

## PURPOSE

This document provides an assessment of significance of the Proposal to the relevant listed threatened species and ecological communities in accordance with the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* (DoE, 2013).

### Protected Matters Summary Table

Protected Matter	Conservation Value	Extent of impact	Proposed Significance	Basis of Significance assessment
<b>Banksia Woodlands of the Swan Coastal Plain Ecological Community</b>	Endangered	<p><b>2.85 ha:</b></p> <ul style="list-style-type: none"> <li><b>1.68 ha</b> (59%) in Degraded and Cleared condition</li> <li><b>1.17 ha</b> (41%) Good-Very Good and Good condition</li> </ul>	Not a significant impact	<p>This element is not a significant impact in accordance with Significant Impact Guidelines 1.1 (DoE, 2013) and Conservation Advice (DEE 2016) as 59% of the action impacting this TEC is within Degraded/Cleared areas, there is no change in groundwater or surface water regimes, no additional fragmentation and suitable management measures will be implemented during works to reduce indirect impacts to remaining TEC.</p> <p>Impact description:</p> <ul style="list-style-type: none"> <li>2.85 ha (5.7%) of TEC is within a patch size of 38.95 ha.</li> <li>94.3% of the TEC patch remains.</li> <li>Action limits impacts <ul style="list-style-type: none"> <li>Good to Very Good: <b>0.96 ha</b> / 33.8%</li> <li>Good: <b>0.21 ha</b> / 7.2%</li> <li>Degraded: <b>1.01 ha</b> / 35.6%</li> <li>Cleared: <b>0.67 ha</b> / 23.4%</li> </ul> </li> <li>Revegetate 0.65 ha / 22.6%</li> <li>Weed management within wider Caddadup Class A Reserve</li> </ul>
<b>Tuart Woodlands &amp; Forests of the Swan Coastal Plain Threatened Ecological Community</b>	Critically Endangered	<p><b>1.24 ha:</b></p> <ul style="list-style-type: none"> <li><b>1.00 ha</b> (82.44%) in Degraded and Cleared condition.</li> <li><b>0.24 ha</b> (17.56%) in Good-Very Good and Good condition.</li> </ul>	Not a significant impact	<p>This element is not a significant impact in accordance with Significant Impact Guidelines 1.1 (DoE, 2013) and Conservation Advice (DEE 2019) as 82.44% is in Degraded/Cleared condition, no change in groundwater or surface water regimes, no additional fragmentation of the TEC and suitable management measures during works will be implemented to reduce the risk of indirect impacts to remaining TEC.</p> <ul style="list-style-type: none"> <li>1.24 ha (4.28%) of TEC is within a wider patch size of 28.97 ha.</li> <li>95.7% of TEC patch remains.</li> <li>Proposed tank site chosen to utilising existing cleared areas and vegetation in Degraded condition: <ul style="list-style-type: none"> <li>Good to Very Good: <b>0.08 ha</b> / 6.39%</li> <li>Good: <b>0.14 ha</b> / 11.18%</li> <li>Degraded: <b>0.64 ha</b> / 52.50%</li> <li>Cleared: <b>0.36 ha</b> / 29.93%</li> </ul> </li> <li>No dewatering or change in surface water regimes.</li> </ul>

				<ul style="list-style-type: none"> <li>• Revegetation of 0.1 ha / 7.72%</li> <li>• Weed management within wider Caddadup Class A Reserve</li> </ul>
<p>Potential Black Cockatoo foraging habitat (<i>Calyptorhynchus banksii naso</i>, <i>Zanda baudinii</i> and <i>Zanda latirostris</i>)</p>	<p>Endangered, Vulnerable</p>	<p><b>2.44 ha:</b></p> <ul style="list-style-type: none"> <li>• <b>1.26 ha</b> (51.66%) in Degraded condition</li> <li>• <b>1.18 ha</b> (48.34%) in Good-Very and Good condition</li> </ul>	<p>Not a significant impact</p>	<p>This element is not a significant impact in accordance with referral guideline (DAWE, 2022), Recovery Plan (DEC, 2008) and Significant Impact Guidelines 1.1 (DoE, 2013) as there is roosting or current breeding habitat, not impacting on critical habitat for the species, no reduction in the area of occupancy of the species, no disruption to breeding and suitable management measures will be implemented to reduce risk of indirect impacts to remaining Black Cockatoo habitat.</p> <ul style="list-style-type: none"> <li>• 2.44 ha (19.7%) within a wider patch of 12.34 ha</li> <li>• High to Very High quality in accordance with referral guideline (DAWE, 2022)</li> <li>• Proposed tank site chosen to utilise existing cleared areas and vegetation in Degraded condition: <ul style="list-style-type: none"> <li>○ Good to Very Good: <b>0.97 ha</b> / 39.91%</li> <li>○ Good: <b>0.21 ha</b> / 8.43%</li> <li>○ Degraded: <b>1.26 ha</b> / 51.66%</li> </ul> </li> <li>• Not critical habitat: <ul style="list-style-type: none"> <li>○ No roosting or current breeding habitat</li> <li>○ No impacts to nearby water sources.</li> <li>○ Avoiding clearing during breeding season / mitigation measures to reduce impacts.</li> <li>○ Utilising existing vehicular access and low speeds maintained to reduce risk of vehicular strike</li> <li>○ No dewatering or change in surface water regimes.</li> </ul> </li> <li>• Revegetation of 0.69 ha</li> <li>• Weed management within wider Caddadup Class A Reserve</li> </ul>
<p>Black Cockatoo potential breeding trees (<i>Calyptorhynchus banksii naso</i>, <i>Zanda baudinii</i> and <i>Zanda latirostris</i>)</p>	<p>Endangered, Vulnerable</p>	<p><b>11</b> potential breeding trees DBH &gt; 500 mm containing no hollows.</p>	<p>Not a significant impact</p>	<p>This element is not a significant impact in accordance with referral guideline (DAWE, 2022), Recovery Plan (DEC, 2008) and Significant Impact Guidelines 1.1 (DoE, 2013) as the trees do not contain hollows and therefore no current breeding habitat or roosting habitat.</p> <ul style="list-style-type: none"> <li>• 11 of 28 potential breeding trees containing no hollows to be cleared, 18 trees to be retained</li> <li>• Not critical habitat: <ul style="list-style-type: none"> <li>○ No roosting or current breeding habitat</li> <li>○ No impacts to nearby water sources</li> <li>○ Avoiding clearing during breeding season / mitigation measures to reduce</li> </ul> </li> </ul>

