



# VEGETATION CLEARING ASSESSMENT

LILLYDALE ROAD WIDENING

FEBRUARY 2023



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## 1. INTRODUCTION

Lillydale Road, formally Centenary Road, is located in the south-west portion of the City of Bunbury (the City) and connects Parade Road and Bussell Highway. Lillydale Road has been identified as a district distributor and an important link for residents of Usher, Withers and Dalyellup connecting directly to Bussell Highway. A significant increase in the usage of the road has been observed since the opening of Parade Road to Dalyellup in 2010 (City of Bunbury, 2021).

The Bussell Highway and Lillydale Road intersection is due to be connected to the Bunbury Outer Ring Road (BORR) being completed by Main Roads WA (due for completion by 2025). The BORR project is proposed to construct slip lanes and a roundabout at the eastern end of Lillydale Road, with the intersection of Bussell Highway. This is expected to increase the number of vehicles using the alignment, as it will provide a more direct route to the eastern and northern suburbs than the current alignment of Forrest Highway and Robertson Drive. The future Tuart Brook Development is also planned to be located to the north of Lillydale Road and will further increase the future usage of this road network (City of Bunbury, 2021).

Road inspections have identified the failure of the road structure in multiple sections along the alignment, unsafe gradient of the side batter and insufficient room for cyclist to safely use the road network alongside vehicle traffic (City of Bunbury, 2021).

The upgrade of Lillydale Road is required to facilitate the increase in current and future traffic volumes and to ensure continuation of the road width connecting to the BORR (see **Figure 1**). The upgrade of Lillydale Road will take into account the need to accommodate emergency vehicles, provide sufficient room for cyclists and incorporate modifications to ensure safe batter lines along the whole alignment of the road.

The upgrade of Lillydale Road and the ultimate connection to the BORR will have a significant improvement to vehicles traffic times and safety (City of Bunbury, 2021). It is proposed that the upgrade of Lillydale Road will be separated into two stages, with

- Stage 1 being completed in 2023/24 financial year, incorporating the construction of a slip lane at the Parade Road roundabout onto Lillydale Road, and
- Stage 2 being completed in 2024/25 financial year, including the remaining road widening to connect to the BORR at the eastern end of Lillydale Road.

The following native vegetation clearing assessment has taken into account clearing requirements for both stages.

## 2. ENVIRONMENTAL ASSESSMENT

A number of ecological surveys, including flora, vegetation community and fauna surveys, have been completed for the section of Lillydale Road where the road upgrades are proposed. These surveys formed part of studies completed for the Bunbury Water Resource Recovery Scheme (WRRS) being developed by Aqwest. The WRRS project proposed to provide treated wastewater (TWW) for the irrigation of existing public open spaces and for construction water requirements of the BORR.

The ecological surveys completed covered the proposed water pipeline running from the new Aqwest Recycled Water Treatment Plant (RWTP) along Lillydale Road, starting at the Parade Road roundabout and running east along Lillydale Road to Bussell Hwy (Aqwest, 2021). This included the northwest section of the road reserve on Parade Road, north of the roundabout, and the northern and southern section of Lillydale Road where the proposed road widening is to occur (Project area).

## 2.1. Flora and Vegetation Survey

The flora and vegetation survey completed by GHD (2021) included a desktop review of publicly available information and relevant reports and a single two phase detailed and targeted flora and vegetation survey to identify:

- Flora species present including the presence or potential presence of any Threatened or Priority Flora and introduced species.
- Vegetation community types present, including presence of Threatened or Priority Ecological Communities (TECs or PECs) or other significant vegetation, and
- Vegetation condition, including the location of any Weeds of National Significance (WONS) or Declared Weeds.

The area directly north and adjacent to the Project area forms part of the recently proclaimed Kalgulup Regional Park. This parcel of land is current held with the Western Australia Planning Commission but is due to be vested in the Conservation and Parks Commission (DBCA, 2021). All proposed clearing and road construction will be undertaken within the road reserve and will not intersect with DBCA legislated lands or proclaimed conservation reserves.

Broad scale (1:250,000) pre-European vegetation mapping completed by Beard during the 1970s was outlined as part of the Flora and Vegetation Survey and incorporated the Project area (GHD, 2021). The Project area intersects the –

- Spearwood (association 3) – Mainly Jarrah and Marri, *Eucalyptus marginata*, *Corymbia calophylla*, *E. wandoo* associations
- Spearwood (association 6) – Jarrah, Marri and Wandoo. *Eucalyptus marginata*, *Corymbia calophylla*, *E. wandoo* associations (GHD, 2021).

The pre-European mapping has been adapted and digitised by Shepherd *et.al* (2002) and indicate that the current extent of vegetation association 3 and 6 are less than 30% of their pre-European extent at the Swan Coastal Plain IBRA Bioregion and IBRA subregion level (GHD, 2021).

**Table 1: Extent of vegetation associations mapped within the Project area for the Swan Coastal Plain IBRA Bioregion (GHD, 2021)**

Vegetation Association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining extent (%)	Current extent remaining within all DBCA managed land (%)
<b>Swan Coastal Plain Bioregion</b>		1,501,221.93	579,813.47	38.62	38.45
3	State: WA	2,661,404.62	1,803,437.48	39.53	23.00
	IBRA Bioregion Swan Coast Plain	17,364.58	3,150.77	18.14	11.62
	Sub-region: Perth	16,754.96	2,789.47	16.65	13.12
	LGA: City of Bunbury	859.72	275.38	32.03	0.01
6	State: WA	56,343.01	13,362.25	23.72	39.83
	IBRA Bioregion Swan Coast Plain	56,343.01	13,362.25	23.72	39.83
	Sub-region: Perth	56,343.01	13,362.25	23.72	39.83
	LGA: City of Bunbury	712.97	28.18	39.44	0



Regional vegetation for the Swan Coastal Plain (at vegetation complex level) was mapped by Heddle et al. (1980). Pre-European vegetation complexes intersecting the Project area are shown in **Figure 2**. The mapping indicates that one main vegetation complex was present within the Project area:

- Yoongarillup Complex: Woodland to tall woodland of *Eucalyptus gomphocephala* (Tuart) with *Agonis flexuosa* in the second storey. Less consistently an open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) (GHD, 2021).

The GHD (2021) Flora and Vegetation Survey provided an assessment of this vegetation complex against presumed pre-European extent within the SWA ISRA Bioregion and LGA levels. The current extents of the Yoongarillup Complex is 35.81% at the SWA IBRA Bioregion and 10.89% at the LGA (GHD, 2021).

Four vegetation types were identified within the Project area during the Flora and Vegetation Survey (GHD, 2021) (**Figure 3**), including:

- B- *Eucalyptus gomphocephala* with scattered *Eucalyptus marginata* Tall Woodlands over *Agonis flexuosa* Mid-height Open Forest
- D1 – *Eucalyptus rudis* Tall Woodlands over *Agonis flexuosa*, *Melaleuca raphiophylla* Mid-height Open-forest/Woodlands
- D2 – *Corymbia calophylla*, *Melaleuca preissiana*, *M. raphiophylla* (*Agonis flexuosa*, *Eucalyptus rudis*) Mid-height Open Forest/Woodlands.
- P – Roads and tracks, cleared road verge (sometimes with planted trees) and pasture and parkland.

One TEC/PEC was identified as intersecting the northern section of the Project area – Tuart (*Eucalyptus gomphocephala*) woodlands and Forests of the Swan Coastal Plain (Vegetation Type B) (**Figure 4**) (GHD 2021).

**Table 2: TEC/PEC identified in vicinity of Project Area (GHD, 2021)**

Community Type	EPBC Act	BC Act/ DBCA	Description
Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and Forests of the Swan Coastal Plain (TEC)	Critically Endangered	Priority 3	Mostly confined to Quindalup Dunes and Spearwood Dunes from Jurien Bay to the Sabina River, with outliers along some rivers. Tuart is the key dominant canopy species however Tuart communities comprise a variety of flora assemblages. Flora commonly occurring with Tuart include <i>Agonis flexuosa</i> , <i>Banksia attenuata</i> , <i>B. grandis</i> , <i>Allocasuarina fraseriana</i> , <i>Xylomelum occidentale</i> , <i>Macrozamia riedlei</i> , <i>Xanthorrhoea preissii</i> , <i>Spyridium globulosum</i> , <i>Templetonia retusa</i> and <i>Diplolaena dampieri</i>
Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands of the Swan Coastal Plain (PEC)			

The vegetation condition for the Project area ranged from 'Good' to 'Completely Degraded' (**Figure 5**). A large proportion of the Project area was cleared or showed high levels of disturbance and was classified as 'Completely Degraded' (GHD, 2021). Two introduced species identified as Weeds of National Significance (WONS) or Declared Weeds were recorded in the Project area, including *Asparagus asparagoides* (WONS) and *Ipomoea indica* (Invasive environmental weed). The area was assessed as being within the Spearwood soil landscape sub systems and having a high to moderate risk of acid sulphate soils (GHD, 2021).

## 2.2. Phytophthora Dieback Occurrence Survey

Disease occurrence surveys were completed as part of the WRRS project and incorporated the Project area. Three small areas of infested vegetation were identified along the Centennial Road alignment east of Bussell Hwy, with a small area extending north of Lillydale Road, along Parade Road (Figure 2 & Figure 3c of the Phytophthora Dieback Occurrence Survey, Great Southern Bio Logic, 2020). The Project area was identified as 'uninterpretable' (Great Southern Bio Logic, 2020).

To ensure that the potential spread of dieback does not occur during the project, a Phytophthora Dieback Management Plan (PDMP) will be developed for the project. The PDMP will address the following:

- Hygiene requirements associated with mitigation risk of exporting disease from infested and potentially infested areas to all other areas, including other sites external to the project.
- Protection of protectable areas that are identified as uninfested, and
- Application of hygiene measures during all potential soil moving activities inclusive of preliminary site investigations, construction works and post construction revegetation and ongoing maintenance (Great Southern Bio Logic, 2020).

## 2.3. Fauna Survey

The fauna survey completed by Biota Environmental Science, on behalf of GHD, included a desktop study, fauna habitat mapping and a targeted field survey for the following conservations significant species listed under the *WA Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Biota, 2021):

- Western Ringtail Possum (*Pseudocheirus occidentalis*) (Critically Endangered)
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Endangered)
- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) (Endangered), and
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia*) (Vulnerable).

The vegetation communities within the road reserve were identified as a combination of cleared areas to accommodate roads and tracks with (Figure 6):

- Tuart/Peppermint woodlands – Tuart (*Eucalyptus gomphocephala*) tall woodlands over Peppermint (*Agonis flexuosa*) low forest. Lower strata usually dense shrubs but occasionally sedges and grasses only. Grey brown sand or loamy sands; and
- Melaleuca shrubland and/or woodlands – Shrubland or woodland of *Melaleuca*, typically Moonah (*Melaleuca preissiana*) or Swamp Paperbark (*M. raphiophylla*) typically over sedge or introduced grasses in dampland areas. Emergent Flooded Gum (*Eucalyptus rudis*) or Marri (*Corymbia calophylla*) (Biota, 2021).

Trees with potential of providing Black Cockatoo breeding and foraging habitat were mapped along both the northern and southern side of Lillydale Road; foraging habitat for WRP was also mapped (Biota, 2021).

