

Table 1. Assessment against the Significant Impact Criteria for Black Cockatoos.

Significant Impact Criteria	Significant Impact	Justification
Lead to a long term-decrease in the size of a population.	Unlikely to occur	<p>Black cockatoos forage over a large area, primarily in areas up to 12 km from their nest during the breeding season. During the non-breeding season, black cockatoos will mainly forage in areas up to 20 km from a known night roosting habitat (although may travel farther). Roost sites are typically within 2 km of a natural or artificial water source. Black cockatoos rely on connecting patches of vegetation between foraging resources, breeding habitat, and night roosting habitat.</p> <p>The Site is within the known breeding range of Carnaby’s black cockatoo (CBC) and distribution of Baudins black cockatoo (BBC) and Forest red-tailed black cockatoo (FRTBC). The nearest (buffered) confirmed breeding area for white-tailed black cockatoos (assumed to be CBC) is around 3.8 km east (DBCA-054) and nearest confirmed breeding site is 35 km north-east (DBCA-063).</p> <p>The closest known roost is located approximately 5 km north-east of the Site.</p> <p>Access to permanent water is present from artificial water display (Lake Treeby) within 2 km of the Site.</p> <p>Loss of foraging resources required to support black cockatoos in the non-breeding season has been identified as a significant risk to the species’ survival (DAWE, 2022).</p> <p>Therefore, despite the area of habitat to be removed being relatively small (3.01 ha) and separated from the closest known breeding site (35 km), it is within an area that has been subject to increasing urbanisation that is known to support foraging by black cockatoos during the non-breeding season.</p> <p>Given the above, there is a risk that the impact is considered of greater significance due to the cumulative impact of clearing and urbanisation in the surrounding area. However, the proposed clearing itself is unlikely to lead to a long-term decrease in the size of any black cockatoo population.</p>
Reduce the area of occupancy of the species.	Unlikely to occur	<p>The most recently estimated area of occupancy of CBC is 10,000 km² (low reliability) (Garnett et al., 2011), of BBC it is 25,000 km² (low reliability) (Garnett et al., 2011), with the estimated area of occupancy of FRTBC at 20,000 km² (low reliability) (Garnett et al., 2011).</p> <p>The removal of 3.01 ha of foraging habitat will not have a material impact on the habitat availability in the local area and therefore won’t reduce either species’ area of occupancy.</p>
Fragment an existing population into two or more populations.	Unlikely to occur	<p>The proposed clearing of black cockatoo habitat is limited to 3.01 ha of foraging habitat which is located within a historically cleared area that is largely fragmented from a larger patch of remnant vegetation on both the north and north-east side of the Development Area. Black cockatoos are highly mobile and frequently travel distances of around 12 km (during the breeding season) and 20 km (during the non-breeding season) to access foraging resources (DAWE, 2022). The clearing would not cause further vegetation fragmentation, given it is</p>

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<p>Adversely affect habitat critical to the survival of the species.</p>	<p>Unlikely to occur</p>	<p>located within a previously cleared area and does not represent remnant native vegetation, and that good connectivity will persist following the clearing due to the re-aligned bush forever.</p> <p>Therefore, the removal of 3.01 ha of 'Low to Moderate' quality foraging habitat will not cause vegetation fragmentation or cause any existing black cockatoo populations to be fragmented.</p> <p>Habitat that is critical to the survival for CBC includes:</p> <p><i>In the non-breeding season, the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources (DPaW, 2013).</i></p> <p>Vegetation within the Development Footprint partially meets this definition, through vegetation that provides foraging habitat, however lacks night roosting habitat. Given the retention of vegetation in the surrounding area, that will continue to be protected within BF 389, the removal of 3.01 ha of scattered habitat will not contribute to further fragmentation.</p> <p>The Development Footprint is within the known breeding range of CBC and FRTBC, with the nearest confirmed breeding site located 35 km north-east. The Development Footprint is within the known foraging distribution of BBC, and outside the known breeding range.</p> <p>Habitat that is critical to the survival of BBC and FRTBC is identified as all Marri, Karri, and Jarrah forests, woodlands, and remnants in the south-west of WA receiving more than 600 mm of annual average rainfall (DEC, 2008). Based on this definition, the habitat cannot be considered critical habitat for FRTBC or BBC.</p> <p>Within 12 km of the Development Footprint, there is an estimated 48,292.75 ha of remnant native vegetation (DPIRD-005) of which 44,918 ha is considered highly likely to constitute suitable foraging habitat for the three black cockatoos, as well as contain potential roosting and breeding for CBC and FRTBC based on the mapped vegetation complexes (DBCA-046). These are vegetation complexes are dominated by Jarrah (<i>Eucalyptus marginata</i>) and/or Marri (<i>Corymbia calophylla</i>) and/or Tuart (<i>Eucalyptus gomphocephala</i>) and are considered to provide suitable habitat for both species of black cockatoos.</p> <p>Given the absence of suitable nesting hollows or night roosting habitat, and the abundance of foraging habitat within the Development Area, the proposed clearing of 3.01 ha will not adversely affect habitat critical to the survival of CBC or FRTBC.</p>
<p>Disrupt the breeding cycle of the population.</p>	<p>Unlikely to occur</p>	<p>The Development Footprint is within the known breeding range of CBC and FRTBC and outside the known or predicted breeding range of BBC. The nearest (buffered) confirmed breeding area for CBC is around 3.8 km east (DBCA-054) and nearest confirmed breeding site is 35 km north-east (DBCA-063).</p> <p>Foraging habitat is critical to maintain the condition of black cockatoos during the non-breeding season.</p> <p>Given the Development Area lacks breeding habitat and contains only a small area of foraging habitat with a scattered nature (i.e. spread over a 28 ha area), higher quality habitat is available within the western portion of Lot 5130, and adjacent bush forever sites.</p>

