularis</i>) and Forest Raven (<i>Corvus tasmanicus</i>).</p> <p>Vast areas of woodland and forest habitat are available outside of the study site within the Kennett River township and the</p>	 <p>Remnant woodland (EVC 83) within the study site with cleared understory comprising introduced grasses.</p>  <p>Ornamental plantings adjacent to the caravan park.</p>

Habitat	Description	Photograph
	<p>Great Otway National Park and would provide higher quality habitat resources for fauna species (including threatened species).</p>	
<p>Coastal scrub</p>	<p>Coastal scrub habitat within the study site generally comprises a dense shrub layer and lacks canopy trees. This habitat is likely to be utilised by a range of fauna species that require dense cover for refuge and foraging including birds, small mammals and reptiles. Rufous Bristlebird (<i>Dasyornis broadbent</i>), listed under the FFG Act is considered likely to occur in this habitat type.</p> <p>Species identified within this habitat during the field assessment included Satin Bowerbird (<i>Ptilonorhynchus violaceus</i>), Little Wattlebird (<i>Anthochaera chrysoptera</i>), New Holland Honeyeater (<i>Phylidonyris novaehollandiae</i>) and White-browed Scrubwren (<i>Sericornis frontalis</i>).</p>	 <p>Coastal scrub habitat adjoining a shared path.</p>
<p>Aquatic habitats</p>	<p>Aquatic habitat within the study site included permanent and ephemeral wetlands and the Kennett River. A shallow, ephemeral wetland occurs in the grassed picnic area and is likely to only hold water following period of heavy rainfall. A system of constructed wetlands, which are located between the café carpark and the river, are likely to hold water year-round and were surrounded by dense fringing reeds. The Kennett River also provides permanent aquatic habitat and is located along the northern perimeter of the study site.</p> <p>The ephemeral wetland contained a high cover of aquatic vegetation and was inundated during the time of the assessment. This habitat is likely to provide foraging opportunities for common bird and frog species when it is present (i.e. during periods of high rainfall). No frogs were calling during the assessment; however, waterfowl species were observed foraging including Pacific Black Duck (<i>Anas superciliosa</i>) and Purple Swamphen (<i>Porphyrio porphyrio</i>).</p> <p>The deeper, more permanent wetlands are also likely to provide breeding and foraging</p>	 <p>Ephemeral wetland surrounded by mown lawn.</p>

Habitat	Description	Photograph
	<p>opportunities for wetland bird species and frogs, providing high levels of cover for more cryptic species.</p> <p>The Kennett River is fringed with sedges and reeds providing high quality breeding and foraging opportunities for wetland birds and waterfowl species; however, it is noted this habitat occurs outside of the study site. Kennett River also provides important habitat for purely aquatic species including fish and aquatic invertebrates. Due to the high levels of connectivity within Kennett River (i.e. lack of dams and weirs) and mostly intact vegetation along the banks (including upstream), the river is considered to provide high quality aquatic habitat for fauna, and is known to support one EPBC Act-listed fish species, Australian Grayling (<i>Prototroctes maraena</i>).</p>	 <p>Permanent constructed wetlands surrounded by dense fringing vegetation.</p>  <p>Kennett River immediately north of the study site.</p>
<p>Modified grassland</p>	<p>Modified grassland occurred within and adjacent the study site and comprised a dense cover of introduced grasses which are subject to ongoing mowing/slashing.</p> <p>Modified areas provide little value for native fauna beyond foraging habitat for common and adaptable species. Species observed utilising this habitat during the field assessment included Masked Lapwing (<i>Vanellus miles</i>), Sulphur-crested Cockatoo (<i>Cacatua galerita</i>) and Australian Wood Duck (<i>Chenonetta jubata</i>).</p>	 <p>Cleared grassland habitat dominated by introduced grasses.</p>

3.6 Threatened fauna

The VBA contains records for 32 threatened fauna species listed under one or more of the EPBC Act or FFG Act (DELWP 2021a; DELWP 2021g). The PMST lists an additional 39 EPBC Act-listed fauna species with potential to occur due to species modelled distributions, for which there are currently no records within the study area (DAWE 2021a).

The locations of previous records for fauna within the study area are provided in Figure 4 (Appendix E). The likelihood of occurrence of threatened fauna species is provided in Appendix B.

3.6.1 EPBC Act-listed species

A total of 17 EPBC Act-listed species have been previously recorded within the study area (DELWP 2021a). Of the EPBC Act-listed fauna species which have been recorded (or are predicted to occur), the following two species may potentially occur in habitats within or in proximity to the study site.

3.6.1.1 Hooded Plover

Hooded Plover (*Thinornis rubricollis rubricollis*) is listed as Vulnerable under the EPBC Act and has eight previous records within the study area, most recently from 2019. Four of these records occur on the beach at Kennett River, opposite the study site.

Hooded Plover is found on ocean beaches, usually backed by vegetated dunes (TSSC 2014). This species breeds on or near beaches, with nests located on flat beaches above the high tide mark or within adjacent stony terraces or sparsely vegetated dunes (TSSC 2014). Breeding occurs between August and March (TSSC 2014). Habitat for this species includes the beach and coastal dunes which occur within the Kennett River Coastal Reserve to the east of the study site.

The proposed works will not directly impact ocean beach or dune habitat adjacent to the study site, with a buffer provided by a strip of coastal scrub vegetation that will be retained. Indirect impacts, such as noise from construction, may disturb the species, however impacts are likely to be minimal and short term in nature. If possible, it is recommended that construction works along the eastern side of the Great Ocean Road are undertaken at a time that avoids the breeding season of Hooded Plover (August-March) to minimise disturbance.

3.6.1.2 Australian Grayling

Australian Grayling (*Prototroctes maraena*) is listed as Vulnerable under the EPBC Act and has seven previous records within the study area, most recently from 1997. One of these records (from 1987) occurs within the Kennett River, adjacent to the study site.

Australian Grayling occur within streams and rivers in both fresh and brackish water environments (DoEE 2018e). Adults migrate between the fresh headwaters of coastal streams to the estuarine reaches to spawn, which occurs from late March to May (DAWE 2021f). The newly hatched larvae drift downstream and out to sea where they remain for approximately six months (DAWE 2021f). Juveniles then return to freshwater environments where they remain for the duration of their adult lives (DAWE 2021f). Although the record of Australian Grayling within Kennett River is dated, it is likely this species still persists within the upper reaches of Kennett River and utilises the estuary at both larval and juvenile stages.

Construction works do not extend into the instream habitats of Kennett River. Based on the extent of works proposed, significant impacts to this species are considered unlikely. Appropriate sediment and erosion controls must be employed during construction to avoid runoff from construction entering the river system.

3.6.1.3 Remaining EPBC Act species

Whit-throated Needletail (*Hirundapus caudacutus*) has eight records within the study area as recently as 2017, however this species is primarily aerial and only likely to flyover the study site for short periods during the species migration period in Australia (late spring and early autumn). This species is not likely to be impacted by the proposed works.

A number of species indicated in the VBA search are pelagic bird species (e.g. albatrosses, petrels etc.) or marine mammals (e.g. seals and whales) and are not considered to occupy habitats within the study site. The proposed construction works are not anticipated to cause indirect impacts to marine species through excessive noise or vibration.

Based on the absence of recent historical records and results of the site assessment, other EPBC Act-listed fauna species are considered unlikely to regularly utilise habitat within or adjoining the study site.

3.6.2 FFG Act-listed species

A total of 29 species listed as threatened under the FFG Act have been previously recorded within the study area (DELWP 2021a). With the exception of species previously discussed above in Section 3.6.1, a further six FFG Act-listed species are considered to potentially utilise habitats within or adjacent to the study site including:

- Caspian Tern (*Hydroprogne caspia*);
- Common Sandpiper (*Actitis hypoleucos*);
- Little Egret (*Egretta garzetta*);
- Rufous Bristlebird (Otway) (*Dasyornis broadbenti caryochrous*);
- White-bellied Sea-Eagle (*Haliaeetus leucogaster*); and
- Australian Mudfish (*Neochanna cleaveri*).

Rufous Bristlebird is likely to occur in the dense coastal scrub habitats which run alongside the Great Ocean Road and has 23 previous records within the study area. However, due to the minimal loss of coastal scrub habitat proposed (i.e. minor clearing along the edge of the road for line-of-sight), significant impacts to this species is considered unlikely.

The remaining birds listed above are likely to be only occasional visitors or flyover the study site whilst foraging or moving between patches of higher quality habitat or ocean waters surrounding the study site. This is based on the limited number of previous records and a lack of suitable habitat within the study site itself.

Although not previously recorded in Kennett River, the Australian Mudfish has been recorded from nearby river systems in the Otways (i.e. Wye River and Glen Aire). This species prefers well vegetated coastal wetlands, swamps and drains, while flooded wetland areas adjacent to intermittently open estuaries are thought to provide significant habitat for the species (DSE 2001). The breeding ecology is poorly understood although it is thought that they spend part of their early life stage at sea (DSE 2001). It is possible that this species utilises aquatic habitats adjacent to the study site, including Kennett River and the wetland system with dense areas of Tall Marsh vegetation. Appropriate sediment and erosion controls must be employed during construction to avoid runoff from construction entering the wetlands or river system.

3.6.2.1 Remaining FFG Act species

Based on the absence of recent historical records, lack of suitable habitat and results of the site assessment, other FFG Act-listed fauna species are considered unlikely to regularly use habitat within or adjacent to the study site.

3.7 Ramsar Wetlands

The PMST identified one Ramsar wetland relevant to the study area (DAWE 2021). This includes:

- Port Phillip Bay (Western Shoreline) and Bellarine Peninsula (50-100 km upstream)

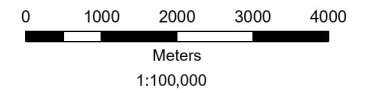
Based on the distance and lack of connectivity to the study site, construction works are unlikely to impact this Ramsar site. Nonetheless, construction works must ensure best practise erosion and sediment controls are in place for the duration of construction to avoid indirect impacts to any receiving watercourses, particularly considering the proximity of the site to Kennett River.

3.8 Migratory species

The PMST identified 46 migratory species that have the potential to occur in the study area (DAWE 2021a). No species listed as migratory were observed using habitat within or adjacent the study site during the site assessment.

Of the species identified in the database search, migratory shorebird species may occasionally visit the beach habitat adjacent the study site or flyover the study site. However, habitats within the study site do not provide suitable habitat to support these species and they are therefore unlikely to be impacted by the project. Similarly, White-throated Needletail is likely to only fly over the study site (refer Section 3.6.1.3). Marine species will not be impacted by project works.

The remaining terrestrial migratory species include Satin Flycatcher (*Myiagra cyanoleuca*), Rufous Fantail (*Rhipidura rufifrons*) and Black-faced Monarch (*Monarcha melanopsis*). All may occur in forested habitats surrounding the study site and may pass through on occasion, however the habitat within the study site is not suitable to support these species on a regular basis.

