



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9351/1
Permit Holder:	SE Waroona Development Pty Ltd
Duration of Permit:	From 8 January 2022 to 8 January 2027

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of constructing an overhead transmission line.

2. Land on which clearing is to be done

Lot 4 on Diagram 34161, Wagerup
Lot 25 on Deposited Plan 59266, Waroona
Landwehr Road reserve (PIN 11601192), Waroona

3. Clearing authorised

The permit holder must not clear more than 0.99 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

PART II – MANAGEMENT CONDITIONS

4. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

5. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

PART III - RECORD KEEPING AND REPORTING

6. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ol style="list-style-type: none">(a) the species composition, structure, and density of the cleared area;(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;(c) the date that the area was cleared;(d) the size of the area cleared (in hectares);(e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4; and(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 5.

7. Reporting

The permit holder must provide to the *CEO* the records required under condition 6 of this permit when requested by the *CEO*.

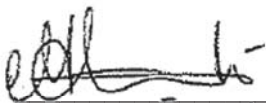
DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Meenu Vitarana
A/MANAGER

NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

16 December 2021

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

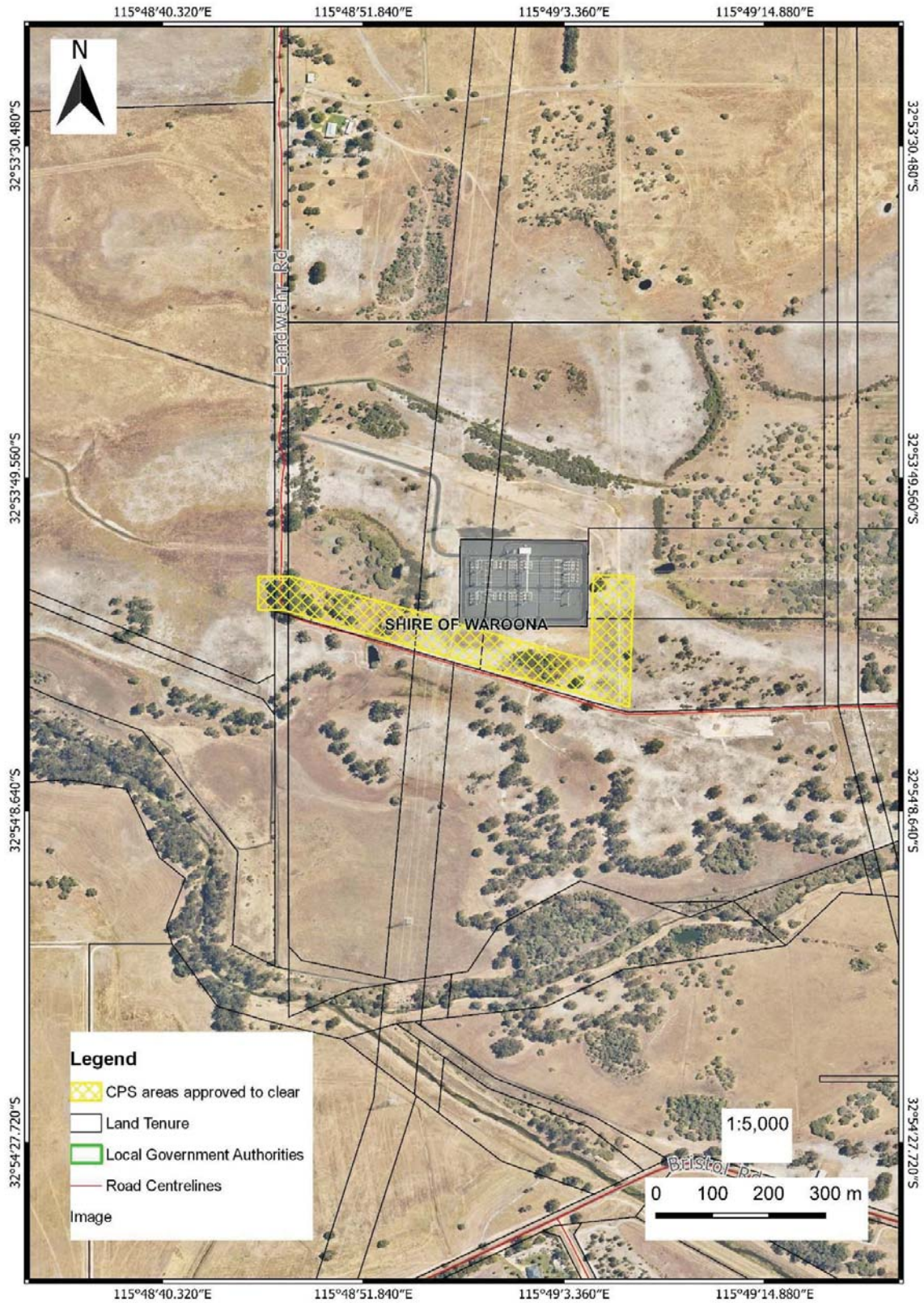


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9351/1
Permit type:	Purpose permit
Applicant name:	SE Waroona Development Pty Ltd
Application received:	7 July 2021
Application area:	0.99 hectares of native vegetation
Purpose of clearing:	Constructing an overhead transmission line
Method of clearing:	Mechanical
Property:	Lot 4 on Diagram 34161 Lot 25 on Deposited Plan 59266 Landwehr Road reserve (PIN 11601192)
Location (LGA area/s):	Shire of Waroona
Localities (suburb/s):	Wagerup Waroona

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area of fragmented native vegetation (see Figure 1, Section 1.5). The proposed clearing will facilitate the construction of a transmission line from the Waroona Solar Farm site to Western Power's Landwehr Terminal Station.