				<ul style="list-style-type: none"> <li>○ impacts.</li> <li>○ Utilising existing vehicular access and low speeds maintained to reduce risk of vehicular strike</li> <li>○ No dewatering or change in surface water regimes.</li> </ul> <ul style="list-style-type: none"> <li>● Weed management within wider Caddadup Reserve</li> </ul>
<p><b>Potential Western Ringtail Possum Habitat</b> <i>(Pseudocheirus occidentalis)</i></p>	<p>Critically Endangered</p>	<p><b>2.38 ha:</b></p> <ul style="list-style-type: none"> <li>● <b>1.20 ha</b> (50.56%) Degraded.</li> <li>● <b>1.18 ha</b> (49.44%) Good-Very Good and Good.</li> </ul>	<p>Not a significant impact</p>	<p>This element is not a significant impact in accordance with Significant Impact Guidelines 1.1 (DoE, 2013) and Significant Impact Guidelines (DEWHA, 2009) as the proposed action is not located within a Core, Primary Corridor or Supporting Habitat area, no populations of WRP were recorded, no critical habitat is present and suitable management measures will be implemented to reduce risk of impacts.</p> <p>2.38 ha (21.36%) of potential habitat within wider patch of 11.15 ha</p> <ul style="list-style-type: none"> <li>● Not critical habitat: <ul style="list-style-type: none"> <li>○ Suitable habitat present.</li> <li>○ No evidence of Western Ringtail Possum observed.</li> <li>○ No potential denning habitat, dreys or hollows</li> <li>○ No recorded population.</li> <li>○ Utilising existing vehicular access and low speeds maintained to reduce risk of vehicular strike.</li> <li>○ No dewatering or change in surface water regimes.</li> </ul> </li> <li>● Proposed tank site chosen to utilise existing cleared areas and vegetation in Degraded condition: <ul style="list-style-type: none"> <li>○ Good to Very Good: <b>0.97 ha</b> / 40.82%</li> <li>○ Good: <b>0.21 ha</b> / 8.63%</li> <li>○ Degraded: <b>1.20 ha</b> / (50.56%)</li> </ul> </li> <li>● Revegetation of 0.67 ha</li> <li>● Weed management within wider Caddadup Class A Reserve</li> </ul>

# **BANKSIA WOODLANDS TEC & TUART WOODLANDS AND FORESTS OF THE SWAN COASTAL PLAIN TEC**

Banksia Woodlands of the Swan Coastal Plain ecological community is a threatened ecological community (TEC), listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain (SCP) ecological community is a threatened ecological community, listed as critically endangered under the EPBC Act.

The proposed action will involve the following:

- Clearing of up to 2.87 ha of Banksia Woodlands TEC (59% Degraded/Cleared, 41% in Good-Very Good / Good condition) within a wider patch of 38.95 ha. 2.22 ha will be permanently cleared and 0.65 ha of temporary clearing will be revegetated.
- Clearing of up to 1.24 ha of Tuart Woodlands & Forests TEC (82.4% Degraded/Cleared, 17.6% Good-Very Good / Good condition) within wider patch of 28.97 ha. 1.15 ha will be permanently cleared and 0.10 ha of temporary clearing will be revegetated (Attachment 1 – Figures)

The following sections address the significant impact criteria for a critically endangered and endangered ecological communities.

## **Reduce the extent of an ecological community**

### *Banksia Woodlands TEC*

The proposal will require the total clearing of up to 2.87 ha of Banksia Woodlands TEC within a wider patch of 38.95 ha which extends across the Caddadup Class A Reserve (Class A reserve) (Figure 6) and surrounding area (Figure 8a). The clearing of the Banksia Woodlands TEC includes 2.22 ha permanently and 0.65 ha temporarily for construction purposes that is proposed to be revegetated. Therefore, the reduced extent of the extent of the Banksia Woodlands TEC is 2.22 ha representing an approximate 5.7% reduction in the extent of the ecological community within the wider patch of 38.95 ha. This reduction is not considered to be a significant impact to the TEC:

1. The clearing of up to 2.22 ha of Banksia Woodlands TEC is not considered to represent a significant loss of the ecological community locally, with 36.72 ha of the 38.95 ha (representing 94.3%) of wider patch of the TEC remaining.
2. The clearing is not considered to represent a significant reduction in the extent of the TEC regionally with extensive patches of remnant vegetation likely to be representative of the Banksia Woodlands TEC within land reserved for Regional Open Space and Yalgorup National Park vested for conservation in perpetuity under the *Conservation and Land Management Act 2002* (CALM Act).