### 2.3.1. Black Cockatoos

Black Cockatoo breeding habitat trees were considered to be those of relevant species with a diameter at breast height (DBH) of 50cm or greater as defined in the Commonwealth referral guidelines (DSEWPac 2012). A total of 56 habitat trees were identified in the vicinity of the Project area, comprising *Eucalyptus rudis* (Flooded Gum), *Eucalyptus gomphocephala* (Tuart) and *Corymbia calophylla* (Marri). Of these 56 trees, only two were assessed as containing hollows during a ground assessment but could not be assessed with pole cameras for the presence of breeding; both are located outside the Project area (Figure 7) (Biota 2021).

High quality foraging habitat was defined as areas within native vegetation types that were dominated by foraging plants and were in good to excellent vegetation condition. Moderate quality foraging habitat was defined as areas of scattered foraging plants based on the vegetation descriptions and mapping of Ecoedge botanical consultants (Biota 2021).

No evidence of roosting was recorded within the study area, although there are a number of records in the local area (within 10km) (Biota 2021).

### 2.3.2. Western Ringtail Possum

A survey of western ringtail possums (WRP) was completed as part of the larger Aqwest’s Bunbury Water Resource Recovery Scheme (WRRS) project. Western Ringtail Possums were recorded along Lillydale Road, east of Parade Road and Bussell Hwy. Intact native vegetation is adjacent to the north of this route (i.e. Kalgulup Regional Park) and fragments remain within the agricultural land to the south (Biota 2021).

WRP were recorded most commonly during the larger Aqwest WRRS survey in Tuart/Peppermint woodlands and Marri/Eucalyptus woodlands habitat types, with both vegetation types being core habitat for the species. Secondary habitat, from which the species also was recorded during the fauna survey, include scattered Marri/Eucalyptus in paddocks and road reserves, and Peppermint over scrubland on dunes where this habitat was adjacent to Tuart/Peppermint woodlands (Biota 2021).

## 3. VEGETATION CLEARING ASSESSMENT

The clearing of 0.8 ha of native vegetation has been determined as necessary to facilitate the increase in current and future traffic volumes and to ensure continuation of the road width connecting to the BORR across the entire Project footprint of 1.45 ha. The redesign of the Lillydale Road alignment has aimed to minimise the clearing of vegetation and avoid impacts to the majority of the significant habitat trees identified south of the current road alignment.

The current road alignment features steep road shoulders and batter lines of 1:1m gradient, which represents a danger to vehicle traffic moving along the alignment. Correction of these batter line are required as part of the redevelopment of Lillydale Road. The incorporation of a 1:4m gradient will ensure that safety requirements are met. This, however, will required an increase in the clearing at certain areas along the alignment to accommodate this correction to the batters and accounts for some of the stepped edges of the clearing footprint.

Figure 8 outlined the area of native vegetation that will be impacted during the project.

**Table 3: Proposed Vegetation Clearing**

Total area of Project area (hectares)	1.45 ha
B- <i>Eucalyptus gomphocephala</i> with scattered <i>Eucalyptus marginata</i> Tall Woodlands over <i>Agonis flexuosa</i> Mid-height Open Forest	0.05
D1- <i>Eucalyptus rudis</i> Tall Woodlands over <i>Agonis flexuosa</i> , <i>Melaleuca raphiophylla</i> Mid-height Open-forest/Woodlands	0.22
D2- <i>Corymbia calophylla</i> , <i>Melaleuca preissiana</i> , <i>M. raphiophylla</i> ( <i>Agonis flexuosa</i> , <i>Eucalyptus rudis</i> ) Mid-height Open Fores/Woodlands.	0.53
P– Roads and tracks, cleared road verge (sometimes with planted trees) and pasture and parkland	0.65

### 3.1. Assessment of Clearing Against Threatened Ecological Community (TEC)/ Priority Ecological Community (PEC)

A TEC/PEC was identified to the north and west of the intersection of Lillydale Road and Parade Road. This TEC/PEC was identified as Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain (TEC)/Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain (PEC) (GHD 2021).

As outlined in **Table 2**, this TEC/PEC is identified as ‘Critically Endangered’ under the EPBC Act and Priority 3 under the BC Act. The flora and vegetation survey identified this area as being in ‘Good’ vegetation condition (GHD 2021).

**Figure 4** indicates that the north-west portion of the Project area will intersect the area of the TEC/PEC as mapped during the Flora and Vegetation Survey completed by GHD (2021). A desktop assessment indicates that approximately 0.05 ha of clearing will intersect the TEC/PEC. The remaining area of the mapped TEC within the road reserve is 0.3 ha, with an additional 8.9ha of remnant vegetation directly north of Lillydale Road that forms part of the Kalgulup Regional Park (to be vested with the Western Australia Conservation and Parks Commission).

An onsite assessment of the clearing area has been undertaken and indicated that the proposed clearing within this north-west proportion of the project will comprises majority introduced species (including introduced grasses, Blue Lupins (*Lupinus cosentinii*), Tagasaste (*Chamaecytisus palmensis*) and *Watsonia* spp.). A large proportion of the road alignment in this part of the Project area will be positioned within the already cleared area or highly disturbed area of the road reserve (**Photo 1 & 2, Appendix B**).

Based on the onsite assessment, it is reasoned that the clearing proposed to be undertaken in the north-west section of the Project area does not represent the TEC/PEC identified in the GHD (2021) survey and is in ‘Degraded’ condition due to the introduced species and previous clearing for the existing road. The vegetation directly north of the proposed Project area is in better condition and better represents the TEC/PEC. This area will be protected during the entire road widening project to ensure that impacts to the TEC/PEC are minimised, with details of ‘no go zones’ outlined in an Environmental Management Plan for the Project.

### 3.2. Assessment of clearing against Black Cockatoo Habitat

Of the 56 habitat trees identified within the vicinity of the Project area, a total of 17 intersect the Project area. No habitat trees with potential hollows (identified during the ground assessment of the Fauna Survey completed by Biota (2021)) are located within the proposed Project area. The proposed clearing will include the removal of 17 habitat trees and 0.8 ha of vegetation complexes that represent moderate quality foraging habitat along the linear alignment of the existing road. No evidence of roosting was recorded within the Project area.

An assessment against DSEWPac (2012) foraging habitat quality scoring tool for Black Cockatoos was completed and results outline in **Table 4** below.

**Table 4: Foraging quality scoring tool template**

Category	Baudin’s Cockatoo	Carnaby’s Cockatoo	Forest Red-tailed Black-Cockatoo
Foraging potential	-2	0	0
Connectivity	0	0	0
Proximity to breeding	-2	-2	-2
Proximity to roosting	0	0	0
Impact from significant plant disease	0	0	0
<b>Total score</b>	<b>8</b>	<b>8</b>	<b>8</b>

The proposed clearing has a low to moderate risk of significant impact to Black Cockatoos as:

- Clearing will remove 0.8 ha of native vegetation, including the removal of 17 habitat trees identified during the Fauna Survey (Biota, 2021).
- The vegetation condition within the majority of the Project area has been assessed as 'Degraded', however Black Cockatoos would use the site transiently.
- The Project area occurs outside known cockatoo breeding sites and is unlikely to function as a suitable breeding location.

### **3.3. Assessment of clearing against Western Ringtail Possums (WRP)**

During the survey of western ringtail possums (WRP) completed by Biota (2021), WRP were recorded most commonly in Tuart/Peppermint woodlands and Marri/Eucalyptus woodlands habitat types. These two habitat types were identified within the Project area and a sighting of WRP was recorded along the section of Lillydale Road east of Parade Road of the Project area.

Given the presence of Tuart/Peppermint Woodlands and Marri/Eucalyptus woodland habitat types within the clearing area, and the recorded sighting during the Fauna Survey (Biota, 2021), there is a likelihood that WRP are present within the Project area and use the corridor transiently.

Intact native vegetation is located directly adjacent to the north, west and east of the Project area and forms part of the Kalgulup Regional Park and fragments remain within the agricultural land to the south (Biota, 2021). The re-design of the project to incorporate smaller batter gradients (reducing the clearing area) and avoiding or minimise clearing in the southern section of the road reserve to conserve habitat linkages, has been undertaken to minimise impacts on WRP.

The proposed clearing has been assessed as having a moderate risk to impacts on Western Ringtail Possums as:

- Clearing will remove 0.8 ha of native vegetation identified as supporting habitat for WRP along the linear alignment of the existing road.
- The vegetation condition within the majority of the Project area has been assessed as 'Degraded', however WRP would be likely to use the site transiently as a low-quality foraging and habitat linkages.

A fauna specialist will be engaged to inspect the area immediately prior to, and for the duration of clearing activities, for the presence of WRP. If any WRP are encountered during the clearing activities, all works will cease until the individual has moved on from the area or has been removed by WRP specialist.

## **4. ABORIGINAL HERITAGE**

As part of the *Aboriginal Cultural Heritage Act 2021* a due diligence assessment (DDA) was completed for the Project. In undertaking the DDA, the proposed Project activities were assessed to identify if there was a risk of harm being caused to Aboriginal Cultural Heritage (ACH).

The proposed project activities will include ground disturbance and has been assessed as potential Tier 2 or 3 activities. A search of the Department of Planning, Land and Heritage (DPLH) Aboriginal Heritage Inquiry System (AHIS) did not indicate the presence of any Registered Aboriginal Sites or Other Heritage Places within the vicinity of the Project area. The nearest heritage site shown on the AHIS is Registered Aboriginal Site 24507, identified as Artifact scatter, approximately 500m north of the Project area. The Project area is not located within a 'Protected Area', as defined by the *Aboriginal Cultural Heritage Act 2021*.

Based on the review of the AHIS, no previous surveys identifying previously completed Aboriginal Heritage Reports and the like-for-like historical landuse (Road Reserve), the proposed activities have been assessed as not resulting in a risk of harm to ACH (Government of Western Australia, 2022).