1.3. Decision on application

Decision:	Granted
Decision date:	16 December 2021
Decision area:	0.99 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed, and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the findings of an ecological assessment undertaken by AECOM (2021a), which included a targeted black cockatoo survey and a reconnaissance flora and vegetation survey (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer considered that the proposed clearing was to facilitate the operation of a solar farm.

The assessment identified that the proposed clearing will result in:

- The loss of 0.59 hectares of suitable foraging habitat for all three black cockatoo species, comprising high-quality foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*) and Baudin's cockatoo (*Calyptorhynchus baudinii*), and quality foraging habitat for the forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*),
- the loss of vegetation growing in, or in association with, an environment associated with a wetland,
- minor, localised and short-term impacts to surface water quality through sedimentation and turbidity, and
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values in an extensively cleared landscape.

Given the extent of foraging habitat within the application area and the existence of larger remnants of quality foraging habitat in the vicinity and in close proximity to significant habitat resources, the Delegated Officer determined that the proposed clearing was unlikely to result in significant impacts to foraging habitat for black cockatoo species in the context of the local area. After consideration of the available information and noting the condition and extent of vegetation within the application area, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to have long-term adverse impacts on biological, conservation, or land and water resource values and can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise, and reduce the impacts and extent of clearing, and
- take hygiene steps to minimise the risk of the introduction and spread of weeds.

1.5. Site map

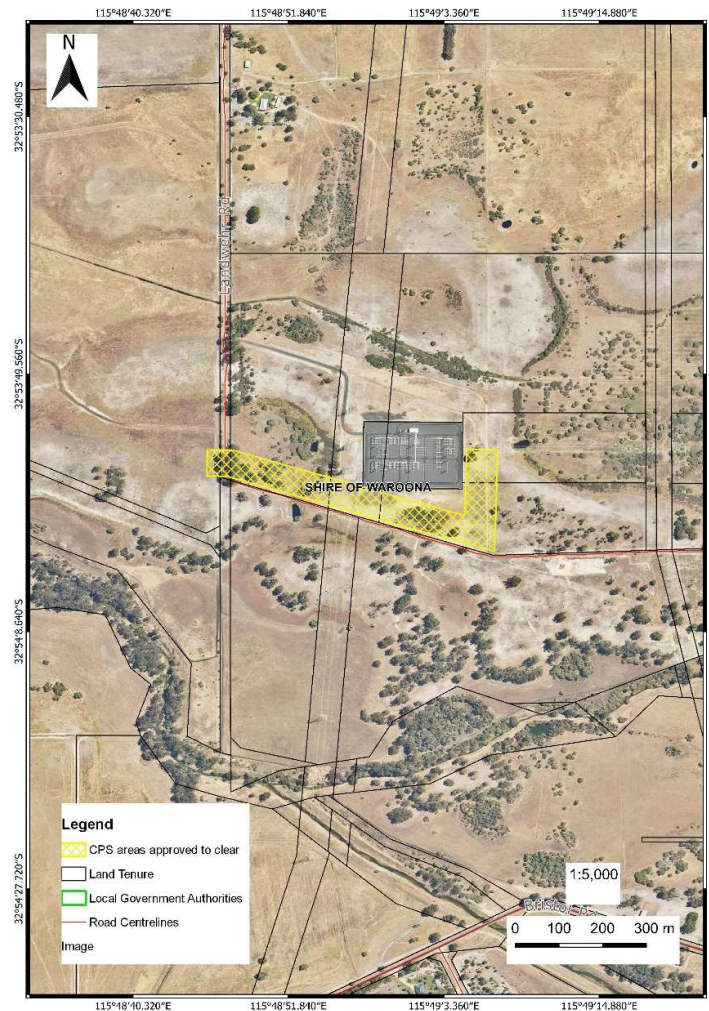


Figure 1 The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Supporting documentation was submitted by the applicant, demonstrating that the planning of the transmission line had selected the shortest path from the Waroona Solar Farm site to Western Power's Landwehr Terminal Station, to minimise the total extent of the clearing (AECOM, 2021b). The applicant advised that there were no alternative alignments for the transmission line that would remove the need for clearing entirely, but advised that clearing would be avoided during construction, where possible (AECOM, 2021b).

In considering the above, the Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to biological values (fauna and flora), significant remnant vegetation, and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

Noting the site characteristics and habitat preferences of the conservation significant fauna species recorded in the local area (see Appendix A), the application area was considered to contain suitable habitat for all three black cockatoo species:

- Baudin's cockatoo (*Calyptorhynchus baudinii*) (listed as Endangered under the BC Act and EPBC Act),
- Carnaby's cockatoo (*Calyptorhynchus latirostris*) (listed as Endangered under the BC Act and EPBC Act), and
- Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) (listed as Vulnerable under the BC Act and EPBC Act).

This was supported by the findings of an ecological assessment undertaken by AECOM, which included a targeted black cockatoo survey and a reconnaissance flora and vegetation survey (AECOM, 2021a). The targeted black cockatoo survey identified that the application area included potential breeding, roosting and foraging habitat for black cockatoo species and noted evidence of foraging by both Baudin's cockatoo and the forest red-tailed black cockatoo within the application area (AECOM, 2021a).

The ecological assessment undertaken by AECOM identified an additional seven conservation significant fauna species that may occur within the application area (AECOM, 2021a). However, the assessment noted that habitat for these species is generally limited, of poor quality and has been highly modified (AECOM, 2021a). It is also acknowledged that many of these additional species are transient, highly mobile species that do not rely on specialist niche habitats. As the application area comprises fragmented marri (*Corymbia calophylla*) and swamp paperbark (*Melaleuca raphiophylla*) woodland in Degraded (Keighery, 1994) condition that lacks native understorey species, continuous canopy structure, and connectivity to larger remnants of suitable habitat in the local area, it was not considered likely to contain significant habitat resources for any of the other conservation significant fauna species recorded in the local area or to be acting as a significant ecological linkage in the landscape.