### *Eucalypt Woodlands and Forests of the Swan Coastal Plain (SCP) TEC*

The proposal will involve the total clearing of up to 1.24 ha of Tuart Woodlands and Forests of the SCP TEC, of which 1.15 ha will be permanently cleared and 0.1 ha will be temporarily cleared for construction purposes that will be revegetated. Approximately 82.4% of the Tuart TEC is in Degraded/Cleared condition and 17.6% in Good-Very Good and Good condition.

The 1.24 ha proposed to be cleared is located within a patch size of 28.97 ha representing approximately 4.3% reduction in the extent of the TEC within the immediate area (Figure 8b). This reduction is not considered a significant impact to the TEC due to the degraded nature of the patch of TEC proposed to be cleared and the minor reduction of 4.3% in the extent of the TEC within the wider patch.

## **Fragment or increase fragmentation of an ecological community**

The proposed clearing within the proposed action will include the following:

- 2.87 ha of Banksia Woodlands TEC (59% in Degraded/Cleared condition) within a wider patch size of 38.95 ha, of which 2.22 ha will be permanently cleared and 0.65 ha is temporarily cleared and will be revegetated (Figure 13).
- 1.24 ha of Tuart Woodlands and Forests of the SCP TEC (82.4% in Degraded/Cleared condition) within a wider patch size of 28.97 ha, of which 1.15 ha will be permanently cleared and 0.1 ha will be temporarily cleared and will be revegetated (Attachment 1 – Figures)

The development footprint has been designed to utilise existing cleared areas including access tracks and disturbances between Old Coast Road to the existing tank site to avoid impacts to the TECs. Approximately 64% (2.13 ha) of the Proposal area is in Cleared or Degraded condition.

### *Banksia Woodlands TEC*

The conservation advice for the Banksia Woodlands TEC defines patches as "...a discrete and mostly continuous area of an ecological community. A patch may include small scale (less than 30 m) variations, gaps and disturbances, such as tracks, paths or breaks, or localised variations in vegetation that do not significantly alter the overall functionality of the ecological community. Such breaks are included in patch size calculations from the edge of canopy of 30 m or more..." (DEE, 2016).

The Banksia Woodlands TEC patch of 36.05 ha presented in Figure 13, includes existing tracks and cleared areas (Focused Vision, 2023). The proposal has been designed to utilise areas of the Class A Reserve in Cleared or Degraded condition to reduce impacts to vegetation in Good or better condition whilst allowing for optimal topographical conditions for the proposed infrastructure.

The Proposal has been designed to utilise Degraded and Cleared areas rather than higher quality and intact areas of vegetation. The proposal will not cause fragmentation of the Banksia Woodlands TEC as there will be no permanent gaps greater than 30 m created as a result of the proposal. Therefore, the Banksia Woodlands TEC patch over the wider Class A Reserve will remain as one patch. Given there is no fragmentation of the TEC, no significant impacts are expected, and it is considered a not a controlled action.

### *Tuart Woodlands and Forests of the SCP TEC*

The conservation advice for the Tuart Woodlands and Forests of the SCP TEC defines patches as "a discrete and mostly continuous area of vegetation that meets the key diagnostic characteristics. The patch boundary is 30 m beyond the outer canopy of the established Tuart trees...A patch may include small areas without understorey vegetation (such as roads, paths, tracks, buildings, waterbodies etc.) that do not significantly alter the overall function of the ecological community. These small areas do not break up a patch...as long as there some parts of the canopy within 60 m of the outer edges of the canopies adjacent." (DEE, 2019).

The proposed clearing of Tuart Woodlands and Forests of the SCP TEC is along the western periphery of the mapped TEC patch of 28.97 ha (Attachment 1 – Figure 14). As such, the Tuart Woodlands and Forests of the SCP TEC patch will remain unfragmented across the Class A Reserve. Given there is no fragmentation of the TEC, no significant impacts are expected, and it is considered a not a controlled action.

## **Adversely affect habitat critical to the survival of an ecological community**

### *Banksia Woodlands TEC*

The net remaining 36.73 ha (94.3 %), including revegetation areas, of the Banksia Woodlands TEC patch in which the action is proposed will remain within the Class A Reserve ensures the long-term survival of the ecological community and maintain the existing connection to the surrounding patches of remnant native vegetation. As such, the proposal to clear up to 2.87 ha of the Banksia Woodlands TEC (59% Degraded/Cleared and 41% Good-Very Good/Good condition), of which 0.65 ha is proposed to be revegetated, along with the proposed mitigation and management measures proposed, is not likely to impact habitat critical to the survival of the patch of the remaining Banksia Woodlands TEC (Attachment 6 – Revegetation Plan, Attachment 8 – Construction Environment Management Pla).

Given there is no expected impacts to habitat critical for the survival of the TEC, no significant impacts are expected, and the action is considered a not a controlled action.

### *Tuart Woodlands and Forests of the SCP TEC*

The Tuart Woodlands and Forests of the SCP TEC conservation advice states the following areas are critical to the survival of the TEC:

- Areas that are included in conservation reserves;
- Large patches that are not yet reserved;

- Areas maintaining ecological connectivity between significant patches (DEE, 2019).