## 5. TEN CLEARING PRINCIPLES ASSESSMENT

**Table 5: Assessment against 10 Clearing Principles under Schedule 5 of the Environmental Protection Act 1986**

Principle		Assessment	Outcome
<b>A</b>	Native vegetation should not be cleared if it comprises a high level of biological diversity.	<p>The Native Vegetation Clearing Permit (NVCP) application area includes the clearing of 0.8 ha of native vegetation along the northern section and part of the southern section of Lillydale Road reserve.</p> <p>Native vegetation for this area, as described in the Flora and Vegetation Survey report (GHD 2021), consists of 3 vegetation units, including:</p> <ul style="list-style-type: none"> <li>- B – <i>Eucalyptus gomphocephala</i> with scattered <i>Eucalyptus marginata</i> Tall Woodlands over <i>Agnois flexuosa</i> Mid-height Open Forest (0.05 ha).</li> <li>- D1 – <i>Eucalyptus rudis</i> Tall Woodland over <i>Agnois flexuosa</i>, <i>Melaleuca rhapsiophylla</i> Mid-height Open-forest/Woodland (0.18ha).</li> <li>- D2 – <i>Corymbia calophylla</i>, <i>Melaleuca preissiana</i>, <i>M.rehaphiophylla</i> (<i>Agnois flexuosa</i>, <i>Eucalyptus rudis</i>) Mid-height Open Forest/Woodlands (0.47 ha).</li> </ul> <p>The remainder of the Project area is mapped as P (road and tracks, cleared road verges (sometimes with planted trees) and pasture and parklands with scattered trees, including areas with no vegetation.</p> <p>The vegetation condition for the majority of the Project area has been described as ‘Degraded’ to ‘Completely Degraded’. Large numbers of introduced species are evident along the alignment of the road, two introduced species identified as Weeds of National Significance (WONS) or Declared Weeds were recorded in the Project area, including *<i>Asparagus asparagoides</i> (WONS) and *<i>Ipomoea indica</i> (Invasive environmental weed) (GHD, 2021). Weed management actions will be outlined in the Environmental Management Plan to minimize the spread and removal of these species from the Project area. A small section in the north-west of the Project area was determined to be in ‘Good’ condition. Clearing within this section of vegetation has been kept to a minimum and will be located in the southern section of this area that exhibits already cleared areas and introduced species that do not represent ‘Good’ quality vegetation (<b>Photo 1, Appendix B</b>).</p> <p>Given the presence of significant area of intact native vegetation to the north, east and west, it is considered that the Project area is not likely to comprise a greater diversity than similar areas, either locally or at a bioregional scale. The proposed clearing is considered not likely to be at variance to this Clearing Principle.</p>	The proposed clearing is not likely to be at variance to this principle
<b>B</b>	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant fauna indigenous to Western Australia	<p>The Project area includes 3 habitat types, as described in the Fauna Assessment report (Biota, 2021). The habitat types include (<b>Figure 6</b>):</p> <ul style="list-style-type: none"> <li>- Tuart/ Peppermint Woodlands (0.05ha)</li> <li>- Melaleuca shrubland and/or Woodlands (0.74ha)</li> <li>- ‘Cleared’ (0.66ha)</li> </ul> <p>Based on the habitat types identified within the Project area, it is considered that the below conservation significant fauna species are known/may occur or considered to be likely to occur, based on habitat availability and previous records in the local area:</p> <ul style="list-style-type: none"> <li>- Carnaby’s Cockatoos (<i>Calyptorhynchus latirostris</i>) (EN)</li> <li>- Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksia</i>)</li> <li>- Baudin’s Cockatoo (<i>Calyptorhynchus baudinii</i>)</li> <li>- Western Ringtail Possum (<i>Pseudocheirus occidentalis</i>)</li> </ul>	The proposed clearing may be at variance to this principle.

		<p><b>Black Cockatoo</b></p> <p>Of the 56 habitat trees identified within the vicinity of the Project area, a total of 17 intersect the project area. No habitat trees with potential hollows (identified during the ground assessment of the Fauna Survey completed by Biota (2021)) were located within the proposed Project area. The proposed clearing will include the potential removal of 17 habitat trees and 0.8 ha of vegetation complexes that represent moderate quality foraging habitat. No evidence of roosting was recorded within the Project area (Biota, 2021).</p> <p>The proposed clearing has a low to moderate risk of significant impact to Black Cockatoos as:</p> <ul style="list-style-type: none"> <li>• Project area will cover 1.45 ha, which will include the potential removal of 17 habitat trees and 0.8 ha of vegetation complexes identified as being moderate foraging habitat (Biota, 2021).</li> <li>• The vegetation condition within the majority of the Project area has been assessed as 'Degraded', however Black Cockatoos would use the site transiently.</li> <li>• The Project area occurs outside known cockatoo breeding sites and is unlikely to function as a suitable breeding location.</li> </ul> <p><b>Western Ringtail Possum</b></p> <p>Given the presence of Tuart/Peppermint Woodlands and Marri/Eucalyptus woodland habitat types within the clearing area, and the recorded sighting during the Fauna Survey (Biota, 2021), there is a likelihood that WRP are present within the Project area and use the corridor transiently.</p> <p>Intact native vegetation is located directly adjacent to the north, west and east of the Project area and forms part of the Kalgulup Regional Park and fragments remain within the agricultural land to the south (Biota, 2021). The re-design of the project to incorporate smaller batter gradients (reducing the clearing area) and avoiding clearing in the southern section of the road reserve to conserve habitat linkages, has been undertaken to minimize impacts on WRP.</p> <p>The proposed clearing has been assessed as having a moderate risk to impacts on Western Ringtail Possums as:</p> <ul style="list-style-type: none"> <li>• Clearing will remove 0.8 ha of native vegetation identified as supporting habitat for WRP.</li> <li>• The vegetation condition within the majority of the Project area has been assessed as 'Degraded', however WRP would be likely to use the site transiently as a low-quality foraging and habitat linkages.</li> </ul> <p>A fauna specialist will be engaged to inspect the area immediately prior to, and for the duration of clearing activities, for the presence of WRP. If any WRP are encountered during the clearing activities, all works will cease until the individual has moved on from the area or has been removed by WRP specialist.</p> <p>Due to the small extent of potential clearing along the linear alignment of the existing road, the suitability and quality of habitat present, and habitat types impacted being widespread and well represented in the immediate local area, it is not considered likely that clearing will result in significant impacts to habitat for fauna. However, as the Project area intersects up to 0.8 ha of habitat for Black Cockatoos and WRP, applying a conservative approach it has been assessed that clearing may be at variance to this principle.</p> <p>As these species are listed under the EPBC Act, clearing required for widening of Lillydale Road has been referred separately to Department of Climate Change, Energy, the Environment and Water (DCCEEW), based on verbal advice received from DWER. The City of Bunbury is not seeking the assessment of clearing native vegetation to be completed under the bilateral agreement.</p>	
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<b>C</b>	Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora	<p>No Threatened flora species were listed under the EPBC Act and/or BC Act were recorded during the Flora and Vegetation Survey report (GHD, 2021).</p> <p>Given the 'Degraded' and 'Very Degraded' vegetation condition identified for the majority of the Project area, it is unlikely that the application area contains or comprises habitat for rare flora species.</p> <p>The proposed clearing is not likely to be at variance to this Principle.</p>	The proposed clearing is not likely to be at variance to this principle.
<b>D</b>	Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for, the maintenance of a threatened ecological community.	<p>The Flora and Vegetation Survey (GHD, 2021) identified one conservation significant ecological community listed under the EPBC Act and the BC Act within the vicinity of the Project area. The Threatened Ecological Community (TEC) identified within the vicinity of the Project area was (GHD, 2021):</p> <ul style="list-style-type: none"> <li>- B - Tuart Woodlands and Forest of the Swan Coastal Plain (EPBC Act – Critically Endangered TEC/ BC Act - Priority 3)</li> </ul> <p><b>Figure 4</b> indicates that the north-west portion of the Project area will intersect a small extent of this TEC/PEC area (as mapped during the Flora and Vegetation Survey completed by GHD (2021)). A desktop assessment indicates that approximately 0.05 ha of clearing will intersect the TEC/PEC.</p> <p>An onsite assessment of this section of the proposed road alignment indicated that majority of road footprint will be positioned within already cleared area or comprises majority introduced species (including introduced grasses, Blue Lupins (<i>Lupinus cosentinii</i>), Tagasaste (<i>Chamaecytisus palmensis</i>) and Watsonia spp.). The remaining area of mapped TEC within the road reserve is 0.3 ha, with an additional 8.9ha of remnant vegetation directly north of Lilydale Road that forms part of the Kalgulup Regional Park (to be vested with the Western Australia Conservation and Parks Commission).</p> <p>Based on the onsite assessment, it is reasoned that the clearing proposed to be undertaken in the north-west section of the Project area does not represent the TEC/PEC identified in the GHD (2021) survey and is in 'Degraded' condition due to the introduced species and previous clearing for the existing road. The vegetation directly north of the proposed Project area is in better condition and will be protected during the project to ensure that impacts to the TEC/PEC are minimised, with details of 'no go zones' outlined in an Environmental Management Plan for the project.</p> <p>It is considered that the proposed clearing is unlikely to result in residual impacts to Tuart Woodland TECs, however applying a conservative approach it has been assessed that as this TEC is listed under the EPBC Act, clearing required for widening of Lillydale Road has been referred separately to Department of Climate Change, Energy, the Environment and Water (DCCEEW), based on verbal advice received from DWER. The City of Bunbury is not seeking the assessment of clearing native vegetation to be completed under the bilateral agreement.</p>	The proposed clearing is may be to be at variance to this principle.
<b>E</b>	Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been	<p>Regional vegetation was mapped by Heddle <i>et.al.</i> (1980), based on majority geomorphic units on the Swan Coastal Plain. The Heddle <i>et.al.</i> (1980) mapping indicated the Project area sits within the following vegetation complex:</p> <ul style="list-style-type: none"> <li>• Yoongarillup Complex: Woodland to tall woodland of Eucalyptus gomphocephala (Tuart) with Agonis flexuosa in the second storey. Less consistently an open forest of Eucalyptus gomphocephala (Tuart) - Eucalyptus marginata (Jarrah) - Corymbia calophylla (Marri).</li> </ul>	The proposed clearing is not likely to be at variance to this principle.



	extensively cleared.	<p>The GHD (2021) Flora and Vegetation Survey provided an assessment of this vegetation complex against presumed pre-European extent within the SWA ISRA Bioregion (<b>Table 5.1</b>) and LGA levels (<b>Table 5.2</b>). The current extents of the Yoongarillup Complex is 35.81% at the SWA IBRA Bioregion and 10.89% at the LGA (GHD, 2021).</p> <p style="text-align: center;"><b>Table 5.1: Extent of vegetation complexes on the Swan Coastal Plain mapped in the Project area</b></p> <table border="1" data-bbox="533 341 1827 475"> <thead> <tr> <th>Vegetation Complex</th> <th>Pre-European extent (ha)</th> <th>Current Extent (ha)</th> <th>Proportion pre-European Extent remaining in Swan Coastal Plain (%)</th> <th>Proportion of current extent remaining in all DBCA Management Lands (%)</th> <th>Reduction of current extent due to the proposed clearing (%)</th> </tr> </thead> <tbody> <tr> <td>Yoongarillup</td> <td>27,977.93</td> <td>10,018.14</td> <td>35.81</td> <td>18.41</td> <td>0.01</td> </tr> </tbody> </table> <p style="text-align: center;"><b>Table 5.2: Extent of vegetation complexes within City of Bunbury LGA mapped within the Project area</b></p> <table border="1" data-bbox="533 533 1827 641"> <thead> <tr> <th>Vegetation Complex</th> <th>Pre-European Extent in LGA (ha)</th> <th>Current Extent in LGA (ha)</th> <th>Remaining extent at LGA (%)</th> <th>Proportion of the vegetation complex within the LGA (%)</th> <th>Reduction of current extent due to the Proposed action (%)</th> </tr> </thead> <tbody> <tr> <td>Yoongarillup</td> <td>1,435.65</td> <td>156.36</td> <td>10.89</td> <td>5.13</td> <td>0.45</td> </tr> </tbody> </table> <p>The proposed clearing will result in 0.01 reduction in the current extent of this vegetation complex within the Swan Coastal Plain and 0.45% reduction within the City of Bunbury.</p> <p>It is considered the proposed clearing is not likely to be at variance to this principle.</p>	Vegetation Complex	Pre-European extent (ha)	Current Extent (ha)	Proportion pre-European Extent remaining in Swan Coastal Plain (%)	Proportion of current extent remaining in all DBCA Management Lands (%)	Reduction of current extent due to the proposed clearing (%)	Yoongarillup	27,977.93	10,018.14	35.81	18.41	0.01	Vegetation Complex	Pre-European Extent in LGA (ha)	Current Extent in LGA (ha)	Remaining extent at LGA (%)	Proportion of the vegetation complex within the LGA (%)	Reduction of current extent due to the Proposed action (%)	Yoongarillup	1,435.65	156.36	10.89	5.13	0.45	
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Yoongarillup	1,435.65	156.36	10.89	5.13	0.45																						
<b>F</b>	Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	<p>The Project area does not intercept any watercourse or wetlands categorized as per the following accessed from Data WA:</p> <ul style="list-style-type: none"> <li>- DBCA’s Directory of Important Wetlands in Australia (DBCA-045)</li> <li>- Ramsar Sites (DBCA-010)</li> <li>- RIWI Act River (DWER-036)</li> </ul> <p>It is considered the proposed clearing is not likely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle.																								
<b>G</b>	Native vegetation should no be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	<p>The area was assessed as being within the Spearwood soil landscape sub systems and having a high to moderate risk of acid sulphate soils (GHD, 2021). Management actions will be implemented during the construction activities to ensure that impacts from acid sulphate soils are minimised and outlined in an Environmental Management Plan for the project.</p> <p>The clearing of vegetation within the Project area has the potential short term impacts during construction, however based on the ‘Degraded’ and ‘Very Degraded’ condition of the majority of the clearing, it is unlikely to appreciable deterioration in the quality of the land. The proposed clearing will remove a number of weed species from the road reserve, and in conjunction with mitigation planting, the project will help to improve the quality of vegetation within the road reserve that adjoins a section of the Kalgulup Regional Park.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle.																								