Black cockatoo breeding habitat

Black cockatoo species are known to nest in hollows of live and dead trees, including marri, jarrah (*Eucalyptus marginata*), karri (*Eucalyptus diversicolor*), wandoo (*Eucalyptus wandoo*), tuart (*Eucalyptus gomocephala*), flooded gum (*Eucalyptus rudis*), and other *Eucalyptus* spp. (Commonwealth of Australia, 2012). 'Breeding habitat' for black cockatoos includes trees of these species that either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow, where suitable DBH for nest hollows is 500 millimetres for most tree species (Commonwealth of Australia, 2012). While breeding, black cockatoos also generally forage within a 6-to-12-kilometre radius of their nesting site (Commonwealth of Australia, 2012). According to available datasets, mapped potential black cockatoo feeding habitat is recorded within a 12-kilometre radius of the application area, including partially within the application area itself, making it a suitable location for breeding if appropriate hollows are present. The application area is located within the modelled breeding range for Carnaby's cockatoo and the forest red-tailed black cockatoo but is outside of the modelled breeding range for Baudin's cockatoo and is not considered likely to comprise potential breeding habitat for this species.

The targeted black cockatoo survey identified 14 native habitat trees of suitable DBH to provide breeding habitat within the application area, comprising 12 marri trees and two stags (AECOM, 2021a). It is noted that an additional 17 introduced *Eucalyptus* sp. of suitable DBH for breeding were identified within the application area (AECOM, 2021a), but that these species do not meet the definition of native vegetation for the purposes of Part V Division 2 of the EP Act and are therefore, outside of the scope of this clearing permit to assess. However, no habitat trees, native or non-native, within the application area were identified to contain hollows of suitable size for breeding by either Carnaby's cockatoo or the forest red-tailed black cockatoo. Given the above, the proposed clearing is not considered likely to comprise significant breeding habitat for black cockatoo species and is not considered likely to significantly impact breeding by black cockatoo species in the local area.

Black cockatoo roosting habitat

It is recognised that the habitat trees within the application area may also represent suitable roosting habitat for black cockatoo species. According to available databases, the closest confirmed roost site for black cockatoos occurs 8.5 kilometres from the application area (DBCA, 2007-) and no evidence of roosting was noted during the targeted black cockatoo survey (AECOM, 2021a). Further, roosting is typically noted to occur within suitable trees close to an important water source and within an area of quality foraging habitat (Commonwealth of Australia, 2012). As the application area does not transect any permanent watercourses and contains sparsely distributed foraging habitat, as discussed below, it is not considered likely that the application area comprises significant roosting habitat for any black cockatoo species.

Black cockatoo foraging habitat

Black cockatoo species are noted to forage on a range of plant species, with the primary foraging resources varying between species (Commonwealth of Australia, 2012). Carnaby's cockatoos forage on the seeds, nuts, and flowers of a variety of plants, including Proteaceous species (*Banksia* spp., *Hakea* spp., and *Grevillea* spp.), as well as *Allocasuarina* and *Eucalyptus* species, marri and a range of introduced species (Valentine and Stock, 2008). On the Swan Coastal Plain, it is noted that *Banksia* species (predominantly *Banksia attenuata*, *Banksia menziesii* and *Banksia sessilis*) are the most important natural food source for Carnaby's cockatoo, followed by marri (Groom, et al., 2014). Forest red-tailed black cockatoos feed predominantly on the seeds of marri and jarrah, which comprise approximately 90 per cent of their diet (DEC, 2008). Baudin's cockatoos primarily feed on the seeds of marri, but may also forage on the seeds of jarrah and Proteaceous species (DEC, 2008). Given the application area contains marri and occurs within the predicted occurrence range for all three black cockatoo species, the application area is likely to provide suitable foraging habitat for black cockatoos.

The targeted black cockatoo survey identified that foraging habitat within the application area is limited to isolated patches of marri trees and introduced *Eucalyptus* sp. (AECOM, 2021a). As introduced species are not considered native vegetation for the purposes of Part V Division 2 of the EP Act and are not relevant to the assessment of this clearing permit application, foraging habitat within the application area is considered to be limited to marri trees within

the CcJp vegetation community. Therefore, the targeted black cockatoo survey identified that the vegetation within the application area comprises 0.59 hectares of high-quality foraging habitat for Carnaby's cockatoo and Baudin's cockatoo, and 0.59 hectares of quality foraging habitat for the forest red-tailed black cockatoo (AECOM, 2021a). Quality of the foraging habitat was inferred from the abundance of preferred foraging species, evidence of use, and the proximity of the application area to significant habitat resources (AECOM, 2021a). The survey also observed three occurrences of recent foraging by black cockatoo species in the form of chewed marri nuts, which were attributed to the forest red-tailed black cockatoo and Baudin's cockatoo (AECOM, 2021a; Figure 2).

In regard to the forest red-tailed black cockatoo and Baudin's cockatoo, critical habitat for these species is defined as all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimetres of annual average rainfall (DEC, 2008). As the application area includes remnant marri woodland on the Swan Coastal Plain and evidence of foraging by both species was observed during the targeted black cockatoo survey, the application area may meet the definition of critical habitat for Baudin's cockatoo and the forest red-tailed black cockatoo. Critical habitat for Carnaby's cockatoo includes any habitat that provides for feeding, watering, regular night roosting and potential for breeding (DPAW, 2013). As the application area includes 0.59 hectares of foraging habitat and potential roosting trees, it may also be considered critical habitat for Carnaby's cockatoo. It is also acknowledged that the application area provides quality foraging habitat for all three black cockatoo species within an area that has been extensively cleared (see Section 3.2.3). However, it is acknowledged that foraging habitat within the application area is limited to isolated patches of marri trees and that approximately 83 per cent of all remaining remnant vegetation within the local area is mapped as foraging habitat for black cockatoo species. According to available databases, approximately 4943 hectares of mapped foraging habitat for black cockatoo species exists within the local area, including approximately 2254 hectares within conservation estate. The application area represents less than 0.012 per cent of this mapped foraging habitat.