The proposal will involve the clearing of up to 1.24 ha of the Tuart TEC in mostly Degraded/Cleared condition (82.4%) that occurs along the periphery of the western edge of the wider patch of 28.97 ha. Although the Tuart TEC is located within a Class A Reserve considered to be critical areas for the survival of the TEC, it is not considered that the proposed clearing of 4.28% of the wider patch of the TEC in mostly Degraded/Cleared condition would cause an adverse or significant impact onto this TEC.

Given the degraded vegetation condition of the Tuart Woodlands and Forests of the SCP and the surrounding class A reserve provides ecological connectivity, no impacts to habitat critical for the survival of the TEC are expected.

### **Modify or destroy abiotic (non-living) factors (such as water, nutrients, soil) necessary for an ecological community's survival, including a reduction of groundwater levels or substantial alteration of surface water drainage patterns**

*Banksia Woodlands TEC and Tuart Woodlands and Forests of the SCP TEC*

The proposal will involve the clearing of native vegetation and the construction of a duplicate tank, pipework, access tracks, overflow sump and associated infrastructure.

Stormwater runoff generated within the proposed action will be infiltrated via the overflow sump to the south of the site or direct in-situ infiltration. There will be no substantial modification of the surface water drainage patterns of the surrounding Banksia Woodlands or Tuart Woodlands and Forests of the SCP TECs as a result of the proposed action. Given there is no substantial alteration of surface water drainage patterns, no impacts are expected to the TEC's survival.

No dewatering of groundwater will be required for the proposal and therefore groundwater levels are unchanged. There are no impacts expected to the TEC's survival from a change in groundwater levels.

The proposed action will not modify or destroy abiotic factors necessary for the remaining Banksia Woodlands and Tuart Woodlands and Forests of the SCP TECs survival.

### **Cause a substantial change in the species composition of an occurrence of an ecological community including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting**

*Banksia Woodlands TEC and Tuart Woodlands and Forests of the SCP TEC*

2.87 ha of Banksia Woodlands TEC, 59% Degraded/Cleared, is proposed to be cleared within a patch size of 38.95 ha. The reduced extent of the Banksia Woodlands TEC represents an approximate 5.7% reduction in the extent of the TEC in mostly Degraded/Cleared condition and is therefore not expected to change the species composition within the wider TEC patch.

1.24 ha of Tuart Woodlands and Forests of the SCP TEC, 82.4% Degraded/Cleared condition, proposed to be cleared within a patch size of 28.97 ha. The reduced extent of the Tuart Woodlands and Forests of the SCP TEC represents an approximately 4.28% reduction in the extent of the TEC that is in mostly Degraded/Cleared condition and is therefore not expected to change the species composition within the greater TEC.

The proposed action does not involve regular burning or flora or fauna harvesting.

Due to the small extent of clearing of the TECs that are in mostly Degraded/Cleared condition, it is not expected that the Proposal would cause a substantial change in the species composition in the remaining wider patches of the Banksia Woodlands and Tuart Woodlands & Forests TECs.

With the appropriate management measures in place, proposed action is not expected to cause a substantial change in the species composition of the remaining patches of Banksia Woodlands and Tuart Woodlands and Forests of the SCP TECs.

## **Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including but not limited to:**

- **Assisting invasive species, that are harmful to the listed ecological community, to become established; or**
- **Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community**

### *Banksia Woodlands TEC and Tuart Woodlands and Forests of the SCP TEC*

The new water services infrastructure including the new tank and pipework will need to be flushed with chlorinated water prior to operational use. This test water will be directed to the overflow sump for infiltration/evaporation and will not be directed into any areas of remnant native vegetation. The test water will be adequately dechlorinated prior to disposal. Given these site management measures, no impacts are expected to the TEC.

Dieback (*Phytophthora cinnamomic*) and invasive flora species are identified as threats to the Banksia Woodlands TEC and Tuart Woodlands and Forests of the SCP TEC (DEE, 2016; DEE 2019). The Banksia Woodlands TEC and Tuart Woodlands and Forests of the SCP TEC surrounding the proposed action are considered to be in 'Degraded' to 'Very Good to Good' condition with occurrences of declared weed, Bridal Creeper (*\*Asparagus asparagoides*). Water Corporation will implement weed and hygiene management measures within the wider Caddadup Reserve as per Attachment 6 – Revegetation Plan and Attachment 8 – CEMP to ensure the surrounding adjacent TECs are not indirectly impacted as a result of the proposal. These management measures will mitigate the spread or introduction of dieback (*Phytophthora cinnamomi*) and weeds, as such, no impacts to the TECs are expected from weeds and dieback as a result of the proposed action.

## **Interfere with the recovery of an ecological community**

### *Banksia Woodlands TEC*

There is no adopted or made Recovery Plan for this ecological community (DoE, 2024).

### *Tuart Woodlands and Forests of the SCP TEC*

The DCCEEW Species Profile and Threats Database (DoE, 2024) states a recovery plan is not required, as the main threats to the ecological community and priority actions required to address them are largely understood. DoE 2024 states the Conservation Advice sufficiently outlines the priority research and conservation actions needed for this ecological community and the existing strategies, plans and guides are relevant to the management and/or recovery of the ecological community, or its component species.

Conservation Advice (DoEE, 2019) states the primary threats are clearing, introduced species (weeds and feral fauna) and pathogens (dieback). The management measures proposed to be implemented for the proposed action addresses these primary threats, the proposed action does not interfere with a recover of the TEC.