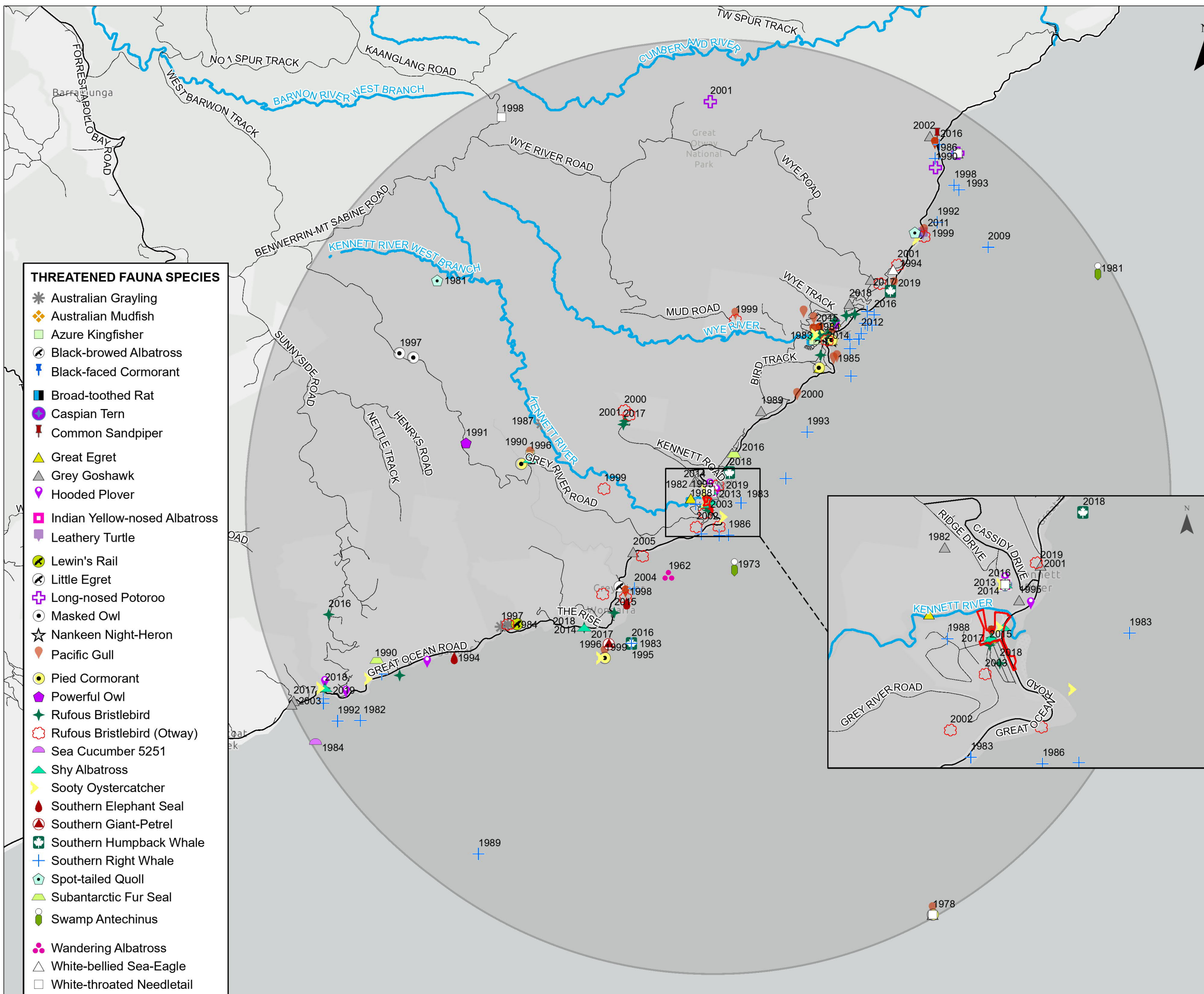


LEGEND

- Study Site
- Study Area
- Major Road
- Minor Road
- River

THREATENED FAUNA SPECIES

- ✱ Australian Grayling
- ◆ Australian Mudfish
- Azure Kingfisher
- ✎ Black-browed Albatross
- ✚ Black-faced Cormorant
- Broad-toothed Rat
- ✚ Caspian Tern
- ✚ Common Sandpiper
- ▲ Great Egret
- ▲ Grey Goshawk
- ✚ Hooded Plover
- Indian Yellow-nosed Albatross
- Leathery Turtle
- ✚ Lewin's Rail
- ✎ Little Egret
- ✚ Long-nosed Potoroo
- Masked Owl
- ★ Nankeen Night-Heron
- Pacific Gull
- Pied Cormorant
- ✚ Powerful Owl
- ✚ Rufous Bristlebird
- ✚ Rufous Bristlebird (Otway)
- ✚ Sea Cucumber 5251
- ▲ Shy Albatross
- ▶ Sooty Oystercatcher
- Southern Elephant Seal
- ▲ Southern Giant-Petrel
- Southern Humpback Whale
- + Southern Right Whale
- ◆ Spot-tailed Quoll
- ▲ Subantarctic Fur Seal
- Swamp Antechinus
- ✚ Wandering Albatross
- ▲ White-bellied Sea-Eagle
- White-throated Needletail



Key Map



SOURCES:
 1. Roads and Waterways © DELWP 2021
 2. Basemap © Nearmap, Light Gray Base: Vicmap, Esri, HERE, Garmin, METI/NASA, USGS
 World Topographic Map: Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS
 Light Gray Reference: Vicmap, Esri, HERE, Garmin, METI/NASA, USGS
 World Hillshade: Esri, USGS

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PROJECT: Kennett River Tourism Infrastructure Improvements - Flora and Fauna Assessment
PROJECT NO: 30043113E
FIGURE NO: 4
FIGURE TITLE: Threatened Fauna Species
CREATED BY: JZ15939
DATE: 3/09/2021
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4 Legislation and Policy

4.1 Commonwealth legislation

4.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act is the central piece of Commonwealth environmental legislation that provides a legal framework to protect and manage national and internationally important flora, fauna, ecological communities and heritage places. MNES which are addressed in this report under the Act include:

- Wetlands of international importance (listed as 'declared Ramsar wetlands');
- Listed threatened species and ecological communities; and
- Migratory species.

4.1.1.1 Implications

An assessment of impacts and recommendations for these MNES is summarised below in Table 9.

Table 9: Summary of potential impacts to MNES and recommendations.

MNES	Potential Impacts	Recommendations
Ramsar wetlands	There is considered to be no direct or indirect impact associated with the proposed action on Ramsar wetlands.	Referral not required.
Threatened species and communities	<p>One listed community is present within and adjacent to the study site (salt-wedge estuary community), however is not anticipated to be impacted by the project works.</p> <p>EPBC Act-listed flora species are considered unlikely to occur within the study site.</p> <p>Two fauna species are considered to potentially utilise habitats immediately adjacent to the study site including Hooded Plover and Australian Grayling. Project works are not anticipated to directly impact the habitats of these species (beach/dune habitat and Kennett River, respectively).</p>	<p>Referral not required.</p> <p>Ensure appropriate sediment and erosion controls are employed during construction to avoid indirect impacts to Kennett River and estuary, which are considered to be the threatened community and provide habitat for threatened fauna.</p> <p>If possible, time construction works along the eastern side of the Great Ocean Road outside of the breeding season of Hooded Plover (August-March) to minimise disturbance.</p>
Migratory species	The study site is not considered to provide suitable habitat to support migratory species.	Referral not required.

4.2 State legislation

4.2.1 *Environmental Effects Act 1978*

The *Environmental Effects Act 1978* (EE Act) provides for an assessment of proposed projects that are capable of having a significant effect on the environment. Projects that trigger the referral criteria must be referred to the Minister administering the EE Act to decide if an Environmental Effects Statement (EES) should be prepared.

4.2.1.1 Implications

Based on a review of the EE Act assessment criteria (DSE 2006), an EES will not be required for impacts to environmental values of the study site as guidelines under the Act have will not be triggered by the proposed works.

4.2.2 *Flora and Fauna Guarantee Act 1988*

The FFG Act is an important component of the Victorian legislation for the protection and management of threatened flora and fauna species and communities. The FFG Act provides for the listing of taxa (genera, species, subspecies and varieties), threatened communities of flora and fauna and potentially threatening processes.

The FFG Act has recently been amended to provide a modern and strengthened framework for the protection of Victoria's biodiversity and includes the Amendment Act and the *Flora and Fauna Guarantee Regulations 2020* (refer Appendix D). The Amended Act requires ministers and public authorities to consider the FFG Act when performing functions that might impact biodiversity.

4.2.2.1 Implications

Three protected flora species (Sallow Wattle, *Acacia* sp. and Prickly Moses) were recorded within the study site and are proposed for removal. A permit to remove protected flora will be required.

Two fauna species, Rufus Bristlebird and Australian Mudfish may occur in habitats within or adjacent to the study site, however, are unlikely to be impacted by project works.

4.2.3 *Planning and Environment Act 1987*

The *Planning and Environment Act 1987* (PE Act) governs the planning framework for the use, development and protection of land in Victoria. The PE Act provides procedures for the preparation and amendment of the Victoria Planning Provisions and planning schemes. The Act also provides avenues for the acquisition and compliance of permits under local planning schemes. The PE Act implements the functions listed below to achieve these objectives:

- Set the broad objectives for planning in Victoria;
- Set the main rules and principles for how the Victorian planning system works;
- Set up the key planning procedures and legal instruments in the Victorian planning system; and
- Define the roles and responsibilities of the Minister, councils, government departments, the community and other stakeholders in the planning system.

4.2.3.1 Victoria Planning Provisions

The Victoria Planning Provisions (VPP) are developed by the Minister for Planning under the PE Act and form the basis for all local planning schemes. The VPP provides the framework, standard provisions and State planning policy, with input from local councils, incorporated documents, planning zones and overlays, for inclusion into any new or amended planning scheme. Amendments to the VPP are made to keep policies current with relevant changes throughout local government.

A planning permit is required under Clause 52.17 of the Colac Otway Shire Planning Scheme for removal of native vegetation.

Three environmental overlays apply to the study site:

- Environmental Significance Overlay – Schedule 2 (ESO2);
- Significant Landscape Overlay - Schedule 2 (SLO2); and
- Erosion Management Overlay – Schedule 1 (EMO1).

ESO2 pertains to the protection of lakes, wetlands and watercourse. No permit is required for removal of native vegetation under this overlay. SLO2 pertains to coastal towns (including Kennett River). A permit is required for removal of native vegetation under this overlay. EMO1 pertains to land susceptible to landslip and erosion. It is

considered that any proposed native vegetation removal required for the project will trigger a permit under the EMO as the roots below ground level will likely be removed.

Refer to Section 4.3 below for a detailed assessment of vegetation removal under the Guidelines, including vegetation offset requirements.

4.2.4 *Marine and Coastal Act 2018*

Marine and coastal Crown land is defined in the *Marine and Coastal Act (MACA) 2018* as Crown Land within 200 metres of the high tide water level. All use, development and works on marine and coastal Crown land by any party, including committees of management, local government and Parks Victoria, requires consent under the MACA. The MACA provides an integrated and coordinated approach to planning and managing the marine and coastal environment by:

- Enabling protection of the coastline and the ability to address the long-term challenges of climate change, population growth and ageing coastal structures;
- Ensuring that partners work together to achieve the best outcomes for Victoria's marine and coastal environment.

4.2.4.1 Implications

At the time of writing, SMEC has confirmed that there will need to be two (2) separate MACA Consent Applications made for the Kennett River project as follows:

- Investigative Works include Service proving works and geotechnical pavement dipping bore holes
- Remainder of all project upgrade works.

SMEC recently submitted a draft MACA Consent application to the Great Ocean Road (GOR) Authority for their endorsement, as they are the Land Manager for coastal Crown land. This is the first of the two MACA consent applications to be made for this project.

The GOR Authority, as the Land manager, will submit the MACA application(s) directly to DELWP for approval.

4.2.5 *Catchment and Land Protection Act 1994*

The key legislation governing the management and classification of noxious weeds and pest animals throughout Victoria is the CALP Act. The Act aims to protect primary production, Crown land, the environment and community health from the effects of noxious weeds and pest animals (Agriculture Victoria 2021). The Act requires landowners to manage noxious weeds and pest animals on their land. This includes the prevention of spread, direct management or in some instance's eradication of regionally prohibited or controlled weeds and pest animal species on their land (Agriculture Victoria 2021).

4.2.5.1 Implications

Three declared noxious weed species (refer Section 3.2.2) were recorded during the site assessment.

Colac Otway Shire is required to ensure that construction works prevent the growth and spread of noxious weed species and pest animals during all stages of construction. It is recommended that a CEMP is developed by Colac Otway Shire and the contractor to ensure appropriate risk management measures are implemented during works to comply with the CaLP Act. Controls for the project may include the exclusive use of weed-free materials (i.e. soil, gravel), minimising erosion/sedimentation and thorough washing of equipment and machinery to avoid transportation of weed material/ pathogen contaminated soil.