Further, the referral guidelines for black cockatoo species acknowledges that foraging habitat within 12 kilometres of a breeding site and within 6 kilometres of a night roost are of particular importance for black cockatoo species (Commonwealth of Australia, 2012). The closest confirmed breeding site for the forest red-tailed black cockatoo is approximately 20 kilometres from the application area according to available databases, while the nearest roosting site for all three black cockatoo species is approximately 8.5 kilometres away. The closest confirmed breeding site for either Carnaby's cockatoo or Baudin's cockatoo is located approximately 8.9 kilometres from the application and is within range for breeding birds to be utilising the application area for foraging. However, the application area represents less than 0.005 per cent of mapped foraging habitat within 12 kilometres of the nearest confirmed breeding and roosting sites, which are surrounded by larger remnants of secure foraging habitat within Myalup State Forest. Therefore, the application area is not considered likely to be significant in supporting foraging by roosting or breeding populations in the local area. It is also noted that the application area itself occurs within 700 metres of Buller Nature Reserve, which provides approximately 368 hectares of foraging habitat and is likely to be more significant in supporting foraging by local roosting and breeding populations.

Given the extent of foraging habitat within the application and the existence of larger remnants of quality foraging habitat in vicinity, the application area is not considered likely to comprise significant foraging habitat for black cockatoo species or to be critical in supporting foraging by black cockatoo species in the local area. As discussed above, the proposed clearing of 0.59 hectares of high quality to quality foraging habitat is not considered likely to represent a significant loss of foraging resources for black cockatoo species in the context of the broader landscape.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 0.59 hectares of high quality to quality foraging habitat for all three black cockatoo species. For the reasons set out above, it is considered that the impacts of the proposed clearing on black cockatoo foraging habitat are unlikely to be significant in the context of the broader landscape and that the proposed clearing does not constitute a significant residual impact.

The applicant may have notification responsibilities under the EPBC Act for impacts to Baudin's black cockatoo, Carnaby's cockatoo, and forest red-tailed black cockatoo and their habitats, as set out in the EPBC Act referral guidelines for these species. The applicant has been advised to contact the federal Department of Water, Agriculture and the Environment (DAWE) to discuss EPBC Act referral requirements.

Conditions

No fauna management conditions required.

3.2.2. Biological values (flora) - Clearing Principles (a) and (c)

Assessment

A reconnaissance flora and vegetation survey was undertaken for the application area on 4 June 2021 (AECOM, 2021a). No threatened or priority flora species were identified within the application area at the time of the survey (AECOM, 2021a). The reconnaissance flora and vegetation survey noted that the application area was unlikely to provide suitable habitat for most of the threatened flora species identified during desktop assessments, with the exception of *Diuris micrantha* (listed as Vulnerable under the BC Act and EPBC Act) which may occur (AECOM, 2021a).

Diuris micrantha (the dwarf bee-orchid) is a tuberous, perennial herb with yellow flowers from August to early October and is typically associated with dark, grey to blackish, sandy clay-loam substrates in winter wet depressions or swamps (DEWHA, 2008). The MrJp and KgAa vegetation communities within the application area may provide suitable habitat for this species. However, the application area consists of fragmented and isolated wetland vegetation in Degraded (Keighery, 1994) condition within historically cleared paddock and is almost entirely lacking in native understorey species (AECOM, 2021a). The dwarf bee-orchid is not said to occur in degraded vegetation and is noted to be susceptible to disturbances such as inappropriate fire regimes, invasive weeds, and grazing (DEWHA, 2008). Noting the extent of the proposed clearing and condition of the vegetation within the application area, it is considered unlikely that the application area is suitable to support a significant population of the dwarf bee-orchid or comprises significant habitat for the species.

In addition to the above, a review of the site characteristics and habitat preferences of the conservation significant flora species recorded in the local area (see Appendix A) identified that the application area may provide suitable and potentially significant habitat for an additional four perennial species that were not specifically targeted in the reconnaissance flora and vegetation survey, as well as suitable habitat for five annual species that may not have been present or identifiable at the time of the survey:

- *Blennospora doliiformis* (listed as Priority 2 by DBCA),
- *Diuris brevis* (listed as Priority 2 by DBCA),
- *Grevillea bipinnatifida* subsp. *pagna* (listed as Priority 1 by DBCA),
- *Pterostylis frenchii* (listed as Priority 2 by DBCA),
- *Schoenus natans* (listed as Priority 4 by DBCA),
- *Schoenus* sp. Waroona (G.J. Keighery 12235) (listed as Priority 3 by DBCA),
- *Stylidium aceratum* (listed as Priority 3 by DBCA),
- *Stylidium longitubum* (listed as Priority 4 by DBCA), and
- *Synaphea* sp. Serpentine (G.R. Brand 103) (listed as Critically Endangered under the BC Act and EPBC Act).