<b>H</b>	Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of adjacent or nearby conservation area.	<p>The Project area adjoins Lot 507 Lillydale Road (currently under the authority of Western Australia Planning Commission), which forms part of the Kalgulup Regional Park and is proposed to be vested with the Conservation and Parks Commission, Western Australia.</p> <p>Due to the small area of proposed clearing being confined to the road reserve and avoidance of vegetation within adjacent reserve, it is considered the proposed clearing is not likely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle.
<b>I</b>	Native vegetation should not be clearing if the clearing of vegetation is likely to cause deterioration in the quality of surface or underground water.	<p>The clearing of vegetation within the Project area has the potential for short term impacts during construction, however the implementation of an Environmental Management Plan will help to minimise any impacts to the quality of surface and/or underground water.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle.
<b>J</b>	Native vegetation should not be clearing if the clearing of vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	<p>The clearing of vegetation within the Project area is not deemed likely to cause, or exacerbate the incidence or intensity of flooding.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	The proposed clearing is not likely to be at variance to this principle.

## 6. Protected Matters Search Results

**Table 6: Conservation Significant Threatened Ecological Communities identified in desktop search via EPBC Act Protected Matters Search Tool and Likelihood of occurrence in Project Area.**

Community Name	EPBC ACT	BC ACT	Likelihood of Occurrence
Clay Pans of the Swan Coastal Plain	Critically Endangered	Vulnerable	<p>Unlikely to occur within Project Area.</p> <p>This ecological community occur where clay substrate is low in the landscape and forms an impermeable layer closer to the surface (DPAW 2015). The Flora and Vegetation Survey did not identify this TEC as occurring within the Project Area (GHD, 2021). Vegetation sub-unit types identified within the Project Area do not represent flora or vegetation associated with this TEC.</p>
Banksia Woodlands of the Swan Coastal Plain Ecological Community	Endangered	Priority 3	<p>Unlikely to occur within Project Area.</p> <p>This ecological community's key diagnostic feature is a prominent tree layer of <i>Banksia</i>, with scattered <i>Eucalyptus</i> and other tree species often present among or emerging above the Banksia canopy. The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs (GHD, 2021).</p> <p>The Flora and Vegetation Survey did not identify this TEC as occurring within the Project Area (GHD, 2021). Vegetation sub-unit types identified within the Project Area do not represent flora or vegetation associated with this TEC.</p>
Tuart ( <i>Eucalyptus gomphocephala</i> ) Woodlands and Forests of the Swan Coastal Plain ecological	Critically Endangered	Priority 3	<p>Identified as occurring in Project area during Flora and Vegetation Survey.</p> <p>Based on the onsite assessment, it is reasoned that the clearing proposed to be undertaken in the north-west section of the Project area does not truly represent the TEC/PEC identified in the GHD (2021) survey and is in 'Degraded' condition due to the introduced species and previous clearing for the existing road. The vegetation directly north of the proposed Project area is in better condition and will be protected during the project to ensure that impacts to the TEC/PEC are minimised, with details of 'no go zones' outlined in an Environmental Management Plan for the project.</p>

**Table 7: Conservation significant Species identified in desktop search via EPBC Act Protected Matters Search Tool and Likelihood of occurrence in Project Area.**

Species Name	Common name	EPBC ACT	BC ACT	Notes	Likelihood of Occurrence
<b>Flora Species</b>					
<i>Andersonia gracilis</i>	Slender Andersonia	Endangered	Endangered	Not suitable Habitat identified	Unlikely to occur
<i>Austrostipa bronweniae</i>	null	Endangered (listed as <i>Austrostipa bronwenae</i> )	Critically Endangered	The Flora and Vegetation survey indicated that suitable search efforts did not record the species (GHD, 2021).  This species is associated with wetland habitats (vegetation sub-units C2, D1, D2, E1 and E2), which were subject to spring and early summer targeted surveys. The size of the plant and long persistent and visible glumes on old inflorescences make the species readily identifiable in vegetation and allow for a high level of confidence in detectability (GHD, 2021).	Unlikely to occur.  It is unlikely that this species will occur within the clearing area given that: <ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the vegetation throughout the Project area with the presence of invasive species</li> </ul>
<i>Austrostipa jacobiana</i>	null	Critically Endangered	Critically Endangered	The Flora and Vegetation survey indicated that suitable search efforts did not record the species (GHD, 2021).  This species is associated with wetland habitats (vegetation sub-units C2, D1, D2, E1 and E2), which were subject to spring and early summer targeted surveys. The size of the plant and long persistent and visible glumes on old inflorescences make the species readily identifiable in vegetation and allow for a high level of confidence in detectability (GHD, 2021).	Unlikely to occur.  It is unlikely that this species will occur within the clearing area given that: <ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the vegetation throughout the Project area with the presence of invasive specie</li> </ul>
<i>Banksia mimica</i>	Summer Honeypot	Endangered		Species was not recorded during the Flora and Vegetation Survey (GHD, 2021)	Unlikely to occur.  It is unlikely that this species will occur within the clearing area given that: <ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the</li> </ul>

					vegetation throughout the Project area with the presence of invasive species
<i>Caladenia huegelii</i>	King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid	Endangered	Critically Endangered	Suitable survey efforts using transects covering habitats identified as potentially suitable was undertaken during the preferred survey time for this species with suitably experienced assessors and did not record the species.	Unlikely to occur.  It is unlikely that this species will occur within the clearing area given that: <ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the vegetation throughout the Project area with the presence of invasive species</li> </ul>
<i>Diuris drummondii</i>	Tall Donkey Orchid	Vulnerable	Vulnerable	Suitable survey efforts using transects covering habitats identified as potentially suitable was undertaken during the preferred survey time for this species with suitably experienced assessors and did not record the species.  The species is associated with wetland habitat (vegetation sub-units C2, D1, D2, E1 and E2) which were subject to survey during the flowering period of spring and early summer (GHD, 2021).  A nearby known location of this species was visited prior to the completion of the early summer survey and the species was confirmed to be flowering. While the species may not flower every season, targeted surveys were undertaken during appropriate survey times for the species, the species was not detected either from flowering or vegetation growth.	Unlikely to occur.  It is unlikely that this species will occur within the clearing area given that: <ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the vegetation throughout the Project area with the presence of invasive species</li> </ul>
<i>Diuris micrantha</i>	Dwarf Bee-orchid	Vulnerable	Vulnerable	Unlikely – Not known from the Bunbury region. Suitable search efforts did not record the species	Unlikely to occur.
<i>Diuris purdiei</i>	Purdie's Donkey-orchid	Endangered	Endangered	Unlikely – Not known from the Bunbury region. Suitable search efforts did not record the species	Unlikely to occur.
<i>Drakaea elastica</i>	Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid,	Endangered	Critically Endangered	Suitable survey efforts using transects covering habitats identified as potentially suitable was undertaken during the preferred survey time for this species with suitably experienced assessors and did not record the species.	Unlikely to occur.  It is unlikely that this species will occur within the clearing area given that:

	Warty Hammer Orchid			<p>This species grows on bare patches of sand within dense vegetation in low-lying areas alongside winter-wet swamps, typically in <i>Banksia sp.</i> woodlands or spearwood (<i>Kunzea glabrescens</i>) thicket vegetation. The species required locations with relatively little direct sun exposure. Suitable habitat for these species were identified as vegetation sub-unit C1, C2 and C3 in the Flora and Vegetation surveys that do not occur within the Project area (GHD, 2021).</p> <p>While the species may not flower each year, targeted surveys for the presence of <i>Drakaea</i> leaf were undertaken with no identified orchid species recorded (GHD, 2021).</p>	<ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- Preferred habitat vegetation sub-units were not present within the Project area.</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the vegetation throughout the Project area with the presence of invasive species, edge effects, tracks, clearing and rubbish dumping, reduce the habitat condition.</li> </ul>
<i>Drakaea micrantha</i>	Dwarf Hammer-orchid	Vulnerable	Endangered	<p>Suitable survey efforts using transects covering habitats identified as potentially suitable was undertaken during the preferred survey time for this species with suitably experienced assessors and did not record the species.</p> <p>This species grows on bare patches of sand within dense vegetation in low-lying areas alongside winter-wet swamps, typically in <i>Banksia sp.</i> woodlands or spearwood (<i>Kunzea glabrescens</i>) thicket vegetation. The species required locations with relatively little direct sun exposure. Suitable habitat for these species were identified as vegetation sub-unit C1, C2 and C3 in the Flora and Vegetation surveys that do not occur within the Project area (GHD, 2021).</p> <p>While the species may not flower each year, targeted surveys for the presence of <i>Drakaea</i> leaf were undertaken with no identified orchid species recorded (GHD, 2021).</p>	<p>Unlikely to occur.</p> <p>It is unlikely that this species will occur within the clearing area given that:</p> <ul style="list-style-type: none"> <li>- the species was not identified during the Flora and Vegetation Survey,</li> <li>- Preferred habitat vegetation sub-units were not present within the Project area.</li> <li>- the proximity and liner nature of the clearing to an existing road, and</li> <li>- the degraded condition of the vegetation throughout the Project area with the presence of invasive species, edge effects, tracks, clearing and rubbish dumping, reduce the habitat condition.</li> </ul>
<i>Lambertia echinata subsp. occidentalis</i>	Western Prickly Honeysuckle	Endangered	Endangered	Unlikely – no suitable habitat identified during Flora and Vegetation Survey (GHD, 2021)	Unlikely to occur
<i>Synaphea sp. Fairbridge Farm (D. Papenfus 696)</i>	Selena's Synaphea	Critically Endangered	Critically Endangered	Unlikely – no suitable habitat identified during Flora and Vegetation Survey (GHD, 2021)	Unlikely to occur

<i>Synaphea sp. Serpentine (G.R. Brand 103)</i>	null	Critically Endangered	Critically Endangered	Unlikely – no suitable habitat identified during Flora and Vegetation Survey (GHD, 2021)	Unlikely to occur
<b>Mammal</b>					
<i>Balaenoptera musculus</i>	Blue Whale	Endangered / Migratory	Endangered	Habitat not present	Would not occur.
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Vulnerable	Vulnerable	The Chuditch was not recorded within the Fauna Survey (Biota, 2021) and has not been recorded from the Bunbury area despite the intensive spotlighting efforts associated with the BORR and the regional Western Ringtail Possum survey work over the course of the past two years (Biota, 2021).	Unlikely to occur.
<i>Eubalaena australis</i>	Southern Right Whale	Endangered/ Migratory	Vulnerable	Habitat not present	Would not occur.
<i>Neophoca cinerea</i>	Australian Sea-lion, Australian Sea Lion	Endangered	Vulnerable	Habitat not present	Would not occur.
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum,	Critically Endangered	Critically Endangered	Resident. Sighted within the Project area during Fauna Survey	Known to occur within Project Area.  Given the close proximity to remnant vegetation and the long-liner nature of clearing, there is the likelihood that individuals will be relocated to the remnant vegetation to the north. The road project has been redesigned to minimize clearing to the south of the road alignment to enable remnant vegetation to be maintained within the road reserve.
<i>Setonix brachyurus</i>	Quokka	Vulnerable	Vulnerable	Prefers dense understorey with water nearby. The nearest record of the species is from swampland near Stratham (> 5km from the Project area), which is the only known remaining population on the Swan Coastal Plain and appears to be restricted to that particular swamp (Biota, 2021)	Preferred habitat not present within the Project area.  Given the proximity of the vegetation to be cleared is within a road reserve, adjacent to a busy road and distance from only known remaining population, it is unlikely to occur within the Project area
<b>Birds</b>					
<i>Anous tenuirostris melanops</i>	Australian Lesser Noddy	Vulnerable	Endangered	Habitat not present	Would not occur.