4.2.6 *Wildlife Act 1975 and Wildlife Regulations 2013*

The *Wildlife Act 1975* and *Wildlife Regulations 2013* are both Victorian legislation which prevent harm to wildlife through the following key objectives:

Wildlife Act 1975:

1. to establish procedures in order to promote:

- (a) the protection and conservation of wildlife;
 - (b) the prevention of taxa of wildlife from becoming extinct;
 - (c) the sustainable use of and access to wildlife; and
2. to prohibit and regulate the conduct of persons engaged in activities concerning or related to wildlife.

Wildlife Regulations 2013:

1. to provide for the management and conservation of wildlife and wildlife habitat;
2. to provide for humane use of and access to wildlife;
3. to make further provision in relation to the licensing system established by section 22 of the *Wildlife Act 1975*;
4. to prescribe fees, offences, royalties and various other matters for the purposes of the *Wildlife Act 1975*; and
5. to provide for exemptions from certain provisions of the *Wildlife Act 1975*.

4.2.6.1 Implications

SMEC holds a permit under the *Wildlife Act 1975* to carry out field investigations for the purpose of conserving, monitoring, improving or maintaining wildlife habitat within Victoria. This also includes the salvage and translocation of wildlife from a particular locality which requires a specific *Wildlife Act 1975* permit (authorised by DELWP) for the capture, handling and relocation of wildlife.

Any works requiring the removal of wildlife within or adjoining the project site must be undertaken by suitably licenced personnel under the Act. Appropriate mitigation measures must be employed during the vegetation removal, such as directional clearing towards areas of remaining habitat, and suitable protocols and contingency measures to manage any injured or displaced fauna during construction. It is recommended that an ecologist is present during vegetation removal works to capture and relocate any displaced fauna, including frogs or fish from wetland areas and potential bird nests.

4.2.7 *Water Act 1989*

The *Water Act 1989* regulates the management and use of all water under the control of the Crown in Victoria. The Act provides Water Authorities with a range of enforcement powers and imposes obligations on persons and organisations not to interfere with assets of Water Authorities, waterways and water.

The Act governs the entitlement of surface and groundwater for a range of uses including industrial and mining water use. A licence is required for works involving construction on a waterway, including temporary or permanent deviation or diversion of a waterway. The right to take water is attained in the form a licence, water share, bulk entitlement or environmental entitlement.

4.2.7.1 Implications

Corangamite CMA is the responsible authority for the control, management and authorisation of works and activities in or over designated waterways in the CMA's waterway management district. Consultation with Corangamite CMA will be required due to the proximity of works to Kennett River.

Consultation is required with Southern Rural Water to incorporate the new toilet block facility into the existing license agreement.

4.3 Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines were incorporated into the Victorian Planning Provisions and all planning schemes in Victoria in December 2017 (DELWP 2017). The Guidelines replace the *Permitted clearing of native vegetation - Biodiversity assessment guidelines* (DEPI 2013).

4.3.1 Three-step approach

Under the Guidelines, all applications for a permit to remove native vegetation in Victoria must follow a three-step approach:

1. Avoid the removal, destruction or lopping of native vegetation;
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided; and
3. Provide an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation.

In accordance with the Guidelines, an application to remove native vegetation must clearly demonstrate that no options exist to further minimise the impacts of native vegetation removal, that will not undermine the objectives of the proposed use or development (DELWP 2017).

4.3.2 Avoid and Minimise Statement

The following statement has been developed in accordance with decision guidelines to be considered in Section 3.5, page 12 of the *Assessor's handbook for applications to remove, destroy or lop native vegetation* (DELWP 2018).

The study site is Kennett River Tourism Infrastructure project area, Kennett River. The proposed works include upgrading the existing carpark and service road, installation of a new toilet block facility with associated wastewater facility and filtration system and open-swale outfall drain and minor road works along Great Ocean Road and Hawdon Avenue.

The proposed project footprint has been designed to impact the smallest area possible, specifically to avoid overall impacts on native vegetation and to Kennett River, however some vegetation removal is unavoidable. A total of 0.467 ha of native vegetation removal is required to undertake the proposed works (including one scattered tree that has been previously endorsed for removal). Vegetation proposed for removal includes four EVC's; Shrubby Foothill Forest (EVC 45), Coastal Headland Scrub (EVC 161), Aquatic Herbland (EVC 653) and Tall Marsh (EVC 821). Shrubby Foothill Forest is listed as endangered in the Otway Ranges bioregion. Areas within DELWP's modelled 'Current Wetland' layer will also be impacted. The proposed vegetation removal is a 'worst-case scenario' and it is likely that more native vegetation will be retained during the detailed design and construction phases.

Vegetation within the study site has been subject to past disturbance such as on-going roadside maintenance. The vegetation proposed to be removed is not considered to play a significant role in protecting water quality of the Kennett River.

Appropriate sediment and contaminant runoff controls will be implemented pre-, during and post-construction to avoid any significant impacts to Kennett River. Controls to minimise impacts on native vegetation will be implemented and include:

- No-Go Zone fencing of native vegetation to avoid further native vegetation loss and soil erosion of inundated areas;
- Sediment fencing around stockpiles to prevent runoff entering waterways and nearby wetlands;
- Covers/tarps over sediment and rubble stockpiles to prevent runoff or windswept materials entering waterways and nearby wetlands;
- Placement of sediment controls around construction boundary where applicable, to prevent sediment/contaminant run off into waterways and nearby wetlands;
- Avoiding demolition work during poor weather (e.g. rain, extreme wind) to prevent sediment/contaminant run off into waterways and nearby wetlands; and
- Providing detailed inductions to workers on site highlighting controls implemented to avoid impacts to sensitive environments within and downstream of the study site.

The project does not require removal of important habitat for threatened fauna, flora species listed as vulnerable or endangered. Combined with implemented sediment and contaminant controls to avoid runoff downstream, the project will not result in a significant impact on Victoria's biodiversity.

4.3.3 Application of the Guidelines for this project

The location mapping for the study site (DELWP 2020d) identifies that impacts within the study site are proposed to occur within Location 3. The project will follow a detailed assessment pathway.

A Native Vegetation Removal (NVR) report for the project has been obtained from DELWP which details offset requirements (Table 10; Appendix D). Third party offsets will be secured via a registered offset broker or Colac Otway Shire's existing registered offsets.

Table 10: Native vegetation removal details

Proposed vegetation removal details	
Assessment pathway	Detailed
Total vegetation removal	0.467
Extent of current removal	0.436 ha
Extent of past removal	0.031
No. large trees to be removed	0
General offset amount	0.274 general habitat units
Minimum strategic biodiversity score	0.694

5 Summary and Recommendations

SMEC recommends that COS undertakes the following next steps for the project:

- Avoid and minimise impacts to native vegetation throughout the entirety of the project (e.g. No-Go Zones, reconsidering construction boundaries);
- Obtain a planning permit for the removal of native vegetation;
- Secure offsets via a registered offset broker or COS's existing registered offsets prior to the removal of native vegetation;
- Submit a MACA Consent Application to GOR for endorsement and subsequent submission to DELWP;
- Prior to construction, develop a Construction Environmental Management Plan (CEMP) for the project to address:
 - Protection of native vegetation to be retained on site during construction
 - Appropriate risk management measures for weeds and pest animals (to comply with CaLP Act)
 - Implement control measures for erosion, toxicant laden and sedimentation runoff into Kennett River
 - Ensure the CEMP highlights the sensitivity of Kennett River which is a listed ecological community under the EPBC Act and provides habitat for Australian Grayling, a threatened fish under the EPBC Act. Direct and indirect impacts must be avoided or mitigated throughout construction with appropriate management measures including No-Go Zone fencing and erosion and sediment controls;
- Timing of construction works along the eastern side of the Great Ocean Road should occur outside of the breeding season of Hooded Plover (August-March) to minimise possible noise disturbance;
- Engage a suitably qualified and licenced ecologist to capture and relocate fauna from vegetation if necessary, during the vegetation removal phase of the project; and
- Improve the overall quality and extent of retained native vegetation post-construction through on-site rehabilitation or revegetation works.

A summary of potential legislative and permit requirements applicable to the project are provided in Table 11.

Table 11: Potential legislative requirements for the project.

Legislation	Assessment Result	Recommendations
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	<p>One listed community is present within and adjacent to the study site (salt-wedge estuary community), however is not anticipated to be impacted by the project works.</p> <p>EPBC Act-listed flora species are considered unlikely to occur within the study site.</p> <p>Two fauna species are considered to potentially utilise habitats immediately adjacent to the study site including Hooded Plover and Australian Grayling. Project works are not anticipated to directly impact the habitats of these species (beach/dune habitat and Kennett River, respectively).</p>	<p>Referral not required.</p> <p>Ensure appropriate sediment and erosion controls are outlined within the project CEMP and employed during construction to avoid indirect impacts to the salt-wedge estuary and also habitat for threatened fauna.</p> <p>If possible, time construction works along the eastern side of the Great Ocean Road outside of the breeding season of Hooded Plover (August-March) to minimise disturbance.</p>

Legislation	Assessment Result	Recommendations
<i>Environmental Effects Act 1978</i>	Approximately 0.467 ha of native vegetation is proposed for removal (including past removals) for the proposed works.	No further requirements as criteria for referral have not been triggered.
<i>Flora and Fauna Guarantee Act 1988</i>	Three protected flora species were recorded within the study site and are proposed for removal. Two fauna species, Rufus Bristlebird and Australian Mudfish, may occur in habitats within or adjacent to the study site, however, are unlikely to be impacted by project works.	An FFG Act permit will be required for the removal of protected flora. Avoid and minimise impacts to native vegetation and habitat for listed flora and fauna.
<i>Planning and Environment Act 1987</i>	Approximately 0.467 ha of native vegetation is proposed for removal (including past removals) for the proposed works. It is noted that some of this vegetation will be retained through the detailed design process. Three environmental overlays are applicable to the site; ESO2, SLO2 and EMO1.	A planning permit is required for the removal of native vegetation under Clause 52.17, SLO2 and EMO1. Avoid and minimise impacts to native vegetation throughout the detailed design and construction process. Secure vegetation offsets prior to vegetation removal on site.
<i>Marine and Coastal Act 2018</i>	The works occur within 200 m of the high tide water level, therefore a MACA Consent is required. GOR is the relevant land manager.	Submit a MACA Consent Application to GOR for endorsement. GOR will then submit the MACA to DELWP for approval. Works can only proceed under the conditions of the approved consent.
<i>Catchment and Land Protection Act 1994</i>	Two declared noxious weeds were recorded within the study site.	Prior to construction, CEMP must be prepared for the project which outlines measures to prevent the spread of declared noxious weeds and pest animals during construction.
<i>Wildlife Act 1975</i>	Suitable habitat is available for fauna within the study site including wetland vegetation and coastal scrub.	If vegetation removal is proposed, an ecologist should be present during vegetation removal for wildlife pre-clearance checks and relocation if necessary.
<i>Water Act 1989</i>	One waterway lies adjacent to, and intersects the study site, Kennett River.	Consultation with Corangamite CMA is required due to the proximity of works to Kennett River. Consultation is required with Southern Rural Water to incorporate the new toilet block facility into the existing license agreement.