## **BLACK COCKATOOS (*Calyptorhynchus banksii naso*, *Zanda baudinii*, *Zanda latirostris*)**

Black cockatoos collectively refer to the following three black cockatoos species:

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) listed as Vulnerable under the EPBC Act.
- Baudin's Black-Cockatoo (*Zanda baudinii*) listed as Endangered under the EPBC Act.
- Carnaby's Black Cockatoo (*Zanda latirostris*) listed as Endangered under the EPBC Act.

The proposed action will involve the following:

- Clearing 2.44 ha of Black Cockatoo foraging habitat within a wider area of 12.35 ha. 1.75 ha will be permanently cleared and 0.69 ha of temporary clearing will be revegetated.
- Clearing of up to 11 potential breeding trees, none containing hollows. Retention of 18 potential breeding trees. (Attachment 1 – Figure 12).

The following sections address the significant impact criteria for a critically endangered species and the assessment has been undertaken on the three black cockatoo species collectively.

### **Lead to a long-term decrease in the size of a population**

The Significant Impact Guidelines 1.1 describes an important population as a population necessary for a species' long-term survival and recovery and may be key source populations either for breeding or dispersal, populations that are necessary for maintaining genetic diversity, and/or populations that are near the limit of the species' range (DoE, 2013). The Survey Area contains a total of 29 potential breeding trees with DBH greater than 500 mm (none containing hollows) and 12.35 ha of black cockatoo foraging habitat within the wider Class A Reserve (Focused Vision, 2023). The proposed action will involve the clearing of up to 2.44 ha of foraging habitat and 11 potential breeding trees containing no hollows.

There was no evidence of breeding or roosts occurring within the Survey Area. There is approximately 600 ha of remnant native vegetation within 4 km of the site that is likely to provide foraging, roosting, and nesting habitat for black cockatoos. The clearing 2.44 ha of foraging habitat and 11 potential breeding trees containing no hollows would not impact on the long-term survival or recovery of a population of the species due to the likely higher amount of habitat in the surrounding area and limited suitable habitat within the proposed action.

The development of the site has been designed to avoid unnecessary clearing of intact native vegetation where possible by aligning new infrastructure in close proximity to existing water services infrastructure on site.

In accordance with the Significant Impact Guidelines 1.1 (DoE, 2013), given there is limited evidence of use of the site by black cockatoos and no suitable breeding habitat present within the proposed action, it is unlikely that the Proposal would lead to a long-term decrease in the size of a population of black cockatoo species.

### **Reduce the area of occupancy of the species**

The clearing of up to 2.44 ha of foraging habitat within a wider patch of 12.35 ha is considered to be a minor reduction in the foraging availability for the black cockatoos within the Class A reserve and within the surrounding area. There is approximately 600 ha of vegetation likely to be suitable foraging habitat within 4km of the proposed action that would provide valuable foraging, breeding and roosting habitat within conservation tenure or parks and recreation reserves. This includes the Yalgorup National Park comprising of 12,888 ha of vegetated land with two known roosting areas for black cockatoos, located approximately 3.3 km to the south of the proposed action.

Given the site is not a primary source of critical habitat for the black cockatoos, the clearing of up to 2.44 ha of foraging habitat and 11 potential breeding trees with the balance of habitat to remain within the Class A reserve, is unlikely to significantly reduce the area of occupancy of the black cockatoo species.

### **Fragment an existing population into two or more populations**

The proposal to clear up to 2.44 ha of black cockatoo foraging habitat and 11 potential black cockatoo trees will not fragment an existing population into two or more populations. The black cockatoo trees within the

Survey Area are at an appropriate DBH for the potential to form hollows for breeding in the future, however, do not currently support breeding for the species. The proposed clearing will not reduce or impact on the accessibility of the species to the nearby confirmed black cockatoo roosting areas located within the Yalgorup National Park approximately 2.4 km to the south of the proposed action.

The clearing of 2.44 ha of foraging habitat will not cause a fragmentation in habitat that will reduce ecological linkage between patches of remnant native vegetation and breeding areas within 4 km of the site. In accordance with the Referral Guidelines (DAWE, 2022), the Proposal will not create a gap of more than 4 km between patches of black cockatoo habitat due to the presence of extensive patches of native vegetation that contain or are inferred to contain breeding, foraging and roosting habitat for the black cockatoo to the north, south and east of the proposed action covering approximately 600 ha.

### **Adversely affect habitat critical to the survival of a species**

The seasonal movements of black cockatoos mean they require extensive areas of habitat for breeding, roosting and foraging, as well as connectivity between habitats to assist their movement across the landscape (DSEWPaC, 2012).

Habitat critical to the survival of black cockatoos is defined as:

- The eucalypt woodland that provides nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding.
- Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate food and/or water resources are available or re-established.
- In the non-breeding season the vegetation provides food resources as well as the sites for nearby watering and night roosting that enable black cockatoos to effectively utilise the available food resources (DPAW, 2013).

The proposed action is not considered to contain critical black cockatoo habitat as it is limited to foraging habitat with no current suitable breeding or roosting habitat or a water source. The nearest surface water feature is the Peel Harvey Inlet which is not a freshwater source. The clearing of up to 2.44 ha will not adversely affect habitat critical to the survival of the black cockatoos as the proposed action does not impact on any current nesting, roosting or freshwater resources for the species.