<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered	Endangered	Habitat not present	Would not occur.
<i>Calidris canutus</i>	Red Knot, Knot	Endangered/Migratory/Marine	Endangered/Migratory	Habitat not present	Would not occur.
<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically Endangered	Critically Endangered / Migratory	Habitat not present	Would not occur.
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo, Karrak	Vulnerable	Vulnerable	Foraging Visitor, potential breeding	Likely to occur and use site in a transient nature.  Core habitat represented by Tuart/Peppermint woodland as potential breeding habitat and mixed Marri/Eucalyptus Woodlands as moderate quality foraging habitat.
<i>Calyptorhynchus baudinii</i>	Baudin's Black-Cockatoo, Long-billed Black-cockatoo	Endangered	Endangered	Foraging Visitor, potential breeding	Likely to occur and use site in a transient nature.  Core habitat represented by Tuart/Peppermint woodland as potential breeding habitat and mixed Marri/Eucalyptus Woodlands as moderate quality foraging habitat.
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo, Short-billed Black-cockatoo	Endangered	Endangered	Foraging Visitor, potential breeding	Likely to occur and use site in a transient nature.  Core habitat represented by Tuart/Peppermint woodland as potential breeding habitat and mixed Marri/Eucalyptus Woodlands as moderate quality foraging habitat.
<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover	Vulnerable / Migratory	Vulnerable/migratory	Habitat not present	Would not occur.
<i>Diomedea amsterdamensis</i>	Amsterdam Albatross	Endangered	Critically Endangered	Habitat not present	Would not occur.
<i>Diomedea dabbenena</i>	Tristan Albatross	Endangered	Critically Endangered	Habitat not present	Would not occur.
<i>Diomedea epomophora</i>	Southern Royal Albatross	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Diomedea exulans</i>	Wandering Albatross	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Diomedea</i>	Northern Royal	Endangered	Endangered	Habitat not present	Would not occur.



<i>sanfordi</i>	Albatross				
<i>Falco hypoleucos</i>	Grey Falcon	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Limosa lapponica menzbieri</i>	Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	Critically Endangered	Critically Endangered	Habitat not present	Would not occur.
<i>Macronectes giganteus</i>	Southern Giant-Petrel, Southern Giant Petrel	Endangered	Migratory	Habitat not present	Would not occur.
<i>Macronectes halli</i>	Northern Giant Petrel	Vulnerable / Migratory	Vulnerable/ Migratory	Habitat not present	Would not occur.
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Critically Endangered /Migratory	Critically Endangered /Migratory	Habitat not present	Would not occur.
<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)	Vulnerable		Habitat not present	Would not occur.
<i>Phoebastria fusca</i>	Sooty Albatross	Vulnerable	Endangered	Habitat not present	Would not occur.
<i>Sternula nereis nereis</i>	Australian Fairy Tern	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	Vulnerable	Endangered	Habitat not present	Would not occur.
<i>Thalassarche cauta</i>	Shy Albatross	Endangered	Vulnerable	Habitat not present	Would not occur.
<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Thalassarche melanophris</i>	Black-browed Albatross	Vulnerable	Endangered	Habitat not present	Would not occur.
<i>Thalassarche steadi</i>	White-capped Albatross	Vulnerable		Habitat not present	Would not occur.
<b>Reptile</b>					
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered	Endangered	Habitat not present	Would not occur.
<i>Chelonia mydas</i>	Green Turtle	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Endangered	Vulnerable	Habitat not present	Would not occur.
<i>Natator depressus</i>	Flatback Turtle	Vulnerable	Vulnerable	Habitat not present	Would not occur.

Sharks					
<i>Carcharodon carcharias</i>	White Shark, Great White Shark	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Pristis pristis</i>	Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish	Vulnerable	Priority	Habitat not present	Would not occur.
<i>Carcharias taurus</i> (west coast population)	Grey Nurse Shark (west coast population)	Vulnerable	Vulnerable	Habitat not present	Would not occur.
<i>Rhincodon typus</i>	Whale Shark	Vulnerable	Other Specially Protected	Habitat not present	Would not occur.

## 7. MITIGATION PLANTING

The City will plant a combination of native species at a ratio of 1:2ha, including peppermint trees, tuarts, paperbarks, Marri and Jarrah, in strategic location to help:

- a) increase the canopy cover and habitat trees for Western Ringtail Possums and Black cockatoos, and
- b) improve the representation of TEC/PEC identified as Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain (TEC)/Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain (PEC).

It is proposed that a total of 0.16 ha of mitigation planting will be completed to mitigate the clearing required for the Lillydale Road widening project.

Several locations have been earmarked as potential mitigation planting areas that have been identified as having the same vegetation communities as the Project area (**Figure 9**), including:

- Lot 507 Lillydale Road directly adjacent to the road reserve. Undertaking mitigation planting within this area will help to provide continuation of the canopy and connectivity of the Kalgulup Regional Park. This land parcel is under the management of Western Australia Planning Commission but will be vested to the Conservation and Parks Commission. Any mitigation planting will need to be completed in consultation with these organisation and will require authorisation.
- Katherine Chauhan Reserve – Undertaking mitigation planting will help to improve the habitat area that has been previously mapped as representative of the same TEC/PEC and represents like for like planting. This land parcel is under the management of the City of Bunbury and has an active ‘Friends of Group’ volunteer base.
- Soccer Club Reserve - Undertaking mitigation planting will help to improve the habitat area that has been previously mapped as representative of the same TEC/PEC and represents like for like planting. This land parcel is under the management of the City of Bunbury.
- Hartley Anderson Reserve - Undertaking mitigation planting will help to improve the habitat area that has been previously mapped as representative of the same TEC/PEC and represents like for like planting. This land parcel is under the management of the City of Bunbury and has an active ‘Friends of Group’ volunteer base.

## 8. CONCLUSION

The redesign of the Lillydale Road alignment has aimed to minimise the clearing of vegetation and avoid impacts to the majority of significant habitat trees identified south of the current road alignment. The current road alignment features steep road shoulders and batter lines of 1:1m gradient, which represents a danger to vehicle traffic moving along the alignment. The redesign of the batters to a 1:4m gradient, from the proposed 1:6m gradient, was also completed to reduce the amount of clearing required.

While the design of the road widening has tried to minimise the amount of clearing of native vegetation, clearing 0.8 ha of native vegetation has been determined as necessary to facilitate the increase in current and future traffic volumes, to ensure continuation of the road width connecting to the BORR and to accommodate the correction in the batter lines.

The desktop assessment of the clearing required to be completed as part of the Lillydale Road widening identified the present of a TEC/PEC and significant habitat for fauna listed under the EPBC Act and BC Act. Onsite assessment of the clearing has determined that vegetation present within the Project area does not represent the TEC/PEC and is unlikely to be at variance to Clearing Principle D, however a conservative approach has been applied to its assessment and referral to DCCEEW.

The proposed clearing has a low to moderate risk of impact to Black Cockatoos as:

- Clearing will remove 0.8 ha of native vegetation identified as supporting Black Cockatoos, including the removal of 17 habitat trees identified during the Fauna Survey (Biota, 2021).

- The vegetation condition within the majority of the Project area has been assessed as 'Degraded', however Black Cockatoos would use the site transiently.
- The Project area occurs outside known cockatoo breeding sites and is unlikely to function as a suitable breeding location.

The proposed clearing has a moderate risk of impact to Western Ringtail Possums (WRP) as:

- Clearing will remove 0.8 ha of native vegetation identified as supporting habitat for WRP.
- The vegetation condition within the majority of the Project area has been assessed as 'Degraded', however WRP would be likely to use the site transiently as a low-quality foraging and habitat linkages.

A fauna specialist will be engaged to inspect the area immediately prior to, and for the duration of clearing activities, for the presence of WRP. If any WRP are encountered during the clearing activities, all works will cease until the individual has moved on from the area or has been removed by WRP specialist.

While the clearing of native vegetation as part of the Lillydale Road widening project has been assessed as not having a significant long-term impact to the habitat connectivity for these species, the proposed clearing has been assessed as likely to be at variance to Clearing Principle B and potentially to Clearing Principle D.

The proposed mitigation planting will help to increase the canopy cover of significant habitat area necessary for significant fauna and the TEC/PEC – '*Tuart (Eucalyptus gomphocephala) woodlands and Forests of the Swan Coastal Plain*' vegetation complex within the local vicinity of the clearing and across the City of Bunbury.

## 9. REFERENCES

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- Beard, J.S. (1979) *Vegetation Survey of Western Australia: Perth Map and Explanatory Memoir 1:250,000 series*, Perth, Vegmap Publications.
- Biota Environmental Science (2021) *Bunbury Water Resource Recovery Scheme – Fauna Assessment*, May 2021. Available online <[CPS 9723-1 - Application Form and Supporting Documents.pdf \(dwer.wa.gov.au\)](#)>
- City of Bunbury (2021) *Regional Road Group – 10 year road Project Strategy*.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2021) *Kalgulup Regional Park Management Plan 96*, Government of Western Australia [available online; <[Kalgulup Regional Park management plan 2021 \(dpaw.wa.gov.au\)](#)>]
- Department of Parks and Wildlife (DPAW) (2015) 'Clay pans of the Swan Coastal Plain'. Available online <[claypans of the swan coastal plain.pdf \(dpaw.wa.gov.au\)](#)>
- DSEWPaC (2012). *EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered), Calyptorhynchus latirostris; Baudin's cockatoo (vulnerable), Calyptorhynchus baudinii; Forest red-tailed black cockatoo (vulnerable), Calyptorhynchus banksia naso*. Department of Sustainability, Environment, Water, Population and Communities, Commonwealth of Australia.
- GHD (2021) *Bunbury Water Resource Recovery Scheme – Flora and Vegetation Survey*, November. Available online <[DWERDT609433 CPS 9723-1 - Supporting information - Flora and Vegetation Survey.PDF](#)>
- Great Southern Bio Logic (2020) *Phytophthora Dieback Occurrence Survey, Bunbury Water Resource Recovery Scheme*. October 2020. Available online <[DWERDT609438 CPS 9723-1 - Supporting information - Phytophthora Dieback Occurrence Survey - Bunbury Water Resource Recovery Scheme.PDF](#)>
- Hedde, E.M., Loneragan, O.W., and Havel, J.J. (1980) *The vegetation complexes of the Darling System, Western Australia. In: Natural Resources Atlas of the Darling System, Western Australia*. The Department of Conservation and Environment, Perth.
- Shepard, D.P., Beeston, G.R., and Hopkins, A.j.m., (2002) *Native vegetation in Western Australia – extent, type and status*. Resource Management Technical Report 249, Department of Agriculture, Western Australia