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Appendix A Flora Results

Key to table:

EPBC	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FFG	Victorian Flora and Fauna Guarantee Amendment Act 2019
CaLP	Catchment and Land Protection Act 1994

Likelihood:

Present	Species confirmed present in the study site based on direct observation, specialist knowledge or relevant reports pertaining to the site
Likely	Suitable habitat available to support species populations/individuals, numerous previous records or specialist knowledge of the study site
Possible	Suitable habitat may be available to support species populations/individuals, and some previous records in proximity to the study site
Unlikely	No suitable habitat to support species populations/individuals, or absence/lack of species records in proximity to the study site

Status of species:

CR	Critically en under the EPBC Act
EN	en under the EPBC Act
VU	vu under the EPBC Act
cr	Critically en under the FFG Act
en	en under the FFG Act
vu	vu under the FFG Act
thr	Threatened under the FFG Act
P	Protected under the FFG Act
CaLP (C)	Listed as regionally controlled under the CaLP Act
#	Native but may be alien species

Table A1: Flora species recorded during the site assessment

Scientific name	Common name	Status
Native		
<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle	P
<i>Acacia melanoxylon</i>	Blackwood	
<i>Acacia</i> sp.	Wattle	
<i>Acacia verticillata</i>	Prickly Moses	P
<i>Acaena novae-zelandiae</i>	Bidgee-widgee	
<i>Allocasuarina verticillata</i>	Drooping Sheoak	#
<i>Banksia marginata</i>	Silver Banksia	
<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	Sweet Bursaria	
<i>Calystegia sepium</i> subsp. <i>roseata</i>	Large Bindweed	
<i>Carex appressa</i>	Tall Sedge	
<i>Cassinia aculeata</i>	Common Cassinia	
<i>Corymbia gummifera</i>	Red Bloodwood	r, #

Scientific name	Common name	Status
<i>Dichondra repens</i>	Kidney-weed	
<i>Eucalyptus globulus</i> subsp. <i>bicostata</i>	Eurabbie	
<i>Eucalyptus ovata</i>	Swamp Gum	
<i>Eucalyptus viminalis</i>	Manna Gum	
<i>Euchiton involucratus</i> s.s.	Star Cudweed	P
<i>Geranium</i> spp.	Crane's Bill	
<i>Gynatrix pulchella</i>	Hemp Bush	
<i>Juncus</i> spp.	Rush	
<i>Leptospermum continentale</i>	Prickly Tea-tree	
<i>Leptospermum laevigatum</i>	Coast Tea-tree	
<i>Leptospermum lanigerum</i>	Woolly Teatree	
<i>Leucopogon parviflorus</i>	Coast Beard-heath	
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle	en, #
<i>Myoporum insulare</i>	Common Boobiella	
<i>Persicaria decipiens</i>	Slender Knotweed	
<i>Phragmites australis</i>	Common Reed	
<i>Pittosporum undulatum</i>	Sweet Pittosporum	#
<i>Poa labillardierei</i>	Common Tussock-grass	
<i>Pteridium esculentum</i> subsp. <i>esculentum</i>	Austral Bracken	
<i>Ranunculus</i> spp.	Buttercup	
<i>Rubus parvifolius</i>	Small-leaf Bramble	
<i>Solanum aviculare</i>	Kangaroo Apple	
Introduced		
<i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus	
<i>Bromus hordeaceus</i>	Soft Brome	
<i>Cenchrus clandestinus</i>	Kikuyu	
<i>Cirsium vulgare</i>	Spear Thistle	CaLP (C)
<i>Coprosma repens</i>	Mirror Bush	
<i>Cyperus eragrostis</i>	Drain Flat -sedge	
<i>Dactylis glomerata</i>	Cocksfoot	
<i>Diets</i> spp.	African Iris	

Scientific name	Common name	Status
<i>Erigeron bonariensis</i>	Flaxleaf Fleabane	
<i>Galium aparine</i>	Cleavers	
<i>Genista monspessulana</i>	Montpellier Broom	WONS, CaLP (C)
<i>Hedera helix</i> s.l.	English Ivy	
<i>Helminthotheca echioides</i>	Ox-tongue	
<i>Modiola caroliniana</i>	Red-flower Mallow	
<i>Oxalis pes-caprae</i>	Soursob	CaLP (R)
<i>Phalaris aquatica</i>	Toowoomba Canary-grass	
<i>Plantago lanceolata</i>	Ribwort	
<i>Prunus domestica</i>	Plum	
<i>Romulea rosea</i>	Onion Grass	
<i>Rubus polyanthemus</i>	Forest Blackberry	
<i>Rumex conglomeratus</i>	Clustered Dock	
<i>Rumex crispus</i>	Curled Dock	
<i>Solanum nigrum</i> s.s.	Black Nightshade	
<i>Sonchus oleraceus</i>	Common Sow-thistle	
<i>Tetragonia implexicoma</i>	Bower Spinach	
<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	
<i>Trifolium repens</i> var. <i>repens</i>	White Clover	
<i>Vinca major</i>	Blue Periwinkle	
<i>Vulpia myuros</i>	Rat's-tail Fescue	
<i>Yucca</i> spp.	Yucca	
<i>Zantedeschia aethiopica</i>	White Arum-lily	

Table A:2 Threatened flora species previously recorded within the study area

Scientific Name	Common Name	EPBC Act	FFG Act	No. Records	Last Record	Likelihood of Occurrence
<i>Acacia howittii</i>	Sticky Wattle		vu	1	2009	Unlikely, outside known range. Confined to eastern Victoria from the upper Macalister River area near Mt Howitt south to near Yarram and east to near Tabberabbera; collections from near Daylesford and Melbourne are presumably of cultivated origin.
<i>Acacia nanodealbata</i>	Dwarf Silver-wattle		vu	2	2009	Possible, but not recorded during site assessment and will not be impacted by the project. Known from forests in the Healesville-Warburton area, the top of Mt Macedon, near Creswick, and in the Otway Range.
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	VU	-	-	N/A - PMST Only	Unlikely, absence of suitable habitat. Apparently confined to permanent swamps principally along the Murray River Between Wodonga and Echuca, uncommon to rare in the south probably due to alteration of habitat.
<i>Asterophora mirabilis</i>	Grey Jockey		en	2	2013	Absence of nearby records, lack of suitable habitat present. Found in cool temperate rainforests of Victoria and Tasmania.
<i>Cyathea cunninghamii</i>	Slender Tree-fern		cr	2	1979	Not present, absence of suitable habitat. Of limited distribution in Victoria and confined to deep gullies in wet forests (e.g. Otway Range, Dandenong Ranges, Tarra-Bulga National Park, Wilsons Promontory, Mt Drummer in the far east) and seldom common.
<i>Echinodium hispidum</i>	Madeira Moss		vu	2	1976	Unlikely, absence of recent, nearby records.
<i>Eucalyptus brookeriana</i>	Brooker's Gum		en	2	1988	Not present, absence of recent, nearby records and suitable habitat. It occurs in two areas; on the northern foothills of the Otway ranges and north of the Great Dividing Range in the Bells Reef-Trentham area.

References

Scientific Name	Common Name	EPBC Act	FFG Act	No. Records	Last Record	Likelihood of Occurrence
<i>Eucalyptus globulus subsp. globulus</i>	Southern Blue-gum		en	9	2002	Unlikely, outside known range. Occurs in Victoria in the area south of the Strzelecki Range.
<i>Lastreopsis hispida</i>	Bristly Shield-fern		en	2	2007	Unlikely, absence of suitable habitat. Grows in wet forests. Locally plentiful in southern Otways (e.g. Maits Rest), but rare outside this area, in scattered localities in mountains east of Melbourne (e.g. Olinda, Fernshaw, Beenak), and discovered in 2015 in the Kuark area on south side of Errinunda Plateau in East Gippsland).
<i>Leiocarpa gatesii</i>	Wrinkled Buttons	VU		-	N/A - PMST Only	Unlikely, outside known range, no previous records in study area. Confined to the Lorne-Anglesea area where believed to be extinct until rediscovered in heathy forest in 1984 following the Ash Wednesday fires.
<i>Melaleuca armillaris subsp. armillaris</i>	Giant Honey-myrtle		en	7	2009	Present but planted, outside natural range. Mainly confined to near coastal sandy heaths, scrubs, slightly raised above saltmarsh, riparian scrubs, rocky coastlines and foothill outcrops eastwards from about Marlo. Occurrences to the west are naturalized.
<i>Nematolepis squamea subsp. squamea</i>	Satinwood		vu	22	2007	Not present, conspicuous species not recorded on site, absence of suitable habitat. In Victoria confined mainly to the Otway Range where locally common in gullies and tall wet forests, but with occurrences in the east, near Bairnsdale and Orbost and more surprising records from drier forest in the Pyrenees Range, Wombat Forest and Beechworth areas.
<i>Pellaea nana</i>	Dwarf Sickle-fern		en	1	1980	Unlikely, absence of suitable habitat. Occurs in moist forest, often among rocks or on rock faces.
<i>Prasophyllum frenchii</i>	Maroon Leek-orchid	EN	L	-	N/A - PMST Only	Unlikely, absence of suitable habitat and recent nearby records. Widespread across southern Victoria but of disjunct occurrence. Found mostly in grasslands, heathlands and grassy woodlands on moderately rich sandy and black clay loams.

Scientific Name	Common Name	EPBC Act	FFG Act	No. Records	Last Record	Likelihood of Occurrence
<i>Prasophyllum spicatum</i>	Dense Leek-orchid	VU	-	-	N/A - PMST Only	Unlikely, absence of suitable habitat and recent nearby records. Scattered over coastal and hinterland areas of Victoria but of disjunct occurrence. Found in grasslands, heathlands and heathy woodlands on well-drained sand and clay loams.
<i>Pterostylis chlorogramma</i>	Green-striped Greenhood	VU	L	-	N/A - PMST Only	Unlikely, absence of suitable habitat and recent nearby records. Apparently localized in Victoria, but exact range uncertain due to confusion with closely allied species. Grows in moist areas of heathy and shrubby forest, on well-drained soils.
<i>Pterostylis cucullata</i>	Leafy Greenhood	VU	L	-	N/A - PMST Only	Unlikely, absence of recent, nearby records and study site would be too disturbed to support species. Widely distributed but disjunct, mostly occurring in small groups in coastal areas, sometimes near inland watercourses.
<i>Thelymitra matthewsii</i>	Spiral Sun-orchid	VU	L	-	N/A - PMST Only	Unlikely, absence of suitable habitat and recent nearby records. Scattered sporadically across southern Vic and extending as far inland as the northern Grampians. Favours open forests and woodlands, where it is found in well-drained sand and clay loams. Grows best in areas where there has been soil disturbance, for example around old quarries and gravel pits, and on road verges, disused tracks or animal trails.