The vegetation within the surrounding area, including the Yalgorup National Park (12,888 ha), would likely provide suitable critical habitat including foraging, breeding and roosting habitat for the black cockatoos. Given the site does not contain critical habitat for the black cockatoo (as containing all three breeding, roosting and foraging habitat), the proposal to clear 11 potential breeding trees with no hollows and up to 2.44 ha of foraging habitat is not considered to have an adverse impact on the habitat critical to the survival of black cockatoos.

### **Disrupt the breeding cycle of a population**

The proposed action will involve the clearing of 11 potential breeding trees that do not contain any hollows and therefore do not currently support black cockatoo breeding. In addition, 18 potential breeding trees will be retained within the wider Caddadup Class A Reserve. Given there is no evidence of black cockatoo breeding within the proposed action area and the retention of 18 potential breeding trees, it is unlikely that the proposal will disrupt the breeding cycle of a population of black cockatoos.

### **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

As previously mentioned, with approximately 600 ha of potential foraging habitat within 4 km of the proposed action, including within managed reserves and containing known roosting and breeding habitat that would likely contain more suitable and connected habitat for the black cockatoos than the proposed action.

The proposal to clear up to 2.44 ha of black cockatoo foraging habitat and 11 potential breeding trees is not considered to be significant enough that it would modify, destroy, remove or decrease the availability or quality of the habitat to the extent that the black cockatoo species would decline.

## **Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat**

The clearing of native vegetation and construction activities have the potential to spread or introduce weeds and dieback (*Phytophthora cinnamomi*) into retained and nearby vegetation that can affect key tree species used by black cockatoos. Best practice weed and hygiene management will be undertaken during the project works to ensure there is no introduction or spread of weeds or disease into the surrounding Class A reserve. The management measures presented in the (Attachment 8 - CEMP) outlines the minimum hygiene management requirements for the proposed action. With implementation of these management measures, it is not expected for invasive species to be introduced and impact the TEC.

## **Introduce disease that may cause the species to decline**

The introduction of dieback (*Phytophthora cinnamomi*) has the potential to impact vegetation that can affect key tree species used by black cockatoos. Best practice weed and hygiene management will be undertaken during the project works to ensure there is no introduction or spread of weeds or disease into the surrounding Class A reserve. The management measures presented in the (Attachment 8 – CEMP) outlines the minimum hygiene management requirements for the proposed action. With implementation of these management measures, it is not expected for dieback or other diseases to be introduced and impact the TEC.

The proposed action to clear and develop the Site for a community park is unlikely to introduce disease that may cause the Black Cockatoo species to decline. The only possible disease and parasite vector associated with the development of the Site would be the attraction of foxes and cats, which are known to favour 'edge effects' created from fragmented habitats (DotEE 2015). Given that the majority of the surrounding area is already highly urbanised and cleared and the Proposal will utilise existing cleared access ways, it is not likely that the Proposal will increase the presence of foxes or cats. As such, it is not likely that the Proposal would introduce disease that may cause the Black Cockatoo species to decline.

## **Interfere with the recovery of the species**

The proposed action will not interfere with the recovery of the black cockatoo species. The clearing of up to 2.44 ha of foraging habitat and the retention of the balance of habitat remaining within the Class A Reserve, in addition to the 600 ha of vegetation within 4 km of the site, it is not likely the proposed action will interfere with the long term recovery of the species.

The recovery actions for the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) and Baudin's Black-Cockatoo (*Zanda baudinii*) are as follows (DEC, 2008):

- Seek the funding required to implement future recovery actions.
- Determine and promote non-lethal means of mitigating fruit damage by Baudin's Cockatoo in orchards.
- Eliminate illegal shooting.
- Develop and implement strategies to allow for the use of noise emitting devices in orchards.
- Determine and implement ways to remove feral Honeybees from nesting hollows.
- Identify factors affecting the number of breeding attempts and breeding success and manage nest hollows to increase recruitment.
- Determine and implement ways to minimise the effects of mining and urban development on habitat loss.
- Determine and implement ways to manage forests for the conservation of Forest Black Cockatoos.
- Identify and manage important sites and protect from threatening processes.
- Map feeding and breeding habitat critical to survival and important populations, and prepare management guidelines for these habitats.
- Monitor population numbers and distribution.
- Determine the patterns and significance of movement.
- Maintain the Cockatoo Care program and use other opportunities to promote the recovery of Forest Black Cockatoos

The recovery actions for the Carnaby's cockatoo (*Calyptorhynchus latirostris*) are as follows (DPAW, 2013):

- Action 1: Protect and Manage Important Habitat: Complete restoration of the original extent of Carnaby's cockatoo habitat is not possible. It is therefore important to identify those parts of the

species' habitat most critical to survival and to protect and manage as much of this important habitat as possible to minimise the impacts of habitat loss.

- Action 2: Undertake Regular Monitoring: Regular monitoring of Carnaby's cockatoo populations and habitat will provide information on the size of the breeding population, breeding success, and use of habitat by the species, and changes in those parameters over time.
- Action 3: Conduct Research to Inform Management:
- Action 4: Manage Other Impacts: The impacts of other factors detrimentally affecting Carnaby's cockatoos such as motor vehicle collisions and illegal activities needs to be monitored and programs developed to manage these for species conservation, and to rehabilitate injured birds.
- Action 5: Engage with the Broader Community
- Action 6: Undertake Information and Communication Activities

The proposed action has been designed to minimise clearing of potential habitat for black cockatoos. The proposed action utilises cleared land to avoid habitat loss, utilises land with a degraded vegetation condition rating, proposes to retain black cockatoo trees where possible (a total of 15 significant trees will be retained) and efforts will also be made to retaining the significant trees that have been identified to be impacted.