## Appendix A – Figures





**Legend**  
■ Project Area

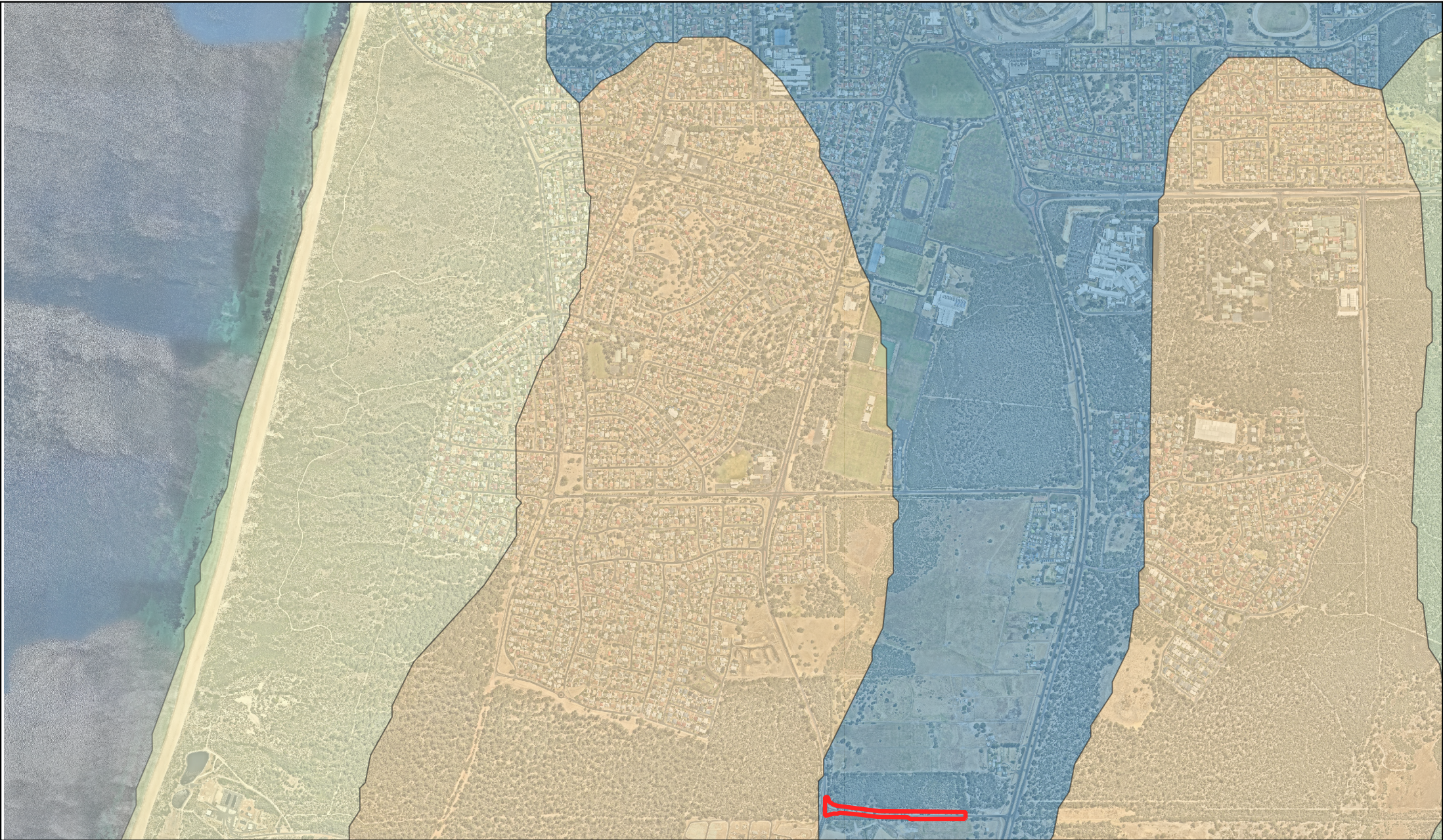


0 100 200 m

**Figure 1:**  
Lillydale Road -  
Project Area

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 56





**Legend**

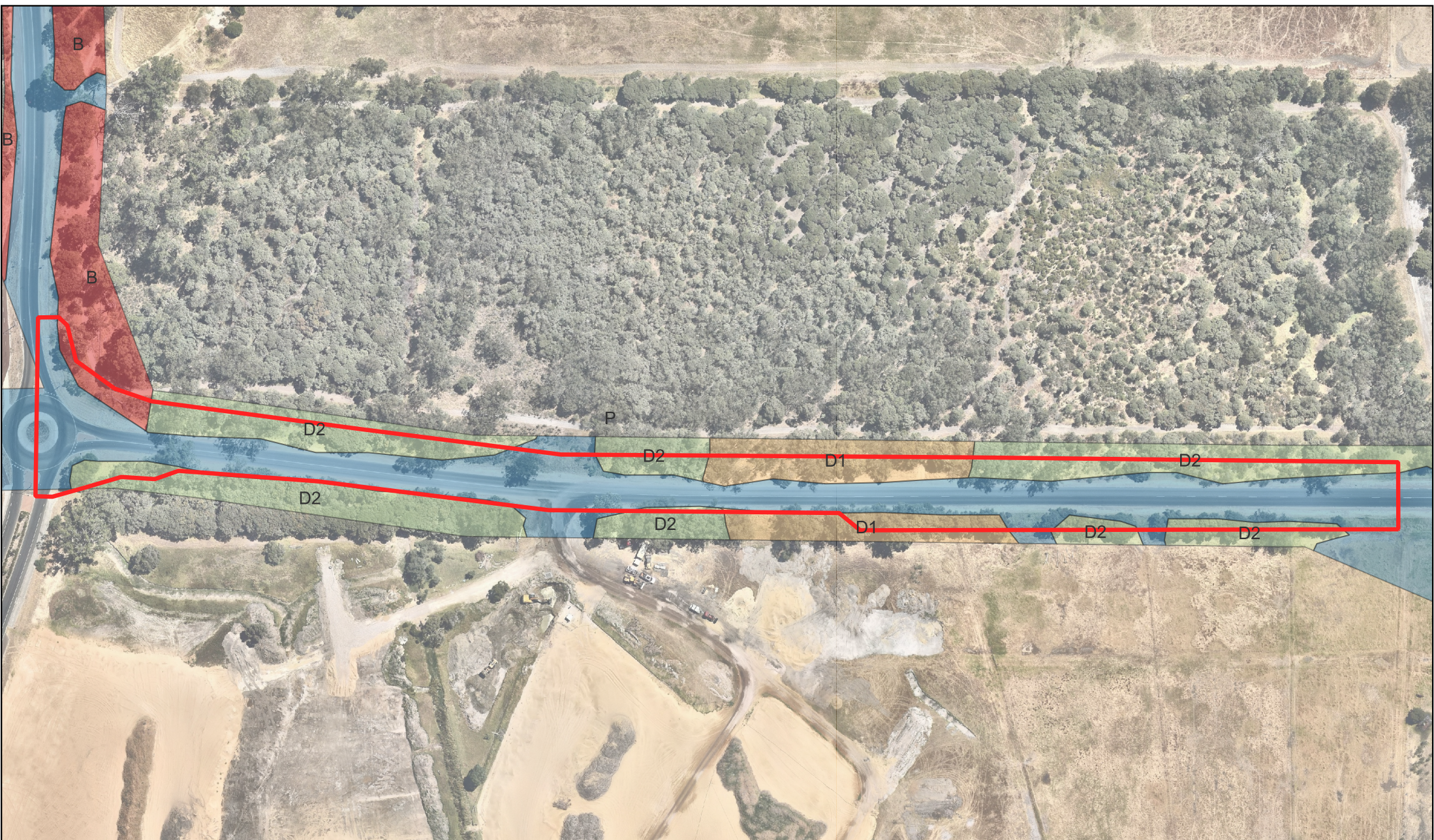
- Project Area
- Pre-European Vegetation Complexes**
  - Karrakatta Complex-Central And\South
  - Quindalup Complex
  - Southern River Complex
  - Swan Complex
  - Yoongarillup Complex



**Figure 2:**  
Lillydale Road -  
Pre-European Vegetation  
Complexes

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

■ Project Area
 Vegetation Types

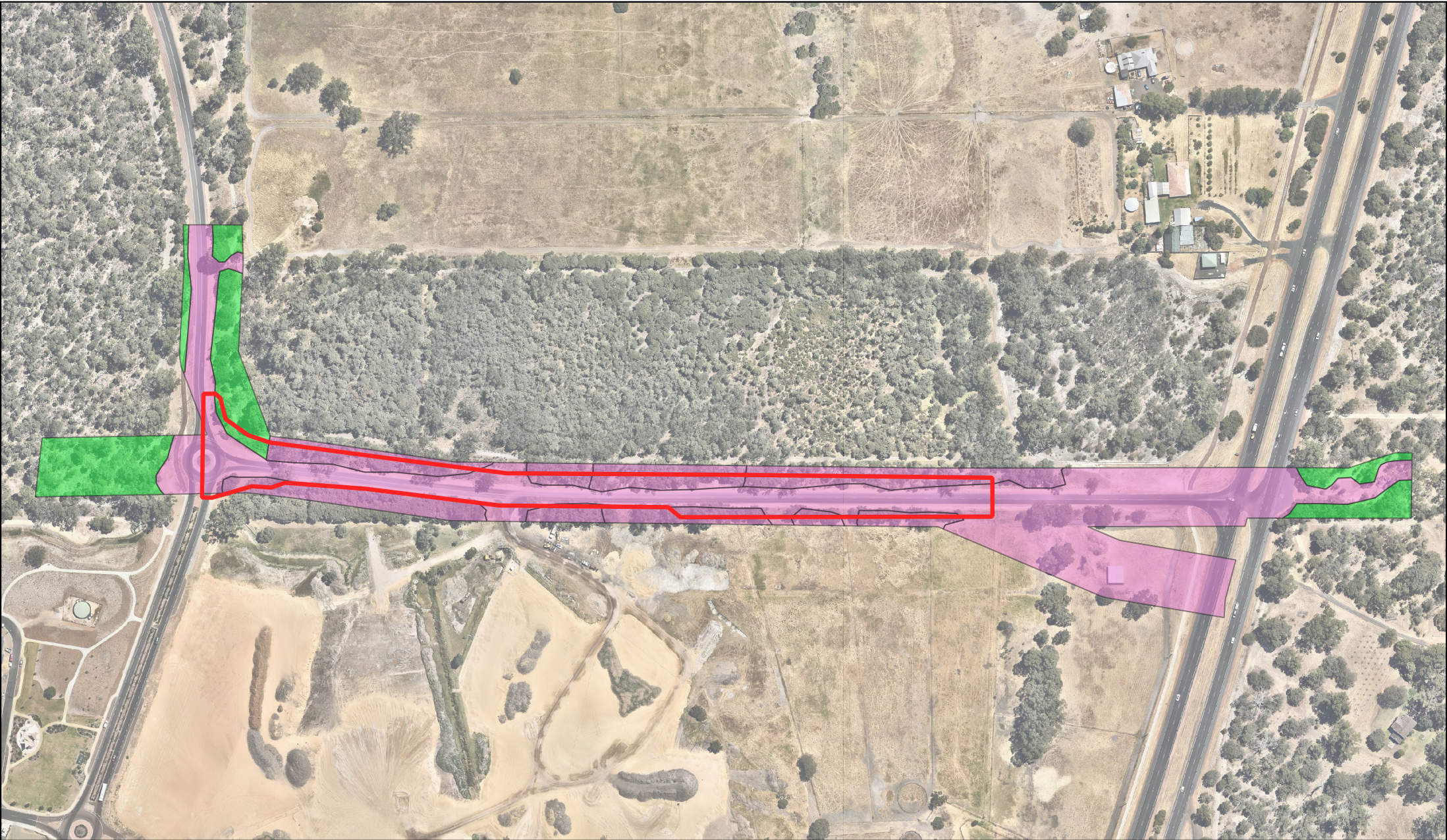
- B
- D1
- D2
- P

0 50 100 m

**Figure 3:**  
Lillydale Road -  
Vegetation Types

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- TEC Vegetation
  - EPBC TEC Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain
  - Other