Appendix B Fauna Results

Key to table:

EPBC	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FFG	Victorian Flora and Fauna Guarantee Act 1988

Likelihood:

Present	Species confirmed present in the study site based on direct observation, specialist knowledge or relevant reports pertaining to the site
Likely	Suitable habitat available to support species populations/individuals, numerous previous records or specialist knowledge of the study site
Possible	Suitable habitat may be available to support species populations/individuals, and some previous records in proximity to the study site
Unlikely	No suitable habitat to support species populations/individuals, or absence/lack of species records in proximity to the study site

Status of species:

CR	Critically en under the EPBC Act
EN	en under the EPBC Act
VU	vu under the EPBC Act
Mi	Migratory under the EPBC Act
Ma	Marine under the EPBC Act
cr	Critically en under the FFG Act
en	en under the FFG Act
vu	vu under the FFG Act
thr	Threatened under the FFG Act
*	Denotes an introduced species
established	Established pest animal under the CaLP Act

Table B1: Fauna species recorded during the site assessment

Common name	Scientific name	Comment
Birds		
Australian King-Parrot	<i>Alisterus scapularis</i>	-
Australian Magpie	<i>Gymnorhina tibicen</i>	-
Australian Wood Duck	<i>Chenonetta jubata</i>	-
Common Blackbird	<i>Turdus merula</i>	-
Crimson Rosella	<i>Platycercus elegans</i>	-
Dusky Moorhen	<i>Gallinula tenebrosa</i>	-
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	-
Eastern Yellow Robin	<i>Eopsaltria australis</i>	-
Eurasian Coot	<i>Fulica atra</i>	-
Forest Raven	<i>Corvus tasmanicus</i>	-
House Sparrow	<i>Passer domesticus</i>	-
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	-

Common name	Scientific name	Comment
Little Wattlebird	<i>Anthochaera chrysoptera</i>	-
Masked Lapwing	<i>Vanellus miles</i>	-
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>	-
Noisy Miner	<i>Manorina melanocephala</i>	-
Pacific Black Duck/Mallard Hybrid	<i>Anas superciliosa X Anas platyrhynchos</i>	-
Pied Currawong	<i>Strepera graculina</i>	-
Purple Swamphen	<i>Porphyrio porphyrio</i>	-
Red Wattlebird	<i>Anthochaera carunculata</i>	-
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>	-
Spotted Pardalote	<i>Pardalotus punctatus</i>	-
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	-
Superb Fairy-wren	<i>Malurus cyaneus</i>	-
Tree Martin	<i>Petrochelidon nigricans</i>	-
Welcome Swallow	<i>Hirundo neoxena</i>	-
White-browed Scrubwren	<i>Sericornis frontalis</i>	-
White-eared Honeyeater	<i>Lichenostomus leucotis</i>	-

Table B:2 Threatened, and migratory terrestrial fauna species previously recorded within the study area

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Birds							
Antipodean Albatross	<i>Diomedea antipodensis</i>	VU	-	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Australasian Bittern	<i>Botaurus poiciloptilus</i>	EN	cr	-	-	N/A - PMST Only	Unlikely - lack of previous records and suitable habitat within the study site. Frequents wetlands with dense reedbeds, and other vegetation in water such as cumbungi, lignum, rushes and sedges.
Australian Fairy Tern	<i>Sternula nereis nereis</i>	VU	cr	-	-	N/A - PMST Only	Unlikely - lack of previous records and suitable habitat within the study site. Found on coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons. It favours both fresh and saline wetlands and near-coastal terrestrial wetlands, including lakes and salt-ponds.
Australian Painted-snipe	<i>Rostratula australis</i>	EN	cr	Ma	-	N/A - PMST Only	Unlikely - lack of previous records and suitable habitat within the study site. Inhabits many different types of shallow, brackish or freshwater terrestrial wetlands. Suitable wetlands usually support a mosaic of low, patchy vegetation, as well as lignum and canegrass.
Bar-tailed Godwit (baueri)	<i>Limosa lapponica baueri</i>	VU	vu	Mi/Ma	-	N/A - PMST Only	Unlikely - lack of previous records and suitable habitat within the study site. Found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms.
Black-browed Albatross	<i>Thalassarche melanophris</i>	VU	-	Mi/Ma	2	2018	Unlikely – pelagic species. The Black-browed Albatross wanders throughout the oceans of the Southern Hemisphere, south of the sub-tropics. Lives on the wing over the southern oceans for most of the year.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Black-faced Monarch	<i>Monarcha melanopsis</i>	-	-	Mi/Ma	1	2010	Possible – suitable habitat immediately adjacent the study site. Found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating.
Blue Petrel	<i>Halobaena caerulea</i>	VU	-	Ma	-	N/A - PMST Only	Unlikely – pelagic species. Individuals are rarely encountered inshore and offshore over the continental shelf and in pelagic waters off the shelf break. It forages in Antarctic and subantarctic waters.
Buller's Albatross	<i>Thalassarche bulleri</i>	VU	en	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. Marine and pelagic, inhabiting subtropical and subantarctic waters of the southern Pacific Ocean. Specific habitat requirements are poorly known.
Campbell Albatross	<i>Thalassarche impavida</i>	VU	-	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Caspian Tern	<i>Hydroprogne caspia</i>	-	vu	-	1	2016	Possible - within Kennett River Coastal Reserve. Prefers coastal habitats. May be found inland in larger wetlands and major river systems with clear water.
Common Greenshank	<i>Tringa nebularia</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – lack of previous records. Found both on the coast and inland, in estuaries and mudflats, mangrove swamps and lagoons, and in billabongs, swamps, sewage farms and flooded crops.
Common Sandpiper	<i>Actitis hypoleucos</i>	-	vu	Mi/Ma	1	2016	Possible - within Kennett River Coastal Reserve. Found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters.
Curlew Sandpiper	<i>Calidris ferruginea</i>	CR	cr	Mi/Ma	-	N/A - PMST Only	Unlikely – lack of previous records. Found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters.
Eastern Curlew	<i>Numenius madagascariensis</i>	CR	cr	Mi/Ma	-	N/A - PMST Only	Unlikely – lack of previous records. Found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Fairy Prion	<i>Pachyptila turtur subantarctica</i>	VU	-	Ma	-	N/A - PMST Only	Unlikely – pelagic species. Breed on offshore islands. Most often seen over the open sea near breeding colonies, and rarely enter sheltered coastal waters.
Flesh-footed Shearwater	<i>Ardenna carneipes</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Fork-tailed Swift	<i>Apus pacificus</i>	-	-	Mi/Ma	2	2000	Possible – flyover only. This species is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground. Mostly occur over inland plains but sometimes above foothills or in coastal areas.
Gould's Petrel	<i>Pterodroma leucoptera leucoptera</i>	EN	-	-	-	N/A - PMST Only	Unlikely – pelagic species. Pelagic species that spends majority of its life at sea. Breeds on both Cabbage Tree Island, 1.4 km offshore from Port Stephens and on nearby Boondelbah Island.
Grey Falcon	<i>Falco hypoleucos</i>	VU	vu	-	-	N/A - PMST Only	Unlikely - lack of previous records and suitable habitat within the study site. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.
Grey Goshawk	<i>Accipiter novaehollandiae</i>	-	en	-	19	2019	Possible – flyover only. Found in most forest types, especially tall closed forests, including rainforests.
Grey-headed Albatross	<i>Thalassarche chrysostoma</i>	EN	en	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. Its habitat includes subantarctic, subtropical, and occasionally Antarctic waters in the Pacific, Indian, Atlantic and Southern Oceans.
Hooded Plover	<i>Thinornis cucullatus</i>	VU	vu	Ma	8	2019	Likely – within Kennett River Coastal Reserve. In Victoria, the highest densities of Hooded Plovers occur on beaches with large amounts of beach-washed seaweed.
Indian Yellow-nosed Albatross	<i>Thalassarche carteri</i>	VU	en	-	1	2016	Unlikely – pelagic species. Marine bird, located in subtropical and warmer subantarctic waters.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Latham's Snipe	<i>Gallinago hardwickii</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely - lack of previous records and suitable habitat within the study site. Latham's Snipe are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. They also use crops and pasture.
Lewin's Rail	<i>Lewinia pectoralis</i>	-	vu	-	1	1984	Unlikely – lack of suitable habitat within the study site. Prefers permanent, fresh-to-saline wetlands surrounded by dense vegetation.
Little Eagle	<i>Hieraetus morphnoides</i>	-	vu	-	1	2014	Possible – flyover/foraging only. Little Eagle is seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest.
Little Egret	<i>Egretta garzetta</i>	-	en	-	1	2013	Unlikely – lack of suitable habitat within study site. Frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves.
Little Tern	<i>Sternula albifrons</i>	-	cr	Mi/Ma	-	N/A - PMST Only	Possible - within Kennett River Coastal Reserve. Little Tern is mainly coastal, being found on beaches, sheltered inlets, estuaries, lakes, sewage farms, lagoons, river mouths and deltas.
Masked Owl	<i>Tyto novaehollandiae</i>	-	cr	-	2	1997	Unlikely – lack of suitable habitat within the study site. Inhabits forests, woodlands, timbered waterways and open country on the fringe of these areas. Require large hollows for nesting.
Northern Buller's Albatross	<i>Thalassarche bulleri platei</i>	VU	-	-	-	N/A - PMST Only	Unlikely – pelagic species. Breeds on islands around New Zealand, and feeds in the seas off Australia and the South Pacific.
Northern Giant Petrel	<i>Macronectes halli</i>	VU	en	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. Breeds in the sub-Antarctic, and visits areas off the Australian mainland mainly during the winter months (May-October). Immature and some adult birds are commonly seen during this period in offshore and inshore waters from around Fremantle (WA) to around Sydney (NSW).

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Northern Royal Albatross	<i>Diomedea sanfordi</i>	EN	-	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. Northern Royal Albatross primarily forages in inshore and offshore waters over the continental shelf to the shelf edge.
Orange-bellied Parrot	<i>Neophema chrysogaster</i>	CR	cr	Ma	-	N/A - PMST Only	Unlikely – lack of suitable habitat within the study site. Migrate to mainland Australia in winter. Found exclusively in Coastal and sub-coastal areas in association with saltmarshes, littoral heathlands, low scrublands in addition to grassy areas.
Osprey	<i>Pandion haliaetus</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – lack of suitable habitat within the study site. Found on the coast and in terrestrial wetlands of tropical and temperate Australia and off-shore islands, occasionally ranging inland along rivers, though mainly in the north of the country.
Painted Honeyeater	<i>Grantiella picta</i>	VU	vu	-	-	N/A - PMST Only	Unlikely – lack of suitable habitat within the study site. Occurs in box-gum woodland and box-ironbark forests with high presence of mistletoe for foraging.
Pectoral Sandpiper	<i>Calidris melanotos</i>	-	-	Mi/Ma	-	N/A - PMST Only	Possible - within Kennett River Coastal Reserve. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.
Powerful Owl	<i>Ninox strenua</i>	-	vu	-	1	1991	Unlikely – lack of suitable habitat within the study site. Found in open forests and woodlands, as well as along sheltered gullies in wet forests with dense understoreys, especially along watercourses. Needs old growth trees to nest.
Red Knot	<i>Calidris canutus</i>	EN	en	Mi/Ma	-	N/A - PMST Only	Possible - within Kennett River Coastal Reserve. Gather in large flocks on the coast in sandy estuaries with tidal mudflats.
Regent Honeyeater	<i>Anthochaera phrygia</i>	CR	cr	-	-	N/A - PMST Only	Unlikely – lack of suitable habitat within the study site. Occurs in dry open forest or woodlands comprising ironbarks, Yellow Box, White and Yellow Gum.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Rufous Bristlebird (Otway)	<i>Dasyornis broadbenti caryochrous</i>	-	vu	-	22	2003	Likely – suitable habitat within study site and numerous records. Usually inhabit dense shrubland, including heathland, usually where a high diversity of plant species grow; some occur in forests where there is a dense understorey of shrubs or bracken.
Rufous Fantail	<i>Rhipidura rufifrons</i>	-	-	Mi/Ma	11	2014	Possible – in surrounding forest habitat only. Found in rainforest, dense wet forests, swamp woodlands and mangroves.
Salvin's Albatross	<i>Thalassarche salvini</i>	VU	-	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Satin Flycatcher	<i>Myiagra cyanoleuca</i>	-	-	Mi/Ma	1	1996	Possible – in surrounding forest habitat only. Found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests.
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	-	-	Mi/Ma	-	N/A - PMST Only	Possible - within Kennett River Coastal Reserve. Prefers the grassy edges of shallow inland freshwater wetlands. It is also found around sewage farms, flooded fields, mudflats, mangroves, rocky shores and beaches.
Short-tailed Shearwater	<i>Ardenna grisea</i>	-	-	Mi/Ma	7	2016	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Shy Albatross	<i>Thalassarche cauta</i>	VU	en	Mi/Ma	20	2019	Unlikely – pelagic species. Pelagic or ocean-going species inhabits subantarctic and subtropical marine waters, spending the majority of its time at sea.
Soft-plumaged Petrel	<i>Pterodroma mollis</i>	EN	-	Ma	-	N/A - PMST Only	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Sooty Albatross	<i>Phoebastria fusca</i>	VU	cr	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Southern Giant-Petrel	<i>Macronectes giganteus</i>	EN	en	Mi/Ma	1	1996	Unlikely – pelagic species. A pelagic species that breeds on offshore islands. Lives on the wing over the southern oceans for most of the year.
Southern Royal Albatross	<i>Diomedea epomophora</i>	VU	cr	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. Pelagic species. On Campbell Island, nests are scattered amongst tussock grasslands and megaherb fields at mid-elevation.
Swift Parrot	<i>Lathamus discolor</i>	CR	cr	Ma	-	N/A - PMST Only	Unlikely – lack of suitable habitat. Migrates to mainland Australia in winter. Forages in dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees.
Wandering Albatross	<i>Diomedea exulans</i>	VU	cr	Mi/Ma	1	1962	Unlikely – pelagic species. Pelagic, spending most of their life in flight, landing only to breed and feed.
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	-	en	Ma	2	2015	Possible – flyover/foraging only. Commonly found in coastal and near coastal areas of Australia. Normally seen perched high in a tree or soaring over waterways and adjacent land.
White-capped Albatross	<i>Thalassarche steadi</i>	VU	-	Mi/Ma	-	N/A - PMST Only	Unlikely – pelagic species. Mostly observed in inshore and offshore waters over the continental shelf and less frequently in pelagic waters off the shelf break. May occasionally enter larger bays.
White-throated Needletail	<i>Hirundapus caudacutus</i>	VU	vu	Mi/Ma	8	2017	Possible – flyover only. Highly aerial species occurring over a variety of habitat types.
Yellow Wagtail	<i>Motacilla flava</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – lack of suitable habitat and uncommon vagrant. Occupies short grass and bare ground within margins of swamps, sewage ponds, saltmarshes, playing fields, airfields, ploughed land and town lawns.
Mammals							
Blue Whale	<i>Balaenoptera musculus</i>	EN	en	Mi	-	N/A - PMST Only	Unlikely – marine species. Ranging from tropical to polar waters, Blue Whale sightings in Australia are widespread. Despite typically being