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<p>Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.</p>	<p>Unlikely to occur</p>	<p>Given the above, clearing would not disrupt the breeding cycle of any black cockatoo population.</p> <p>The Development Footprint contains 3.01 ha of ‘Low to Moderate’ quality habitat spread over a 23.54 ha area (i.e. projected foliage cover of around 13%). Therefore, the Development Footprint does not represent an area of high-quality habitat.</p> <p>In the surrounding area (1 km radius), there is an estimated 290.37 ha of foraging habitat that is of greater quality, as it is remnant native vegetation in good condition, being located within bush forever sites and conservation areas, therefore subject to fewer threatening processes.</p> <p>Given the above, the clearing will not modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.</p>
<p>Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species’ habitat.</p>	<p>Unlikely to occur</p>	<p>Clearing of 3.01 ha of foraging habitat will not result in the establishment of invasive species.</p> <p>Potential introduction of weeds and pathogens which may impact the surrounding habitat will be managed as part of initial clearing activities, standard best-practice management mitigation measures will be implemented to avoid the introduction of pathogens and weeds, including ensuring clean machinery is used and clearing is restricted to permitted areas only. The risk is very low given the small scale of clearing and that the 3.01 ha of foraging habitat to be removed is along existing tracks.</p> <p>As such, the risk of invasive species introduction as result of the clearing will be avoided through the application of standard hygiene measures.</p>
<p>Introduce disease that may cause the species to decline, or</p>	<p>Unlikely to occur</p>	<p>The proposed clearing has an extremely low risk of introducing diseases to which black cockatoos are susceptible (e.g. Beak and Feather Disease).</p> <p>Black cockatoo species can also be impacted by <i>Phytophthora cinnamomii</i> (dieback) disease, given many habitat (plant) species are susceptible to the disease. As part of clearing, standard best-practice management mitigation measures will be implemented to avoid the introduction of pathogens and weeds, including ensuring clean machinery is used and clearing is restricted to permitted areas only.</p> <p>As such, the risk of introducing disease as result of the clearing will be minimised through standard hygiene measures.</p>
<p>Interfere with the recovery of the species.</p>	<p>Unlikely to occur</p>	<p>The proposed clearing relates 3.01 ha of ‘Low to Moderate’ quality foraging habitat. The majority of this habitat was previously cleared and has regrown. The Development Area is within the known breeding range of CBC and FRTBC, and outside the breeding range of BBC, the nearest confirmed breeding site is located 35 km north-east of the Development Area.</p> <p>There are fresh water sources within 2 km from artificial water displays.</p> <p>The recovery objective for CBC (DPaW, 2013) is “to stop further decline in the distribution and abundance of Carnaby’s cockatoo by protecting the birds throughout their life stages and enhancing habitat critical for</p>

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		<p><i>survival throughout their breeding and non-breeding range</i>". Habitat critical to the survival for Carnaby's can be summarised as eucalypt woodland that provide nest hollows used for breeding, with vegetation that provides foraging, roosting habitat and close to natural or artificial water source (DPaW, 2013). The Development Area partially meets this definition, through the provision of foraging habitat that may be utilised during the non-breeding season.</p> <p>The recovery objective for FRTBC and BBC (DEWHA, 2009) is to stop further decline in the breeding populations and ensure their persistence throughout their current range.</p> <p>The Development Footprint is within the known breeding range of CBC, the nearest breeding area is ~3.8 km east however the buffered area does not intersect with the Development Footprint.</p> <p>BF 389 is located north and west of the Site, approximately ~200 ha in size is considered to provide suitable black cockatoo habitat of similar or better-quality than that within the Development Area.</p> <p>As such, given the small scale of impacts and absence of known breeding from the Development Area, the clearing of 3.01 ha foraging habitat will not interfere with the recovery of either species and is not inconsistent with either recovery objective.</p>

Based on the assessment above, the proposed clearing is unlikely to have a significant impact on any black cockatoo species.