Regarding the perennial species, *Diuris brevis* is a perennial herb with yellow flowers from August to September and is associated with black to grey peaty sand in winter-wet woodland (Western Australian Herbarium, 1998-). *Grevillea bipinnatifida* subsp. *pagna* is a prostrate, lignotuberous shrub with red, orange and yellow flowers between August and November and is associated with black to grey sandy clay soils in winter-wet woodland (Western Australian Herbarium, 1998-). *Pterostylis frenchii* is a tuberous, perennial herb associated with shrubland dominated by *Kunzea* spp. in marri, *Agonis flexuosa* or *Banksia* spp. woodland over sandy soils (Western Australian Herbarium, 1998-). *Synaphea* sp. Serpentine (G.R. Brand 103) is a perennial, clumped shrub with yellow flowers from late August to November and is associated with sandy loam to clay soils in low mixed shrubland including marri, *Melaleuca* spp., and *Xanthorrhoea* spp. (Western Australian Herbarium, 1998-). Based on the findings of the reconnaissance flora and vegetation survey, the vegetation communities within the application area may provide suitable habitat for these species. Further, noting the conservation status of these species and that many are known from small populations over restricted ranges, the occurrence of these species within the application area may be significant. However, it is acknowledged that these species are all perennial and, although not flowering, are likely to have been observed if present at the time of the June survey, given the Degraded (Keighery, 1994) condition of the application area and distinct lack of native understorey. Further, the application area consists of fragmented and isolated wetland and woodland vegetation within a historically cleared paddock and is unlikely to support a viable population of the aforementioned species long-term. Given the above, it is considered unlikely that the application area comprises significant habitat for *Diuris brevis*, *Grevillea bipinnatifida* subsp. *pagna*, *Pterostylis frenchii*, or *Synaphea* sp. Serpentine (G.R. Brand 103).

With regard to the annual species, *Blennospora doliiformis*, *Schoenus natans*, *Schoenus* sp. Waroona (G.J. Keighery 12235), *Stylidium aceratum*, and *Stylidium longitubum* are all annual herbs associated with wet soils in wetland or seasonally wet vegetation, usually dominated by *Melaleuca* spp. (Western Australian Herbarium, 1998-). The MrJp and KgAa vegetation communities may provide suitable habitat for these species. Noting that the species flower between October and December (Western Australian Herbarium, 1998-), a June survey may not have been adequate

to identify the presence or absence of these species within the application area. However, as discussed above, the reconnaissance flora and vegetation survey identified that the application area consists of fragmented and isolated wetland vegetation in Degraded (Keighery, 1994) condition and is almost entirely lacking in native understorey species (AECOM, 2021a). Therefore, the application area is unlikely to be suitable to support a significant population of the aforementioned annual species. Further, given the distribution and extent of existing records of the species', the proposed clearing is unlikely to represent a significant impact to the conservation status or ongoing maintenance of the species, if present. Given the above, the proposed clearing is not considered likely to comprise significant habitat for any of the annual species recorded in the local area.

In considering the above, the findings of the reconnaissance flora and vegetation survey, and the severely degraded and disturbed nature of the vegetation, the application area is not considered to comprise significant habitat for any threatened or priority flora species.

Conclusion

Based on the above assessment, the proposed clearing is not considered likely to represent significant habitat for any threatened or priority flora species or to be critical for the continuation of these species. For the reasons set out above, it is considered that impacts to conservation significant flora species are unlikely to result from the proposed clearing and that this does not constitute a significant residual impact.

Conditions

No flora management conditions required.

3.2.3. Significant remnant vegetation - Clearing Principle (e)

Assessment

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). Noting that the current vegetation extent for the mapped Swan Coastal Plain vegetation complex (Southern River Complex) and vegetation extent within the local area fall below the 30 per cent threshold (see Appendix A.2), the application area is considered to be a remnant within an extensively cleared landscape.

While it is noted that the application area consists of isolated marri trees and swamp paperbark woodland, these canopy species may be representative of the Southern River Complex (see Appendix C). Noting that the pre-European vegetation extent of the Southern River Complex has been significantly reduced and that only 1.6 per cent of remaining vegetation mapped within this complex lies within conservation estate, occurrences of intact vegetation that is representative of the Southern River Complex may be significant for its maintenance. However, given the lack of representative mid-and understorey species, the fragmentation and isolation of the vegetation within a historically cleared paddock, and the Degraded (Keighery, 1994) condition of the vegetation within the application area, it is unlikely that the application area is significant for the ongoing maintenance of the Southern River Complex. It is also acknowledged that the vegetation within the application area comprises less than 0.01 per cent of all vegetation remaining within the Southern River Complex and that the proposed clearing is unlikely to significantly reduce the pre-European extent of the complex.

Although the application area is likely to provide foraging habitat for black cockatoo species, it is acknowledged that the foraging habitat within the application area is unlikely to be significant in the context of the broader landscape (see Section 3.2.1) and that the application area does not contain locally or regionally significant communities. Further, the proposed clearing area comprises less than 0.02 per cent of vegetation remaining in the local area and comprises fragmented and isolated native vegetation in Degraded (Keighery, 1994) condition, within a historically cleared paddock, which is likely to be subject to ongoing disturbance and degradation. Noting the above, the application area is not considered to be a significant remnant of native vegetation and the proposed clearing is not considered likely to have a significant impact on vegetation extent within the extensively cleared local area.

However, given the application area is weed-infested, it is acknowledged that the proposed clearing may cause degradation of adjacent and nearby remnant native vegetation (particularly to adjacent wetland vegetation north of the north western portion of the application area) of the in the extensively cleared landscape by facilitating the spread of weeds and dieback. A weed and dieback management condition is considered to minimise this risk, and it is not considered likely that the proposed clearing will have a significant impact on nearby significant remnant vegetation.

Conclusion

Based on the above assessment, the application area is not considered to be significant as a remnant of native vegetation within an area that has been extensively cleared. However, the proposed clearing has the potential to facilitate the spread of weeds and dieback into significant remnant vegetation in the local area.

It is considered that the impacts of the proposed clearing can be managed to be environmentally acceptable by taking steps to minimise the risk of the introduction and spread of weeds and dieback and does not constitute a significant residual impact.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Dieback and weed control, which ensures protocols are put in place to limit the introduction and transportation of dieback- and weed-affected materials.