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
							recorded on the western coast of Australia, Victorian waters are considered to harbour both possible and known foraging areas.
Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i>	VU	vu	-	2	1990	Unlikely – lack of suitable habitat within the study site. Found in high rainfall areas containing a dense ground layer of grasses, sedges, herbs and heaths.
Dusky Dolphin	<i>Lagenorhynchus obscurus</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – marine species. Inhabits coastal waters and oceans.
Fin Whale	<i>Balaenoptera physalus</i>	VU	-	Mi	-	N/A - PMST Only	Unlikely – marine species. Occur in tropical and polar waters, but rarely found in inshore waters. Fin Whales have been recorded in all southern states of Australia largely from aerial observations, or whale strandings.
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU	vu	-	-	N/A - PMST Only	Unlikely – lack of recent records and flowering eucalypts within the study site. Widely distributed across eastern Australia feeding on nectar from a variety of eucalypt species and fruits in rainforest habitats and farmland.
Long-nosed Fur Seal	<i>Arctophoca forsteri</i>	-	vu	Ma	1	2019	Unlikely – marine species. This species inhabits rocky coastlines and offshore islands characterised by large, jumbled angular rocks, boulder-strewn beaches, smooth rock platforms and some vegetated areas. The seal is native to Macquarie Island, South Australia, and Western Australia, and the North Island and South Island of New Zealand.[
Long-nosed Potoroo	<i>Potorous tridactylus trisulcatus</i>	VU	vu	-	3	2001	Unlikely – lack of suitable habitat within the study site. Occurs in a range of vegetation types characterized by dense understoreys, including shrublands, coastal scrub, heathlands, forest and woodlands, and rainforests. It is often most likely to occur near creeks or gullies. Optimal habitat often includes a mosaic of different vegetation types, with denser vegetation used for shelter and more open areas for foraging.
Killer Whale	<i>Orcinus orca</i>	-	-	Mi/Ma	5	2005	Unlikely – marine species. Inhabits coastal waters and oceans.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Pygmy Right Whale	<i>Caperea marginata</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – marine species. Inhabits coastal waters and oceans.
Sei Whale	<i>Balaenoptera borealis</i>	VU	-	Mi	-	N/A - PMST Only	Unlikely – marine species. Inhabits coastal waters and oceans.
Smoky Mouse	<i>Pseudomys fumeus</i>	EN	en	-	-	N/A - PMST Only	Unlikely – lack of suitable habitat within the study site. Occurs in heath habitat within forest or heathland on ridge tops or upper slopes.
Southern Bent-wing bat	<i>Miniopterus orianae bassanii</i>	CR	cr	-	-	N/A - PMST Only	Unlikely – flyover/aerial foraging only. It is an obligate cave-dwelling bat occurring only in south-east South Australia and south-west Victoria. During the non-breeding season individuals are distributed throughout this region, roosting in a large number of caves and rock crevices. During the breeding season, however, the majority of the population congregates in its three regularly- used breeding caves.
Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>	EN	en	-	-	N/A - PMST Only	Unlikely – lack of suitable habitat within the study site. Occurs in scrubby habitats with dense, low ground and shrub cover.
Southern Elephant Seal	<i>Mirounga leonina</i>	VU	-	Ma	2	2014	Unlikely – marine species. To breed and moult the Southern Elephant Seal prefers sand or cobble stone beaches where it can easily come ashore. There are two main populations found in Australian waters and the principal breeding colonies for these populations are located on Heard and Macquarie Islands.
Southern Humpback Whale	<i>Megaptera novaeangliae australis</i>	VU	cr	Mi/Ma	4	2018	Unlikely – marine species. Both the east coast and west coast Australian populations make their annual migrations between breeding areas in tropical waters along the east and west coast of Australia and feeding areas in the Antarctic. Humpback Whales migrate in close proximity to the coast of Australia on their way to and from their winter breeding areas.
Southern Right Whale	<i>Eubalaena australis</i>	EN	en	Mi	44	2019	Unlikely – marine species. The Southern Right Whale is seasonally present along the Australian coast between late April and early

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
							November. It has been recorded in the coastal waters of all Australian states with the exception of the Northern Territory.
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i>	EN	en	-	4	1993	Unlikely – lack of suitable habitat within the study site. Occurs in forested areas with suitable denning sites (i.e. rocky outcrops, caves, hollow logs etc.).
Subantarctic Fur Seal	<i>Arctocephalus tropicalis</i>	EN	-	Ma	2	2016	Unlikely – marine species. Inhabits coastal waters and oceans.
Swamp Antechinus	<i>Antechinus minimus maritimus</i>	VU	vu	-	2	1981	Unlikely – lack of suitable heath, grasslands or dense sedgy wetland habitat within study site. Habitat includes damp areas with dense vegetation cover such as wet heathlands, sedgeland, damp gullies, swamps and tussock grasslands.
Reptiles							
Green Turtle	<i>Chelonia mydas</i>	VU	-	Mi/Ma	-	N/A - PMST Only	Unlikely – marine species. Green turtles occur in seaweed-rich coral reefs and inshore seagrass pastures in tropical and subtropical areas of the Indo-Pacific region.
Leathery Turtle	<i>Dermochelys coriacea</i>	EN	cr	Mi/Ma	1	2011	Unlikely – marine species. In Australia, leatherback turtles occur in tropical and temperate waters. They have been reported feeding in coastal waters around Victoria.
Loggerhead Turtle	<i>Caretta caretta</i>	EN	-	Mi/Ma	-	N/A - PMST Only	Unlikely – marine species. In Australia, they occur in coral reefs, bays and estuaries in tropical and warm temperate waters off the coast of Queensland, Northern Territory, Western Australia and New South Wales.
Amphibians							
Growing Grass Frog	<i>Litoria raniformis</i>	VU	vu	-	-	N/A - PMST Only	Unlikely – no suitable wetland habitat within study site. Occurs in still or slow-flowing waterbodies with a high cover of emergent and submerged vegetation. Can be found in agricultural and pastoral land with permanent waterbodies providing there is sufficient cover of emergent, fringing or submerged vegetation.

Common Name	Scientific Name	EPBC Act	FFG Act	Mi/Ma	No. Records	Last Record	Likelihood of Occurrence
Fish							
Australian Grayling	<i>Prototroctes maraena</i>	VU	en	-	7	1997	Likely – within Kennett River. Occurs within streams and rivers in both fresh and brackish water environments. Larvae and early juvenile stages occur out at sea, before juveniles return to freshwater environments.
Australian Mudfish	<i>Neochanna cleaveri</i>	-	en	-	2	1983	Possible – within Kennett River and adjacent wetlands. Occurs in well vegetated coastal wetlands, swamps and drains.
Eastern Dwarf Galaxias	<i>Galaxiella pusilla</i>	VU	en	-	-	N/A - PMST Only	Unlikely in saline environment of Kennett River. Occurs in slow flowing or still freshwater habitats including swamps, drains, streams and creeks.
Porbeagle	<i>Lamna nasus</i>	-	-	Mi/Ma	-	N/A - PMST Only	Unlikely – marine species. Inhabits coastal waters and oceans.
White Shark	<i>Carcharodon carcharias</i>	VU	en	Mi	-	N/A - PMST Only	Unlikely – marine species. Inhabits coastal waters and oceans.
Invertebrates							
Hairy Burrowing Crayfish	<i>Engaeus sericatus</i>	-	vu	-	1	1982	Unlikely – no suitable habitat within study site (likely to occur upstream only). Occur within the banks of freshwater streams.
Otway Black Snail	<i>Victaphanta compacta</i>	-	en	-	5	1995	Unlikely – lack of suitable habitat within study site. Found in cool temperate rainforests of the Otway Ranges.
Sea Cucumber 5251	<i>Apsolidium densum</i>	-	en	-	2	1985	Unlikely – marine species. Inhabits coastal waters and oceans.

Appendix C Methods Extended

Nomenclature

Victorian Biodiversity Atlas data

The VBA database search encompassed a 10 km search radius around the study site. Multiple records for a species at a single location refer to the most recent record in all tables and mapping associated with this project. Records prior to 1960 have also been removed from the VBA dataset.

Flora species

Common and scientific names for plants follow the VBA database (current version).

Vegetation communities

EVCs are the standard unit for classifying native vegetation types in Victoria. EVCs are characterised by a combination of floristics, lifeforms and ecological characteristics and include a benchmark for the characteristics of the vegetation type in its mature, natural (pre-1750) state (DELWP 2021f).

Other vegetation types that may occur in Victoria include 'ecological communities' listed as threatened on the Commonwealth EPBC Act and 'communities of flora and fauna' (i.e. flora communities) listed as threatened on the Victorian FFG Act. These two acts have vegetation classification systems that differ from each other and also from the EVC classification system. As such, any single patch of native vegetation occurring within the study area (or anywhere in Victoria) will be classifiable as a particular EVC and may also be classifiable as a different ecological community under the EPBC Act, and/or as another flora community under the FFG Act.

Fauna species

Unless otherwise noted, common and scientific names for terrestrial fauna (mammals, birds, reptiles, amphibians, invertebrates) follow the VBA database (current version).

Fauna communities

There is no official classification system for fauna communities in Victoria. Fauna communities known or potentially occurring within the study area or surrounds are only considered in this report if they are listed under either of the EPBC Act and/or the FFG Act, which list a small number of fauna communities that are considered threatened at a national or state level.

Native vegetation descriptions

Native vegetation guidelines

The *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines, DELWP 2017) are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DELWP 2017).

The Guidelines apply a three-step approach (avoid, minimise and offset) as part of a strategic policy to manage the removal of native vegetation, in order to achieve 'no net loss' to biodiversity as a result of the removal, destruction or lopping of native vegetation (DELWP 2017). It is treated as a precautionary approach so that the removal of native vegetation is limited to what is reasonably necessary, and that Victoria's biodiversity is appropriately compensated for any removal of native vegetation that is approved (DELWP 2017).

To assist projects with policy and planning decisions, a number of biodiversity information resources have been developed by DELWP to measure biodiversity values across Victoria and guarantee biodiversity outcomes are delivered in accordance with the Government's investment programs. The following sections provide a summary of each of these information sources that have been used to inform this desktop flora and fauna assessment.