The proposed action does not impact the recovery actions as listed above and presented in the *Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Redtailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan* and the *Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan*.

## WESTERN RINGTAIL POSSUM (*Pseudocheirus occidentalis*)

Western ringtail possum (*Pseudocheirus occidentalis*) is a threatened ecological community, listed as critically endangered under the EPBC Act.

The proposed action will involve:

- Clearing of 2.38 ha of potentially suitable Western Ringtail Possum habitat (49.4% Good-Very Good/Good and 50.56% Degraded condition) within a wider patch size of 11.15 ha.
- 1.71 ha will be permanently cleared and 0.67 ha of temporary clearing will be revegetated. No evidence of WRP use of the area was recorded during the surveys, including no dreys, scat, dens or hollows (Attachment 1 – Figure 15).

The following sections address the significant impact criteria for a critically endangered species.

### Lead to a long-term decrease in the size of a population

No evidence of the Western Ringtail Possum (WRP) was observed, including scats, dreys or hollows, during the survey (Focused Vision, 2023). A population of the WRP was not recorded within the proposed action.

The WRP was once widely distributed across southern and south-west of Western Australia and the species is now confined to patchy areas in the southwest, with the highest populations found around the Bunbury/Binningup to Dunsborough coastal strip (Abbott, 2008; Shedley and Williams, 2014), which over 70km from the proposed action. The proposed action to clear up to 2.38 ha of suitable WRP habitat is not likely to cause a long-term decrease in the size of a population given the balance of the habitat will remain in the Class A reserve and no evidence of WRPs utilising the proposal area.

### Reduce the area of occupancy of the species

The ecological survey identified 11.15 ha of suitable foraging and denning habitat for the WRP consisting of mature trees with an understorey of Peppermint trees in Eucalyptus and Banksia Woodland habitats. Whilst suitable habitat exists within the proposed action, no evidence of the WRP was observed, including scats, dreys or hollows, during the survey (Focused Vision, 2023).

The proposed action is unlikely to reduce the area of occupancy for the WRP species as there was no evidence of WRP occupancy within the Survey Area and approximately 2.38 ha of suitable habitat proposed to be cleared within a wider patch size of 11.15 ha. The remaining suitable habitat will be retained within the Class A reserve.

### Fragment an existing population into two or more populations

No evidence of the Western Ringtail Possum was observed, including scats, dreys or hollows, during the survey (Focused Vision, 2023). A population of the WRF was not recorded within the proposed action.

The clearing will not reduce the connectivity or cause fragmentation of habitat within the Class A reserve. In addition, the surrounding environment within 4 km of the proposed action contains approximately 600 ha of native vegetation in conservation estates or parks and recreation reserves that would provide more suitable and connected habitat for the WRP.

### Adversely affect habitat critical to the survival of a species

The *Significant Impact Guidelines for the WRP* (DEWHA, 2009) identifies the important areas for the WRP occurring between Bunbury and Dunsborough and maps the following areas of habitat:

- Area 1 – Core habitat: maintain and enhance the value of existing habitat, particularly for breeding
- Area 2 – Primary corridors: provide connectivity between areas of core habitat, improving opportunities for dispersal.
- Area 3 - Supporting habitat: Improve habitat quality and connectivity on the plains and to the hinterlands to increase opportunity for foraging, breeding and dispersal (DEWHA, 2009).

The proposed action is located in Mandurah, approximately 93 km to the north of Bunbury, outside of the important areas for the WRP species. However, the application of this significant impact assessment is discussed for this proposed action as demonstrated below:

- The proposed action will not clear more than 50% of a remnant habitat patch. The proposal will involve the clearing of up to 2.38 ha within a wider patch of 11.15 ha, accounting for approximately 20% reduction in habitat.
- The proposed action will not fragment habitat linkages across the Class A reserve and the surrounding environment. Habitat will be readily accessed across the site for the species including the sump area and access tracks which are proposed to have 0.82 ha of revegetation to reduce the area of initial impact that is required for construction purposes.
- No evidence of WRP occupancy of the Survey Area was recorded during the survey, however, the proposed clearing of up to 2.38 ha and revegetation of 0.82 ha and the placement of the infrastructure is not considered to contribute to the fragmentation of any WRP populations.

The WRP require suitable trees for both feeding and breeding, mainly peppermint forest and woodland, Tuart Woodland with a Peppermint understorey (DEWHA, 2009).

Although the proposed action contains suitable feeding and breeding habitat for the WRP, it is not located within or nearby the Bunbury to Dunsborough coastal strip which is considered to have the highest density of WRP populations that are a critical resource to the survival of the WRP species (DEWHA, 2009). As such, the proposal to clear up to 2.38 ha of suitable WRP habitat located approximately 92 km away from critical and high density populations, is unlikely to adversely affect habitat critical to the survival of the species.

### **Disrupt the breeding cycle of a population**

No evidence of the Western Ringtail Possum was observed, including scats, dreys or hollows, during the survey (Focused Vision, 2023). A population of the WRF was not recorded within the proposed action.

The Proposal is unlikely to disrupt the breeding cycle of a population of WRPs. The site contains suitable habitat for breeding, but no evidence of WRP use was recorded during the survey. The site is also located approximately 92 km to the north of significant populations of the species. In addition, the remaining ~80% of WRP habitat will remain within the Class A reserve.