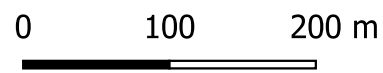


Figure 4a:  
Lillydale Road -  
Location of Threatened  
Ecological Community

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- TEC Vegetation
  - EPBC TEC Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain
  - Other

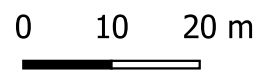


Figure 4b:  
Lillydale Road -  
Location of Threatened  
Ecological Community

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- Introduced Species
  - \*Asparagus asparagoides
  - \*Ipomoea indica
- Vegetation Condition**
  - Completely Degraded
  - Degraded
  - Good
  - Very Good

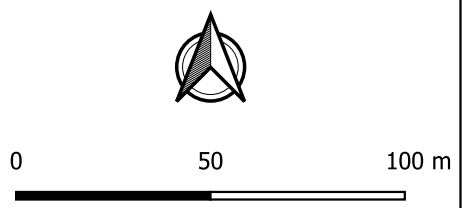
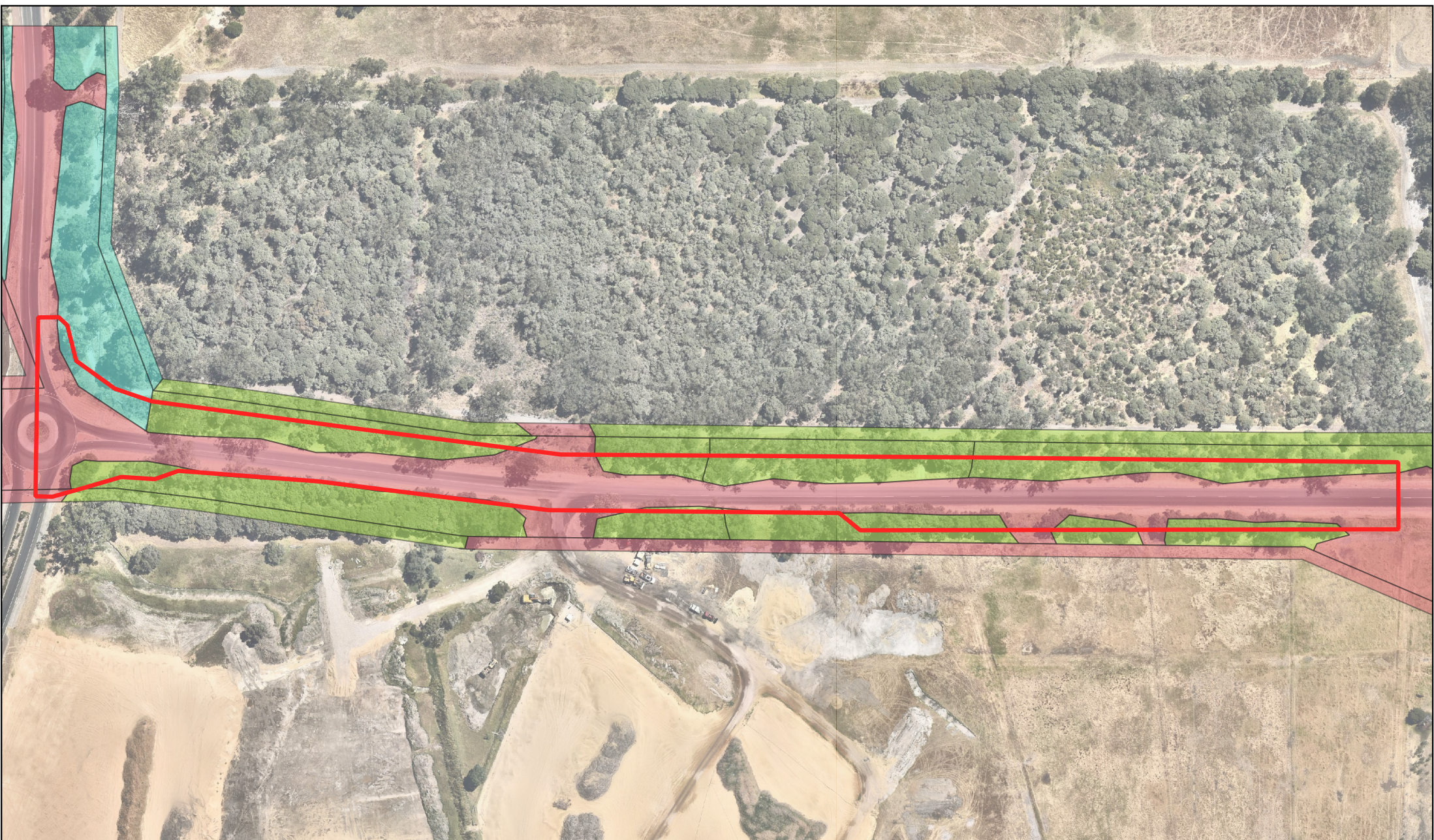


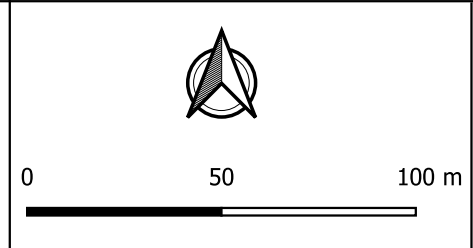
Figure 5:  
Lillydale Road -  
Vegetation Condition and location  
of any Weeds of National  
Significance (WONS) or Declared  
Weeds

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





- Legend**
- Project Area
  - Fauna Habitat Types**
    - Cleared
    - Melaleuca shrubland and/or woodland
    - Tuart/Peppermint woodland



**Figure 6:**  
Lillydale Road -  
Fauna Habitat Types

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- Black-cockatoo breeding habitat tree - *Corymbia calophylla*
- Black-cockatoo breeding habitat tree - *Eucalyptus gomphocephala*
- Black-cockatoo breeding habitat tree - *Eucalyptus marginata*
- Black-cockatoo breeding habitat tree - *Eucalyptus rudis*
- + Hollow assessment - Ground assessed only

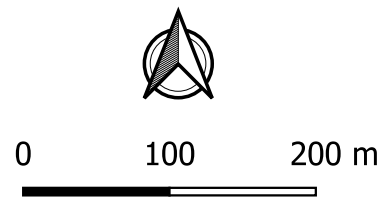


Figure 7:  
Lillydale Road -  
Location of Black Cockatoo  
Habitat Trees

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- Possum Sightings
- *Pseudocheirus occidentalis*
- *Trichosurus vulpecula*



0 100 200 m

Figure 8:  
Lillydale Road -  
Location of Western Ringtail  
Possum Sightings

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- Mitigation Planting Areas
  - Hartley Anderson Reserve
  - Katherine Chauhan Reserve
  - Lot 507 Lillydale Road
  - Soccer Club Reserve

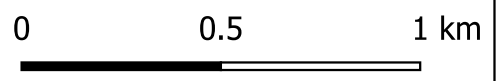
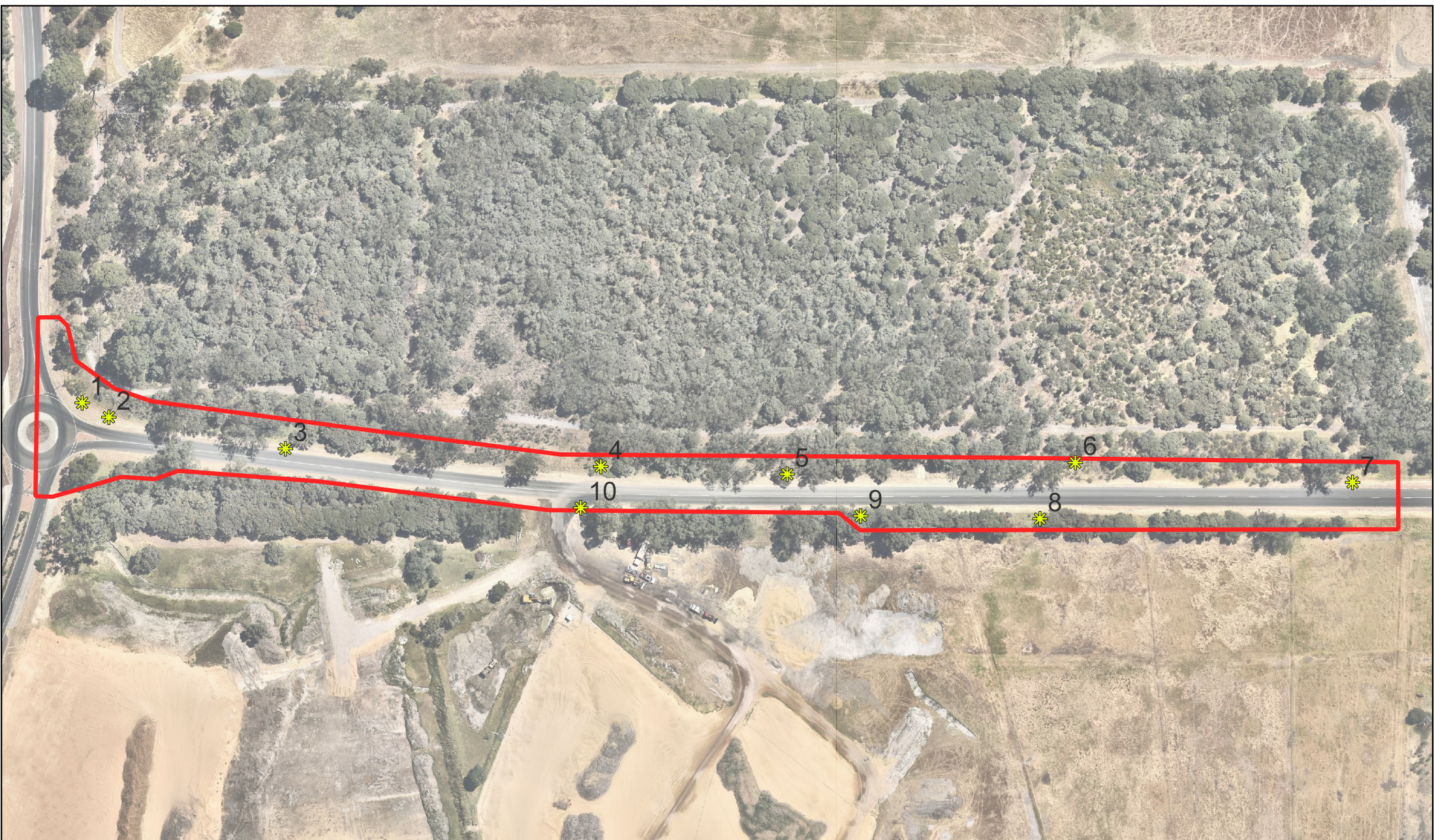