3.2.4. Water resources - Clearing Principles (f) and (i)

Assessment

As the application area is mapped within a perennial swamp, inland flat and two multiple-use wetlands and includes characteristic riparian vegetation (*Melaleuca raphiophylla*, *Juncus preissianus*, *Kunzea glabrescens* and *Astartea affinis*), the vegetation within the application area is considered to be growing in, or in association with, an environment associated with a wetland. However, the application area comprises 0.99 hectares of disturbed and fragmented vegetation within a historically cleared paddock. It is also acknowledged that the mapped wetland has been highly modified through historical clearing for agriculture and nearby road infrastructure, and it is unlikely that the vegetation within the application area is contributing significantly to the function of riparian communities or wetlands in the local area. Given the extent and location of the proposed clearing, the condition of the vegetation, and adjacent land uses, the proposed clearing is not considered likely to result in any significant or long-term impacts to the ecological values of the vegetation communities associated with the wetland mapped within the application area.

Given the presence of mapped wetlands within the application area, the proposed clearing also has the potential to result in impacts to surface water quality through turbidity and sedimentation, if the vegetation within the application area is inundated at the time of the clearing. However, given the extent of the proposed clearing and the condition of the vegetation, it is likely that impacts to surface water will be minor, localised, and short-term. Noting the extent and condition of the vegetation and that the application area is separated from the nearest major watercourse by historically cleared land and does not occur within a proclaimed Surface Water Area, the proposed clearing is not considered likely to significantly impact surface water quality. Accordingly, although the application area occurs within the Murray Groundwater Area, the proposed clearing is not considered likely to result in significant impacts to groundwater quality, given its nature and extent.

Conclusion

Based on the above assessment, the proposed clearing may result in the loss of vegetation growing in, or in association with, an environment associated with a wetland and may cause minor short-term impacts to surface water quality. For the reasons set out above, the proposed clearing is unlikely to result in any significant or long-term impacts to surface or groundwater quality or to the ecological values of the riparian communities associated with the mapped wetlands.

Conditions

No vegetation management conditions required.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on the Department of Water and Environmental Regulation's (DWER's) website on 29 July 2021, inviting submissions from the public within a 21-day period. No submissions were received in relation to this application.

The clearing permit application occurs adjacent to an associated and existing clearing permit (CPS 8758/1). CPS 8758/1 was granted to SE Waroona Development Pty Ltd on 30 September 2020 and allows for the clearing of up to 8.8 hectares of native vegetation for the purpose of facilitating construction of the Waroona Solar Farm and associated infrastructure. CPS 8758/1 is valid to 23 October 2025.

The Shire of Waroona (the Shire) advised DWER that a Development Approval for the Waroona Solar Farm and associated transmission lines was approved on 3 August 2021 (Shire of Waroona, 2021). The Shire advised that the clearing permit application was consistent with the Development Approval, and therefore, the Shire did not have any objections to the proposed clearing (Shire of Waroona, 2021).

The application area falls within the boundaries (policy area) of the *Peel Harvey EPP Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992* (Peel Harvey EPP). The Peel Harvey EPP is a legislative framework that allows

for catchment management initiatives in the policy area, aimed at setting out environmental quality objectives to improve the health of the Peel-Harvey Estuary (the Estuary) and outlining how the environmental quality objectives for the Estuary would be achieved and maintained. The primary objective of the Peel Harvey EPP is to reduce the median load (mass) of total phosphorus flowing into the Estuary from the Serpentine, Murray, and Harvey Rivers, primarily resulting from the clearing of native vegetation and subsequent land uses along these watercourses. This objective of the Peel Harvey EPP and additional measures to reduce the flow of other nutrients (e.g., nitrogen, Chlorophyll a, and dissolved oxygen) into the Estuary have subsequently been supported by management initiatives including the *Water Quality Improvement Plan for the Rivers and Estuary of the Peel-Harvey System - Phosphorus Management* (Peel Harvey Water Quality Improvement Plan) (EPA, 2008) and the *Bindjareb Djilba: A plan for the protection of the Peel-Harvey estuary* (Bindjareb Djilba) (DWER, 2020).

The Bindjareb Djilba indicates that the primary activities causing degradation of the Estuary include nutrient-rich runoff from agriculture and grazing paddocks, wastewater runoff from dairy sheds, piggeries and feed lots, stormwater runoff or discharge from urban areas, industry and wastewater treatment plants, and the clearing of deep-rooted native vegetation to be replaced with shallow-rooted annual crops (DWER, 2020). With respect to the clearing of native vegetation, the Bindjareb Djilba recommends that priority areas of native vegetation within the Peel-Harvey catchment are identified and protected and that revegetation of cleared areas with deep-rooted perennial species that improve water quality is encouraged (DWER, 2020). Noting that the application area comprises marri and paperbark woodland in Degraded (Keighery, 1994) condition that has been subject to significant disturbance through historical clearing activities and weed invasion, it is not considered likely that the application area would be considered to contain priority vegetation within the Peel-Harvey catchment. Further, given the separation between the application area and the Murray River, the extent and condition of vegetation within the application area, and the final land-use as a permanent transmission line, it is not expected that the proposed clearing or eventual land-use will result in significant nutrient export or nutrient run-off into watercourses that support the Peel-Harvey Estuary. Therefore, the proposed clearing is considered to be consistent with the provisions of the Peel Harvey EPP, the Peel Harvey Water Quality Improvement Plan, and the Bindjareb Djilba.