Bioregions

Bioregions are a landscape-scale approach to classifying the environment using a range of attributes such as climate, geomorphology, geology, soils and vegetation. There are 28 bioregions identified within Victoria and each comprises a selection of EVCs and both can be viewed on NatureKit and the NVIM tool (DELWP 2021b, DELWP 2021c).

Native vegetation condition

Native vegetation condition is presented by the condition scores modelled (shown as *Native vegetation condition map*) on the NVIM tool which provides an indication of how relative native vegetation is to its mature, natural state, as represented by benchmarks for the relevant EVCs (DELWP 2018; DELWP 2021c). These condition scores are also used to calculate biodiversity losses associated with vegetation removal at a site.

Location categories

There are three location categories that indicate the potential risk to biodiversity for the removal of native vegetation (DELWP 2017). These location categories include Location 3, Location 2 and Location 1 as described below:

- Location 3 – includes locations where the removal of less than 0.5 hectares of native vegetation could have a significant impact on habitat for a rare or threatened species;
- Location 2 – includes locations that are mapped as endangered EVCs and/or sensitive wetlands and coastal areas and are not included in Location 3; and
- Location 1 – includes all remaining locations in Victoria.

Assessment pathways

An assessment pathway determines how an application to remove native vegetation may impact biodiversity and the outcome of an application based on the location and extent of the native vegetation to be removed and is shown in Table A1 (DELWP 2017). The three assessment pathways include:

- Basic – limited impacts on biodiversity;
- Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas; and
- Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species.

Table A1: Determining the assessment pathway for native vegetation removals.

Extent of Native Vegetation	Location Category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including ≥ 1 large tree	Intermediate	Intermediate	Detailed
0.5 hectares of more	Detailed	Detailed	Detailed

When native vegetation removal is permitted, an offset must be secured that achieves a no net loss outcome for biodiversity. The type and amount of offset required depends on the native vegetation being removed and the contribution it makes to Victoria's biodiversity.

Habitat for rare or threatened species

A series of *habitat importance maps* have been developed by DELWP to show areas of Victoria that are habitat for threatened species (DELWP 2017). Threatened species are those listed under the FFG Act which has been amended in July 2021 to provide a modern and strengthened framework for the protection of Victoria's biodiversity (see Section 2.8 below).

The importance of a site in the landscape as habitat for a rare or threatened species is represented by a habitat importance score (ranging between 0-1). If native vegetation is mapped as habitat for a rare or threatened species, it will have an associated habitat importance score for each species (DELWP 2017).

The presence of modelled habitat for rare or threatened species will therefore contribute to the determination of assessment pathway of an application to remove native vegetation as important habitats are used to calculate biodiversity losses and offset requirements under the Guidelines (DELWP 2017).

Sensitive wetlands

Directory of important wetlands in Australia

The *Directory of Important Wetlands of Australia* is a list of nationally recognised important wetlands with over 150 listed in Victoria. A wetland may be considered nationally important if it meets at least one of the following criteria:

- It is a good example of a wetland type occurring within a biogeographic region in Australia;
- It plays an important ecological or hydrological role in the natural functioning of a major wetland system or complex; or
- It is habitat for animal taxa at a vulnerable stage in their life cycles or provides a refuge when adverse conditions such as drought prevail.

A list of important wetlands in Victoria is available on the Australian Government's DAWE website located here: <http://www.environment.gov.au/cgi-bin/wetlands/search.pl?smode=DOIW> (DAWE 2021b).

Ramsar sites

The Convention on Wetlands of International Importance, especially as waterfowl habitat, otherwise known as the Ramsar Convention, came into being in Ramsar, Iran in 1971 and was ratified in 1975 (DAWE 2021c).

The convention provides the framework for local, regional and national actions, and international cooperation, for the conservation and wise use of wetlands. Wetlands of international importance are selected based on their international significance in terms of ecology, botany, zoology, limnology and or hydrology.

Australia's Ramsar wetlands were protected under the EPBC Act, as of 16 July 2000, as Matters of National Environmental Significance. The EPBC Act regulates actions that will, or are likely to, have a significant impact on any matter of national environmental significance, which includes the ecological character of a Ramsar wetland. This includes relevant actions that occur outside the boundaries of a Ramsar wetland.

An action that will, or is likely to, have a significant impact on a Ramsar wetland will be subject to a rigorous environmental assessment and approval regime under the EPBC Act.

Migratory and marine species

Migratory species

Migratory species are those animals that migrate to Australia and its external territories or pass through or over Australian waters during their annual migrations. Examples of migratory species are species of birds (e.g. shorebirds, albatrosses and petrels), mammals (e.g. whales) or reptiles (e.g. turtles).

Listed migratory species are those listed in the:

- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention);
- China-Australia Migratory Bird Agreement (CAMBA);
- Japan-Australia Migratory Bird Agreement (JAMBA); and
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

All listed migratory species are MNES under the EPBC Act. An action will require approval if the action has, will have, or is likely to have, a significant impact on a listed migratory species.

The term 'important habitat', as identified in the '*EPBC Act Policy Statement 1.1 Significant Impact Guidelines—Matters of National Environmental Significance 2009*' (DoE 2013), is a significant component of managing migratory species. The widely recognised approach to identifying internationally important habitat throughout the world is using criteria adopted under the Ramsar Convention (Ramsar 1971).

Further assistance in identifying important habitats and survey guidelines for migratory species and shorebirds is available in '*EPBC Act Policy Statement 3.21—Industry Guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*' (DoE 2017) and '*Referral guideline for 14 birds listed as migratory species under the EPBC Act*' (DoE 2015).

Marine species

Under the United Nations Convention on the Law of the Sea, Australia has rights and responsibilities over its ocean territories. A declaration by the Minister for the Environment and Heritage under section 248 of the EPBC Act identifies all species currently listed with Marine status under the Act. It is an offence to kill, injure, take, trade, keep, or move any member of a listed marine species on Australian Government land or in Commonwealth waters without a permit (DAWE 2021d).

For the purposes of this assessment, marine species have only been considered in conjunction with a threatened or migratory listing.

Recent legislative changes

Flora and Fauna Guarantee Amendment Act 2019

The FFG Act has been amended to provide a modern and strengthened framework for the protection of Victoria's biodiversity. The *Flora and Fauna Guarantee Amendment Act 2019* (the Amendment Act) came into effect on June 1, 2020.

The Amendment Act:

- Introduces principles to guide the implementation of the FFG Act, including consideration of the rights and interests of Traditional Owners and the impacts of climate change;
- Requires consideration of biodiversity across government to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity;
- Clarifies existing powers to determine critical habitat and improves their protection by encouraging cooperative management;
- Gives effect to a consistent national approach to assessing and listing threatened species using the Common Assessment Method (CAM), which will reduce duplication of effort between jurisdictions and facilitate the monitoring and reporting of species' conservation status; and
- Modernises the FFG Act's enforcement framework including stronger penalties.

Flora and Fauna Guarantee Act Regulations

The FFG Act is supported by the *Flora and Fauna Guarantee Regulations 2020*. The Regulations were made under section 69 of the FFG Act. The key elements of the Regulations are:

- Eligibility criteria for the listing of taxa, communities of flora or fauna and potentially threatening processes;
- Information that must be included in nominations for the listing of taxa of flora and fauna;
- Decision-making criteria for licences, permits and authorisations consistent with the updated objectives of the Flora and Fauna Guarantee Act; and
- The form of notices, applications and certificates issued under the Act.

Victorian Threatened Species Advisory Lists

The introduction of the *Flora and Fauna Guarantee Amendment Act 2019* has streamlined the process for identifying and protecting threatened flora and fauna species in Victoria. Previously, Victoria had multiple lists of threatened species - those listed under the FFG Act, and non-statutory lists called the Victorian Threatened Species Advisory Lists. The recent amendments to the FFG Act have removed duplication by establishing a single comprehensive list of threatened flora and fauna species. This will continue to be known as the FFG Act Threatened List.

With the new comprehensive list now in effect, the Advisory lists have been revoked and are not discussed within this report.

Appendix D Native Vegetation Removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: 05/10/2021
Time of issue: 5:13 pm

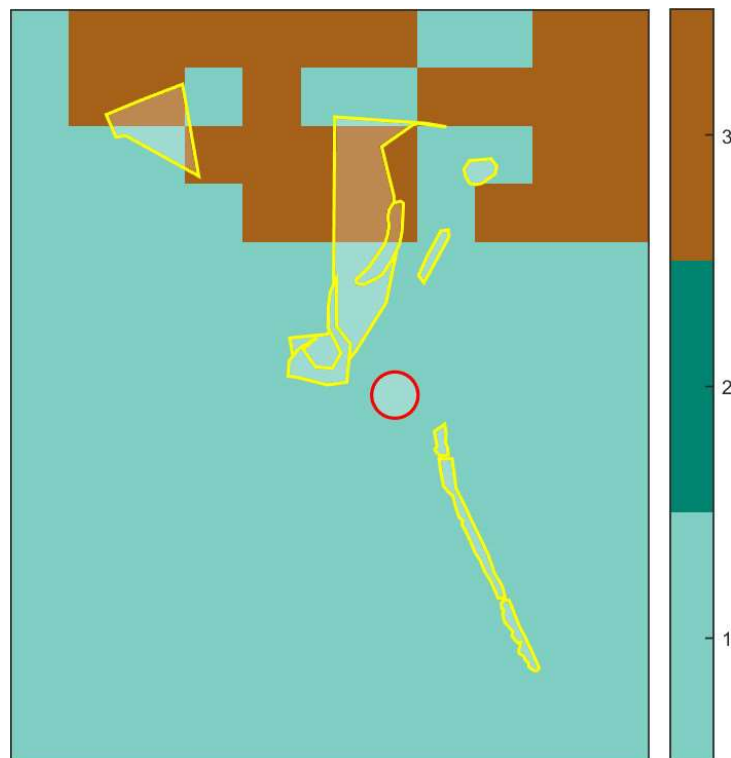
Report ID: SME_2021_050

Project ID	30043113E_KennetRiver_VegetationRemoval_20210930
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Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	0.467 ha
Extent of past removal	0.031 ha
Extent of proposed removal	0.436 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species.

1. Location map



Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount¹	0.274 general habitat units
Vicinity	Corangamite Catchment Management Authority (CMA) or Colac Otway Shire Council
Minimum strategic biodiversity value score ²	0.694
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

¹ The general offset amount required is the sum of all general habitat units in Appendix 1.

² Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) for a full list of application requirements. This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defensible space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

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Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{Species habitat units} = \text{extent} \times \text{condition} \times \text{species landscape factor} \times 2, \text{ where the species landscape factor} = 0.5 + (\text{habitat importance score}/2)$$

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-a	Patch	otr_0653	Endangered	0	no	0.340	0.023	0.023	0.875		0.011	General
3-a	Patch	otr_0821	Least Concern	0	no	0.180	0.036	0.036	0.820		0.009	General
4-a	Patch	otr_0161	Depleted	0	no	0.220	0.012	0.012	0.950		0.004	General
5-a	Patch	otr_0045	Least Concern	0	no	0.200	0.009	0.009	0.849		0.003	General
6-a	Patch	otr_0161	Depleted	0	no	0.220	0.014	0.014	0.820		0.004	General
7-a	Patch	otr_0161	Depleted	0	no	0.220	0.027	0.027	0.820		0.008	General
8-a	Patch	otr_0161	Depleted	0	no	0.220	0.005	0.005	0.820		0.002	General
9-a	Patch	wetland	Vulnerable	0	no	0.400	0.021	0.021	0.820		0.011	General
10-a	Patch	wetland	Vulnerable	0	no	0.600	0.209	0.209	0.901		0.179	General
11-a	Patch	wetland	Vulnerable	0	no	0.400	0.079	0.079	0.830		0.043	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Coast Correa	<i>Correa backhouseana</i> var. <i>backhouseana</i>	504369	Vulnerable	Dispersed	Habitat importance map	0.0036
Sea Bindweed	<i>Calystegia soldanella</i>	500606	Vulnerable	Dispersed	Habitat importance map	0.0019
Australian Mudfish	<i>Neochanna cleaveri</i>	4703	Critically endangered	Dispersed	Habitat importance map	0.0009
Coast Twin-leaf	<i>Zygophyllum billardiarei</i>	503615	Rare	Dispersed	Habitat importance map	0.0004
Australian Grayling	<i>Prototroctes maraena</i>	4686	Vulnerable	Dispersed	Habitat importance map ; special site	0.0003
Coast Ballart	<i>Exocarpos syrticola</i>	501354	Rare	Dispersed	Habitat importance map	0.0003
Hooded Plover	<i>Thinornis rubricollis rubricollis</i>	10138	Vulnerable	Dispersed	Habitat importance map	0.0003
Ruddy Turnstone	<i>Arenaria interpres</i>	10129	Vulnerable	Dispersed	Habitat importance map	0.0002
Dune Poa	<i>Poa poiformis</i> var. <i>ramifer</i>	504826	Rare	Dispersed	Habitat importance map	0.0002
Grey Plover	<i>Pluvialis squatarola</i>	10136	Endangered	Dispersed	Habitat importance map	0.0002
Common Sandpiper	<i>Actitis hypoleucos</i>	10157	Vulnerable	Dispersed	Habitat importance map	0.0001
Lesser Sand Plover	<i>Charadrius mongolus</i>	10139	Critically endangered	Dispersed	Habitat importance map	0.0001
Greater Sand Plover	<i>Charadrius leschenaultii</i>	10141	Critically endangered	Dispersed	Habitat importance map	0.0001
Leafy Greenhood	<i>Pterostylis cucullata</i> subsp. <i>cucullata</i>	505911	Endangered	Dispersed	Habitat importance map	0.0001
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>	12683	Vulnerable	Dispersed	Habitat importance map	0.0001
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	10226	Vulnerable	Dispersed	Habitat importance map	0.0001
Southern Bent-wing Bat	<i>Miniopterus schreibersii bassanii</i>	61343	Critically endangered	Dispersed	Habitat importance map	0.0001

Black-tailed Godwit	<i>Limosa limosa</i>	528553	Vulnerable	Dispersed	Habitat importance map	0.0000
Pacific Golden Plover	<i>Pluvialis fulva</i>	10137	Vulnerable	Dispersed	Habitat importance map	0.0000
Hoary Rapiere-sedge	<i>Lepidosperma canescens</i>	501915	Rare	Dispersed	Habitat importance map	0.0000
Swamp Skink	<i>Lissolepis coventryi</i>	12407	Vulnerable	Dispersed	Habitat importance map	0.0000
Slender Pink-fingers	<i>Caladenia vulgaris</i>	504449	Rare	Dispersed	Habitat importance map	0.0000
Australasian Bittern	<i>Botaurus poiciloptilus</i>	10197	Endangered	Dispersed	Habitat importance map	0.0000
Southern Xanthosia	<i>Xanthosia tasmanica</i>	504088	Rare	Dispersed	Habitat importance map	0.0000
Blue-billed Duck	<i>Oxyura australis</i>	10216	Endangered	Dispersed	Habitat importance map	0.0000
Common Bent-wing Bat (eastern ssp.)	<i>Miniopterus schreibersii oceanensis</i>	61342	Vulnerable	Dispersed	Habitat importance map	0.0000
Forest Bitter-cress	<i>Cardamine papillata</i>	505034	Vulnerable	Dispersed	Habitat importance map	0.0000
Intermediate Egret	<i>Ardea intermedia</i>	10186	Endangered	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	<i>Ardea modesta</i>	10187	Vulnerable	Dispersed	Habitat importance map	0.0000
Bog Gum	<i>Eucalyptus kitsoniana</i>	501290	Rare	Dispersed	Habitat importance map	0.0000
Baillon's Crake	<i>Porzana pusilla palustris</i>	10050	Vulnerable	Dispersed	Habitat importance map	0.0000
Leafy Twig-sedge	<i>Cladium procerum</i>	500786	Rare	Dispersed	Habitat importance map	0.0000
Parsley Xanthosia	<i>Xanthosia leiophylla</i>	504562	Rare	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	<i>Rostratula australis</i>	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Currant-wood	<i>Monotoca glauca</i>	503859	Rare	Dispersed	Habitat importance map	0.0000
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Hardhead	<i>Aythya australis</i>	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	<i>Anas rhynchotis</i>	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Tufted Club-sedge	<i>Isolepis wakefieldiana</i>	501789	Rare	Dispersed	Habitat importance map	0.0000
Western Peppermint	<i>Eucalyptus falciformis</i>	505358	Rare	Dispersed	Habitat importance map	0.0000
Naked Sun-orchid	<i>Thelymitra circumsepta</i>	503383	Vulnerable	Dispersed	Habitat importance map	0.0000

Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>	10220	Vulnerable	Dispersed	Habitat importance map	0.0000
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i>	11008	Endangered	Dispersed	Habitat importance map	0.0000
Elegant Parrot	<i>Neophema elegans</i>	10307	Vulnerable	Dispersed	Habitat importance map	0.0000
Tremont Bundy	<i>Eucalyptus aff. goniocalyx (Dandenong Ranges)</i>	507008	Vulnerable	Dispersed	Habitat importance map	0.0000
Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>	10498	Vulnerable	Dispersed	Habitat importance map	0.0000
White-throated Needle-tail	<i>Hirundapus caudacutus</i>	10334	Vulnerable	Dispersed	Habitat importance map	0.0000
Powerful Owl	<i>Ninox strenua</i>	10248	Vulnerable	Dispersed	Habitat importance map	0.0000
Black Falcon	<i>Falco subniger</i>	10238	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

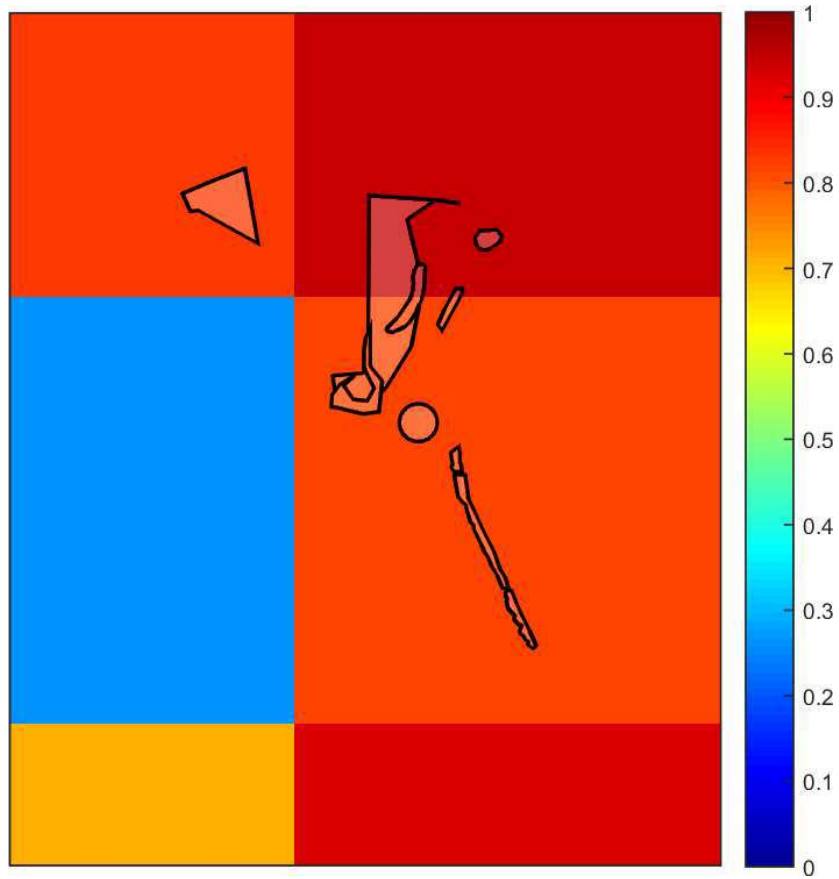
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

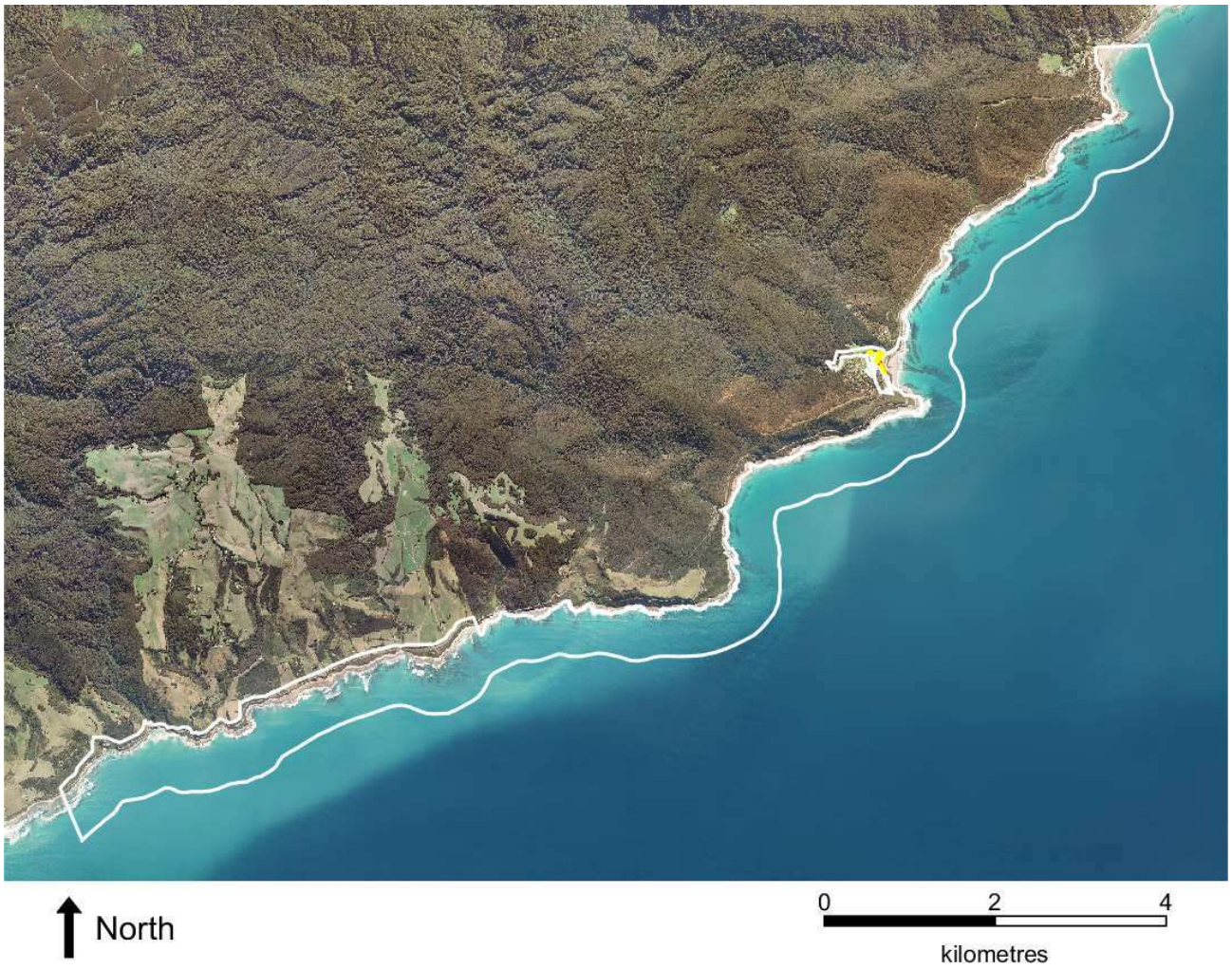
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

Red boundaries denote areas of past removal.

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