Figure 9:  
Lillydale Road -  
Proposed Mitigation Planting  
Locations

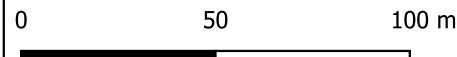
Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50





**Legend**

- Project Area
- ✱ Photo Points







**Figure 10:**  
Lillydale Road -  
Photo Locations

Map Projections: Universal Transverse Mercator (UTM)  
Horizontal Datum: GDA94  
Grid: GDA94 / MGA Zone 50







**Appendix B – Site Photos**

Photo Point (Figure 10)	Habitat Description	Image
1	<p>B- <i>Eucalyptus gomphocephala</i> with scattered <i>Eucalyptus marginata</i> Tall Woodlands over <i>Agonis flexuosa</i> Mid-height Open Forest</p> <p>Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and Forests of the Swan Coastal Plain (TEC)</p> <p>Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the Swan Coastal Plain (PEC)</p>	
2	<p>B- <i>Eucalyptus gomphocephala</i> with scattered <i>Eucalyptus marginata</i> Tall Woodlands over <i>Agonis flexuosa</i> Mid-height Open Forest</p> <p>Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and Forests of the Swan Coastal Plain (TEC)</p> <p>Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the Swan Coastal Plain (PEC)</p>	



<p>3</p>	<p>D2 –  <i>Corymbia calophylla</i>,  <i>Melaleuca preissiana</i>, <i>M. raphiophylla</i>  <i>(Agonis flexuosa, Eucalyptus rudis)</i>  Mid-height Open Forest/Woodlands.</p>	
<p>4</p>	<p>P – Roads and tracks, cleared road verge (sometimes with planted trees) and pasture and parkland</p>	



5	<p>D1 – <i>Eucalyptus rudis</i> Tall Woodlands over <i>Agonis flexuosa</i>, <i>Melaleuca raphiophylla</i> Mid-height Open-forest/Woodlands</p>	
6	<p>D2 – <i>Corymbia calophylla</i>, <i>Melaleuca preissiana</i>, <i>M. raphiophylla</i> (<i>Agonis flexuosa</i>, <i>Eucalyptus rudis</i>) Mid-height Open Forest/Woodlands.</p>	

7	<p>D2 –  <i>Corymbia calophylla</i>,  <i>Melaleuca preissiana</i>, <i>M. raphiophylla</i>  <i>(Agonis flexuosa, Eucalyptus rudis)</i>  Mid-height Open Forest/Woodlands.</p>	
8	<p>D1 – <i>Eucalyptus rudis</i> Tall  Woodlands over <i>Agonis flexuosa</i>,  <i>Melaleuca raphiophylla</i> Mid-height Open-forest/Woodlands</p>	



<p>9</p>	<p>D2 –  <i>Corymbia calophylla</i>,  <i>Melaleuca preissiana</i>, <i>M. raphiophylla</i>  <i>(Agonis flexuosa, Eucalyptus rudis)</i>  Mid-height Open Forest/Woodlands</p>	
<p>10</p>	<p>D2 –  <i>Corymbia calophylla</i>,  <i>Melaleuca preissiana</i>, <i>M. raphiophylla</i>  <i>(Agonis flexuosa, Eucalyptus rudis)</i>  Mid-height Open Forest/Woodlands</p>	

## **Appendix C**

### **Results of the Search using EPBC Act Protected Matters Search Tool**



Australian Government

Department of Climate Change, Energy,  
the Environment and Water

# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 03-Feb-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	3
<a href="#">Listed Threatened Species:</a>	55
<a href="#">Listed Migratory Species:</a>	45

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	64
<a href="#">Whales and Other Cetaceans:</a>	13
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	None
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	17
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	8
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### Listed Threatened Ecological Communities

[ [Resource Information](#) ]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Banksia Woodlands of the Swan Coastal Plain ecological community</a>	Endangered	Community likely to occur within area	In feature area
<a href="#">Clay Pans of the Swan Coastal Plain</a>	Critically Endangered	Community likely to occur within area	In buffer area only
<a href="#">Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community</a>	Critically Endangered	Community likely to occur within area	In feature area

### Listed Threatened Species

[ [Resource Information](#) ]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>BIRD</b>			
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calyptorhynchus banksii naso</a> Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Zanda baudinii listed as Calyptorhynchus baudinii</a> Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding known to occur within area	In feature area
<a href="#">Zanda latirostris listed as Calyptorhynchus latirostris</a> Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thunnus maccoyii</a> Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
<b>MAMMAL</b>			
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Dasyurus geoffroii</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Pseudocheirus occidentalis</a> Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding known to occur within area	In feature area
<a href="#">Setonix brachyurus</a> Quokka [229]	Vulnerable	Species or species habitat may occur within area	In feature area
<b>PLANT</b>			
<a href="#">Andersonia gracilis</a> Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Austrostipa bronweniae listed as Austrostipa bronwenae</a> [92773]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Austrostipa jacobsiana</a> [87809]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Banksia mimica</a> Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Caladenia huegelii</a> King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Diuris drummondii</a> Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Diuris micrantha</a> Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diuris purdiei</a> Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Drakaea elastica</a> Glossy-leafed Hammer Orchid, Glossy- leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Drakaea micrantha</a> Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Lambertia echinata subsp. occidentalis</a> Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Synaphea sp. Fairbridge Farm (D. Papenfus 696)</a> Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Synaphea sp. Serpentine (G.R. Brand 103)</a> [86879]	Critically Endangered	Species or species habitat may occur within area	In feature area
<b>REPTILE</b>			
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

## SHARK

<a href="#">Carcharias taurus (west coast population)</a> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Sphyrna lewini</a> Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

## Listed Migratory Species

[ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Migratory Marine Birds</b>			
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<b>Migratory Marine Species</b>			
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
<a href="#">Eubalaena australis as Balaena glacialis australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Congregation or aggregation known to occur within area	In buffer area only
<a href="#">Mobula alfredi as Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
<a href="#">Mobula birostris as Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only

## Migratory Terrestrial Species

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
<b>Migratory Wetlands Species</b>			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In feature area

## Other Matters Protected by the EPBC Act

Listed Marine Species		[ Resource Information ]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Bird</b>			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Ardenna carneipes as Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardenna grisea as Puffinus griseus</a> Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
<a href="#">Hydroprogne caspia as Sterna caspia</a> Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Onychoprion anaethetus as Sterna anaethetus</a> Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Phoebetria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Puffinus assimilis</a> Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Thinornis cucullatus as Thinornis rubricollis</a> Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In buffer area only
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area
<b>Fish</b>			
<a href="#">Acentronura australe</a> Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
<a href="#">Campichthys galei</a> Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
<a href="#">Heraldia nocturna</a> Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
<a href="#">Hippocampus breviceps</a> Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Hippocampus subelongatus</a> West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
<a href="#">Histiogamphelus cristatus</a> Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only
<a href="#">Lissocampus caudalis</a> Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only
<a href="#">Lissocampus fatiloquus</a> Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only
<a href="#">Lissocampus runa</a> Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
<a href="#">Mitotichthys meraculus</a> Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only
<a href="#">Nannocampus subosseus</a> Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
<a href="#">Phycodurus eques</a> Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
<a href="#">Phyllopteryx taeniolatus</a> Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
<a href="#">Pugnaso curtirostris</a> Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
<a href="#">Stigmatopora argus</a> Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
<a href="#">Vanacampus phillipi</a> Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
<a href="#">Vanacampus poecilolaemus</a> Longsnout Pipefish, Australian Longsnout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only
<b>Mammal</b>			
<a href="#">Arctocephalus forsteri</a> Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
<b>Reptile</b>			
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In buffer area only
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

## Whales and Other Cetaceans [ [Resource Information](#) ]

Current Scientific Name	Status	Type of Presence	Buffer Status
<b>Mammal</b>			
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Congregation or aggregation known to occur within area	In buffer area only



Current Scientific Name	Status	Type of Presence	Buffer Status
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

## Extra Information

EPBC Act Referrals				[ Resource Information ]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Controlled action</b>				
<a href="#">Bunbury Outer Ring Road Southern Section</a>	2012/6652	Controlled Action	Completed	In buffer area only
<a href="#">Bunbury Outer Ring Road Southern Section project, WA</a>	2019/8543	Controlled Action	Final PD	In feature area
<a href="#">Construction of new sporting field</a>	2007/3333	Controlled Action	Post-Approval	In buffer area only
<a href="#">Dalyellup Beach Estate - Residential Development</a>	2007/3361	Controlled Action	Post-Approval	In buffer area only
<a href="#">Residential development, College Grove, WA</a>	2015/7579	Controlled Action	Completed	In buffer area only
<a href="#">Somerville Drive Extension</a>	2011/6153	Controlled Action	Post-Approval	In buffer area only
<a href="#">Yarragadee Water Supply Development</a>	2005/2073	Controlled Action	Completed	In buffer area only
<b>Not controlled action</b>				
<a href="#">Bunbury Water Resources Recovery Scheme-Recycled Water Treatment Plant</a>	2021/8986	Not Controlled Action	Completed	In buffer area only
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV,</a>	2015/7522	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Not controlled action</b>				
<a href="#">sthrn two thirds of Australia</a>				
<a href="#">INDIGO Central Submarine Telecommunications Cable</a>	2017/8127	Not Controlled Action	Completed	In feature area
<a href="#">New automotive centre at the Southwest Institute of Technology, Bunbury, WA</a>	2010/5766	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Development - Assorted Lots Parade Rd, Washington Av &amp; Bussell Hwy, Usher WA</a>	2013/6935	Not Controlled Action	Completed	In feature area
<a href="#">Woodcrest Rise Estate Residential Development</a>	2007/3794	Not Controlled Action	Completed	In feature area
<b>Not controlled action (particular manner)</b>				
<a href="#">Dalyellup Beach Estate Stages 12 and 14, near Bunbury</a>	2004/1726	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
<a href="#">INDIGO Marine Cable Route Survey (INDIGO)</a>	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
<b>Referral decision</b>				
<a href="#">Bunbury Water Resource Recovery Scheme - Stage 2 Pipeline</a>	2022/9145	Referral Decision	Referral Publication	In feature area
<a href="#">Bunbury WRRS - Stage 2 Pipeline</a>	2021/9092	Referral Decision	Completed	In feature area
<b>Biologically Important Areas</b>				
Scientific Name		Behaviour	Presence	Buffer Status
<b>Seabirds</b>				
<a href="#">Ardenna pacifica</a>				
Wedge-tailed Shearwater [84292]		Foraging (in high numbers)	Known to occur	In buffer area only
<a href="#">Onychoprion anaethetus</a>				
Bridled Tern [82845]		Foraging (in high numbers)	Known to occur	In buffer area only
<a href="#">Puffinus assimilis tunneyi</a>				
Little Shearwater [59363]		Foraging (in high numbers)	Known to occur	In buffer area only

Scientific Name	Behaviour	Presence	Buffer Status
<a href="#">Sternula nereis</a> Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
<b>Whales</b>			
<a href="#">Balaenoptera musculus brevicauda</a> Pygmy Blue Whale [81317]	Distribution	Known to occur	In buffer area only
<a href="#">Balaenoptera musculus brevicauda</a> Pygmy Blue Whale [81317]	Migration	Known to occur	In buffer area only
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Seasonal calving habitat	Known to occur	In buffer area only
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Migration (south)	Known to occur	In buffer area only

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.



# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

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Please feel free to provide feedback via the [Contact us](#) page.

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