According to available databases, no Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared consists of fragmented native vegetation in the intensive land use zone of Western Australia. It is adjacent to the existing Landwehr Terminal Station and is surrounded by highly disturbed and historically cleared rural land. The proposed clearing area is a small, isolated, and fragmented remnant in a highly cleared landscape. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 18.54 per cent of the original native vegetation cover.
Ecological linkage	The application area does not intersect any formally mapped ecological linkages. A mapped South West Regional Ecological Linkage (Molloy et al., 2009) comprising riparian vegetation along the Harvey River occurs approximately 350 metres south of the application area. Given the application area consists of fragmented and sparsely distributed vegetation, it is not considered to be contributing significantly to the values of the nearby South West Regional Ecological Linkage or to any formal or informal ecological linkages in the local area.
Conservation areas	The closest conservation area is Buller Nature Reserve, located approximately 0.7 kilometres north-east of the application area, separated by historically cleared rural land.
Vegetation description	<p>A reconnaissance flora and vegetation survey (AECOM, 2021a) indicates the vegetation within the proposed clearing area consists of three native vegetation communities:</p> <ul style="list-style-type: none"> • CcJp, described as <i>Corymbia calophylla</i> and <i>Melaleuca raphiophylla</i> tall open trees over <i>Juncus preissianus</i> low closed mixed sedge and shrubland, • MrJp, described as <i>Melaleuca raphiophylla</i> low open woodland with <i>Juncus preissianus</i> and <i>Solanum nigrum</i> low sparse shrubland over <i>*Arctotheca calendula</i>, <i>Xanthosia huegelii</i>, and <i>Oxalis pes-caprae</i> low closed forland, • KgAa, described as <i>Kunzea glabrescens</i> and <i>Astartea affinis</i> low closed woodland over <i>*Rumex acetosella</i>, <i>*Hypochaeris glabra</i>, and <i>*Cenchrus clandestinus</i> low closed forland (AECOM, 2021a). <p>The full survey descriptions and maps are available in Appendix D.</p> <p>This is broadly consistent with the mapped Swan Coastal Plain vegetation type: the Southern River Complex, which is described as open woodland of <i>Corymbia calophylla</i> (marri) - <i>Eucalyptus marginata</i> (jarrah) - <i>Banksia</i> species with fringing woodland of <i>Eucalyptus rudis</i> (flooded gum) - <i>Melaleuca raphiophylla</i> (swamp paperbark) along creek beds.</p>
Vegetation condition	<p>A reconnaissance flora and vegetation survey (AECOM, 2021a) indicates the native vegetation within the proposed clearing area is in Degraded (Keighery, 1994) condition, described as basic vegetation structure severely impacted by disturbance, with scope for regeneration but not to a state approaching good condition without intensive management (Keighery, 1994).</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C. The full survey descriptions and mapping are available in Appendix D.</p>

Climate and landform	<p>The application area occurs on flat topography in pale deep sand and semi-wet soils. The application area has a mean annual maximum temperature of 21.9°C and a mean annual minimum temperature of 9.6°C. The mean annual rainfall is 1000 millimetres, and the annual evapotranspiration rate is 800 millimetres.</p>
Soil description and land degradation risk	<p>The soil is mapped within the following soil systems:</p> <ul style="list-style-type: none"> • Bassendean B1 Phase (212Bs__B1), described as extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant, which comprises approximately 59 per cent of the application area, • Bassendean B4 Phase (212Bs__B4), described as broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan, which comprises approximately 25 per cent of the application area, and • Bassendean B6 Phase (212Bs__B6), described as sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands, which comprises approximately 16 per cent of the application area (DPIRD, 2021). <p>Land degradation risk for the mapped soil types is summarised in Appendix A.5. The soil types within the application area are mapped as having a low risk of land degradation resulting from water erosion, salinity and flooding, but as having a moderate to high risk of wind erosion, waterlogging, subsurface acidification and phosphorus export (DPIRD, 2021).</p>
Waterbodies and hydrogeography	<p>The desktop assessment and aerial imagery indicated that the application area intersects a perennial swamp that contributes to the Samson Brook North Drain system and an inland flat (inundation area) within the Harvey Estuary system. The application area is also mapped within two multiple-use wetlands, a seasonally waterlogged basin (dampland) and a seasonally inundated basin (sumpland). The closest natural watercourse to the application area is a non-perennial tributary of the Harvey River, approximately 60 metres south, separated by historically cleared land.</p> <p>The application area is mapped within the Murray Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (the RIWI Act). The application area does not transect any water resources proclaimed under either the <i>Metropolitan Water Supply Sewerage and Drainage Act 1909</i> or <i>Country Areas Water Supply Act 1947</i> (CAWS Act).</p> <p>Groundwater salinity within the application area is mapped at 500 to 1000 milligrams per litre total dissolved solids.</p>
Flora	<p>The desktop assessment identified that a total of 28 rare flora species have been recorded within the local area, comprising three Priority 1 (P1) flora, two Priority 2 (P2) flora, eight Priority 3 (P3) flora, eight Priority 4 (P4) flora, and seven threatened flora (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of <i>Boronia capitata</i> (P3) approximately 1.9 kilometres from the application area.</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (AECOM, 2021a), the application area may provide suitable habitat for five threatened or priority flora species and impacts to these species required further consideration (see Appendix A.3).</p>

Ecological communities	<p>The desktop assessment identified that the closest state-listed threatened ecological community (TEC) is an occurrence of the Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994)) TEC (SCP08) and the Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994)) TEC (SCP10a), located approximately 5.6 kilometres north-west of the application area, separated by historically cleared land and road infrastructure.</p> <p>The desktop assessment identified that the application area intersects one mapped occurrence of a priority ecological community (PECs); the Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region PEC (Banksia Woodlands PEC). The Banksia Woodlands PEC is a federally listed threatened ecological community, listed as Endangered under the EPBC Act. Despite existing mapping, the reconnaissance flora and vegetation survey identified that the application did not contain <i>Banksia</i> species and did not meet the defining characteristics to be considered representative of the Banksia Woodlands PEC or TEC or any other conservation significant ecological community (AECOM, 2021a).</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information (AECOM, 2021a), impacts to these ecological communities did not require further consideration.</p>
Fauna	<p>The desktop assessment identified that a total of 21 threatened or priority fauna species have been recorded within the local area, including seven threatened fauna species, nine priority fauna species, four fauna species protected under international agreement, and one other specially protected fauna species (DBCA, 2007-). None of these existing records occur within the application area, with the closest record being an occurrence of a quenda (<i>Isoodon fusciventer</i>) approximately one kilometre from the application area.</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (AECOM, 2021a), the application area may provide suitable habitat for three conservation significant fauna species and impacts to these species required further consideration (see Appendix A.4).</p>