Table 2. Assessment of Significant Impact Criteria for Banksia Woodland of the SCP Threatened Ecological Community.

Significant Impact Criteria	Significant impact	Justification
<p>Reduce the extent of an ecological community</p>	<p>Unlikely to occur</p>	<p>Residential development would require the removal of approximately 0.32 ha of Banksia TEC in ‘Good’ condition, which forms part of a larger patch to the northeast.</p> <p>The Banksia TEC included in the Development Footprint is fragmented as it falls on the fringes of a larger patch of Banksia TEC to the north-east, which is separated by a vehicle track.</p> <p>In 2016, the extent of Banksia TEC was estimated at 253,540.6 ha (DoEE, 2016).</p> <p>Therefore, whilst the proposed clearing would reduce the extent of the ecological community by a very small amount, the impact would not be significant.</p>
<p>Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines</p>	<p>Unlikely to occur</p>	<p>The 0.32 ha of Banksia represents the southern extent of the patch in BF 389 and is already separated from the main patch by a cleared track (~9 m wide). Therefore, clearing would not bisect any additional patches of the ecological community to create smaller patches or fragmentation that would significantly impact the viability of the remaining ecological community.</p>
<p>Adversely affect habitat critical to the survival of an ecological community.</p>	<p>Unlikely to occur</p>	<p>The Approved Conservation Advice defines all patches of TEC and a buffer of 20 – 50 m as critical for the survival of the TEC (DoEE, 2016). Clearing would directly impact 0.32 ha of the Banksia TEC patch. There are 253,540.6 ha of the ecological community across the Swan Coastal Plain (DoEE, 2016). A loss of 0.32 ha represents reduction of 0.000022% of Banksia Woodland TEC at a regional scale.</p> <p>The proposed action is not expected to affect the habitat critical to the survival of Banksia TEC given the very small extent of impact and that the balance of the patch will remain within BF 389.</p>
<p>Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community’s survival.</p>	<p>Unlikely to occur</p>	<p>Clearing 0.32 ha of Banksia TEC for urban development is likely to modify or destroy critical abiotic factors—specifically soil structure, nutrient balance, and hydrology—necessary for the TEC’s survival. In an unmanaged scenario, urban development can alter abiotic factors necessary for Banksia TEC survival.</p> <p>However, given the small scale of impact and that the vegetation is already separated from the main patch, there will be minimal change to abiotic conditions that would negatively affect TEC survival. Future urban development would be undertaken in accordance with strict environmental approvals, including construction and operational management plans, to ensure indirect or consequential impacts do not occur such that adjacent, retained vegetation would be impacted.</p>
<p>Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a</p>	<p>Unlikely to occur</p>	<p>The proposed clearing of 0.32 ha is minimal and not expected to reduce the viability of the patch adjacent to the Development Area. The area of vegetation to be removed is already separated from the balance of the patch by a cleared track, and indirect impacts will be managed throughout construction and operation of future urban development. Therefore, significant impacts will not occur.</p>

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<p>decline or loss of functionally important species.</p> <p>Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:</p> <ul style="list-style-type: none"> • assisting invasive species, that are harmful to the listed ecological community, to become established, or • causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community. 	<p>Unlikely to occur</p>	<p>The clearing will be undertaken adjacent to existing cleared land to the south that may provide an introduction or spread of weeds and pathogens. Standard best-practice management mitigation measures will be implemented to avoid the introduction of pathogens and weeds, including ensuring clean machinery is used and clearing is restricted to permitted areas only. As such, the clearing is not expected to result in substantial reduction in quality or integrity of the community.</p>
<p>Interfere with the recovery of an ecological community</p>	<p>Unlikely to occur</p>	<p>There is no approved advice recovery plan for the for the Banksia Woodland SCP ecological community. The Approved Conservation Advice (DoEE, 2016) recommends that fragmentation is avoided, and impacts are mitigated effectively. The proposed clearing of 0.32 ha is minimal, the area is linear in nature (15-20 m wide), and it is already separated from the main patch by ~9 m, the patch already has low viability as evidenced through visible disturbance. Therefore, its removal will not reduce the viability of the patch or interfere with the recovery of the ecological community.</p>

Based on the assessment above, the clearing of 0.32 ha of Banksia TEC is unlikely to be significant