### **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

The proposed action is located within an area that has approximately 600 ha of patches of remnant native vegetation and intact ecological linkages within 4 km. The loss of up to 2.38 ha of suitable WRP habitat does not represent a significant reduction in the extent or quality of habitat remaining within the Class A reserve and the region and will not cause isolation of remaining habitat for the species.

### **Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat**

The clearing of native vegetation and construction activities have the potential to spread or introduce weeds and dieback (*Phytophthora cinnamomi*) into retained and nearby vegetation that can affect key tree species used by black cockatoos. Best practice weed and hygiene management will be undertaken during the project works to ensure there is no introduction or spread of weeds or disease into the surrounding Class A reserve. The management measures presented in the CEMP (Attachment 8) outlines the minimum hygiene management requirements for the proposed action. With implementation of these management measures, it is not expected for invasive species to be introduced and impact the TEC.

### **Introduce disease that may cause the species to decline**

The introduction of dieback (*Phytophthora cinnamomi*) has the potential to impact vegetation that can affect key tree species used by black cockatoos. Best practice weed and hygiene management will be undertaken during the project works to ensure there is no introduction or spread of weeds or disease into

the surrounding Class A reserve. The management measures presented in the CEMP (Attachment 8) outlines the minimum hygiene management requirements for the proposed action. With implementation of these management measures, it is not expected for dieback or other diseases to be introduced and impact the TEC.

### **Interfere with the recovery of the species**

The proposed action is located approximately 80 km to the north of the Swan Coastal Plain Management Zone which is a key management zone identified in the Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan (DPAW, 2017) and the Significant Impact Guidelines (DEWHA, 2009). The highest priority for recovery objectives and key criteria for success for the recovery plan is the retention of habitat critical for survival of the western ringtail possum is defined, identified and protected in each of the key management zones.

The proposal to clear up to 2.38 ha of suitable WRP habitat is unlikely to interfere with the recovery of the WRP for the following reasons:

- The proposed action is not located within the “important” areas for WRPs as per the Significant Impact Guidelines (DEWHA, 2009)
- Significant avoidance and retention of clearing has been considered for the development of the proposal, with ~80% of suitable WRP habitat will remain within the Class A reserve.
- The proposed action is unlikely to be used as current core habitat for the WRP but has the potential to be used as supporting habitat in the future.

## References

- Abbott, I. (2008). Historical perspectives of the ecology of some conspicuous vertebrate species in south-west Western Australia. *Conservation Science Western Australia*, 6(3), 1-214.
- Commonwealth of Australia (2019). 'Tuart Woodlands and Forests of the Swan Coastal Plain: A Nationally Significant Ecological Community', <https://www.dcceew.gov.au/sites/default/files/documents/tuart-woodlands-forests-swan-coastal-plain-guide.pdf>
- Department of Conservation and Land Management (DCLM) (1995). Yalgorup National Park Management Plan 1995-2005. Management Plan No. 29. Available from: <https://library.dbca.wa.gov.au/FullTextFiles/016593.pdf>. Government of Western Australia for the National Parks and Nature Conservation Authority.
- Department of Environment and Conservation (2008). Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Redtailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan. <https://www.dcceew.gov.au/sites/default/files/documents/wa-forest-black-cockatoos-recovery-plan.pdf>
- Department of Environment, Water, Heritage and the Arts (DEWHA) (2009). Significant impact guidelines for the vulnerable western ringtail possum (*Pseudocheirus occidentalis*) in the south Swan Coastal Plain, Western Australia. Department of Environment, Water, Heritage and the Arts, Canberra.
- Department of Parks and Wildlife (2013). Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Parks and Wildlife, Perth, Western Australia.
- Department of Parks and Wildlife (2017). Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Wildlife Management Program No. 58. Department of Parks and Wildlife, Perth, WA.
- Department of Parks and Wildlife (DPAW) (2013). *Western Australian Wildlife Management Program No. 52. Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Available at: <https://www.agriculture.gov.au/sites/default/files/documents/carnabys-cockatoo-recovery-plan.pdf>. Government of Western Australia and Commonwealth of Australia.
- Department of the Environment (2024). Banksia Woodlands of the Swan Coastal Plain ecological community in Community and Species Profile and Threats Database, Department of the Environment, Canberra. Available from: <http://www.environment.gov.au/sprat>. Accessed 2024-06-24T16:21:57AEST.
- Department of the Environment (2024). Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community in Community and Species Profile and Threats Database, Department of the Environment, Canberra. Available from: <http://www.environment.gov.au/sprat>. Accessed 2024-06-24T16:09:44AEST.
- Department of the Environment (DoE) (2013). Matters of National Environmental Significance. Significant Impact Guidelines 1.1. Commonwealth of Australia.
- Department of the Environment and Energy (2019). Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community. Canberra: Department of the Environment and Energy. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf>.
- Department of the Environment and Energy (DEE) (2016). *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*. Available at <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/131-conservation-advice.pdf>. Commonwealth of Australia.
- Department of the Environment and Energy (DEE) (2019). *Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community*. Available at: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf>. Commonwealth of Australia.
- Shedley E, Williams K (2014). An assessment of habitat for Western Ringtail Possum (*Pseudocheirus occidentalis*) on the southern Swan Coastal Plain (Binningup to Dunsborough). Unpublished report for the Department of Parks and Wildlife, (Bunbury, Western Australia).