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion**					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Swan Coastal Plan (Hedde) vegetation complex*					
Southern River Complex	58,781.48	10,832.18	18.43	940.36	1.6
Local area (calculation)					
10-kilometre radius	31,942.88	5,923.81	18.54	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), the distribution and extent of existing records, and biological survey information (AECOM, 2021a), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Blennospora doliiformis</i>	P2	N	Y	Y	11.3	1	N
<i>Diuris brevis</i>	P2	N	Y	Y	3.5	1	Y
<i>Diuris micrantha</i>	VU	N	Y	Y	11.3	2	Y
<i>Grevillea bipinnatifida</i> subsp. <i>pagna</i>	P1	N	Y	Y	9.0	1	Y
<i>Pterostylis frenchii</i>	P2	N	Y	Y	6.3	4	Y
<i>Schoenus natans</i>	P4	N	Y	Y	6.7	2	N
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235)	P3	N	Y	Y	6.3	1	N
<i>Stylidium aceratum</i>	P3	N	Y	Y	10.6	1	N
<i>Stylidium longitubum</i>	P4	N	Y	Y	11.3	2	N
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)	CR	Y	Y	Y	10.4	1	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), the distribution and extent of existing records, and biological survey information (AECOM, 2021a), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Calyptorhynchus banksii naso</i> (Forest red-tailed black cockatoo)	VU	Y	Y	2.1	16	Y
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	EN	Y	Y	6.9	5	Y
<i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo)	EN	Y	Y	2.1	264	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.5. Land degradation risk table

Risk categories	Bassendean B1 Phase (212Bs_B1)	Bassendean B4 Phase (212Bs_B4)	Bassendean B6 Phase (212Bs_B6)
Wind erosion	50-70% of map unit has a high to extreme wind erosion risk	10-30% of map unit has a high to extreme wind erosion risk	>70% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a high salinity risk or is presently saline	<3% of map unit has a high salinity risk or is presently saline	<3% of map unit has a high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid

Flood risk	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk
Waterlogging	3-10% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk	30-50% of map unit has a moderate to very high waterlogging risk
Phosphorus export	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared may contain suitable habitat for conservation significant flora and fauna species. However, given the area proposed to be cleared comprises marri and paperbark woodland in Degraded (Keighery, 1994) condition that has been subject to significant disturbance through historical clearing activities and weed invasion, the application area is not considered likely to comprise a high level of biodiversity.</p>	Not likely to be at variance	Yes <i>Refer to Sections 3.2.1 and 3.2.2, above.</i>
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared contains potential foraging, roosting, and breeding habitat for three conservation significant fauna species.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared may contain suitable habitat for two flora species listed under the BC Act.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared comprises marri and paperbark woodland in Degraded (Keighery, 1994) condition that has been subject to significant disturbance through historical clearing activities and weed invasion and is not considered to comprise vegetation representative of any threatened ecological community (TEC) listed under the BC Act or EPBC Act. Given the distance and separation from the nearest TEC, the proposed clearing is not likely to impact or be necessary for the maintenance of any TEC.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The extent of the mapped vegetation type and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001).</p>	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u> Given the distance and separation from the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any nearby conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> Given the application area intersects several mapped water bodies and wetlands, the application area is considered to include riparian vegetation and the proposed clearing may impact on- or off-site hydrology and water quality.</p>	At variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The mapped soils are moderately susceptible to wind erosion, waterlogging, subsurface acidification, and phosphorus export. Noting the extent and linear nature of the application area and the highly disturbed condition of the vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u> Given the application area intersects several mapped water bodies and wetlands, the proposed clearing may result in short-term impacts to surface or ground water quality.</p>	May be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The mapped soils and topographic contours in the surrounding area do not indicate that the application area is susceptible to flooding. Noting this, the extent of the proposed clearing across a linear footprint, and the condition of the vegetation, the proposed clearing is unlikely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Biological survey information excerpts

Table 1. Vegetation communities mapped within the application area (AECOM, 2021a).

Code	Description	Details
CcJp	<i>Corymbia calophylla</i> and <i>Melaleuca raphiophylla</i> tall open trees over <i>Juncus preissianus</i> low closed mixed sedge and shrubland.	Survey effort: N/A Survey Area: 0.59 ha Condition: Degraded
MrJp	<i>Melaleuca raphiophylla</i> low open woodland with <i>Juncus preissianus</i> and <i>Solanum nigrum</i> low sparse shrubland over * <i>Arctotheca calendula</i> , ? <i>Xanthosia huegelii</i> , and <i>Oxalis pes-caprae</i> low closed forbland.	Survey effort: one traverse (Waroona 06). Survey Area: 0.31 ha Condition: Degraded
KgAa	<i>Kunzea glabrescens</i> and <i>Astartea affinis</i> low closed woodland over * <i>Rumex acetosella</i> , * <i>Hypochaeris glabra</i> , and * <i>Cenchrus clandestinus</i> low closed forbland.	Survey effort: one traverse (Waroona 07). Survey Area: 0.09 ha Condition: Degraded
Planted	Introduced mixed <i>Eucalyptus</i> spp. over weeds.	Survey Area: 0.24 ha Condition: Completely Degraded
Cleared	Cleared paddock comprising common pasture weeds. Occasional solitary introduced <i>Eucalyptus</i> spp.	Survey Area: 2.95 ha Condition: Cleared



Figure 1. Vegetation communities mapped within the application area (AECOM, 2021a).

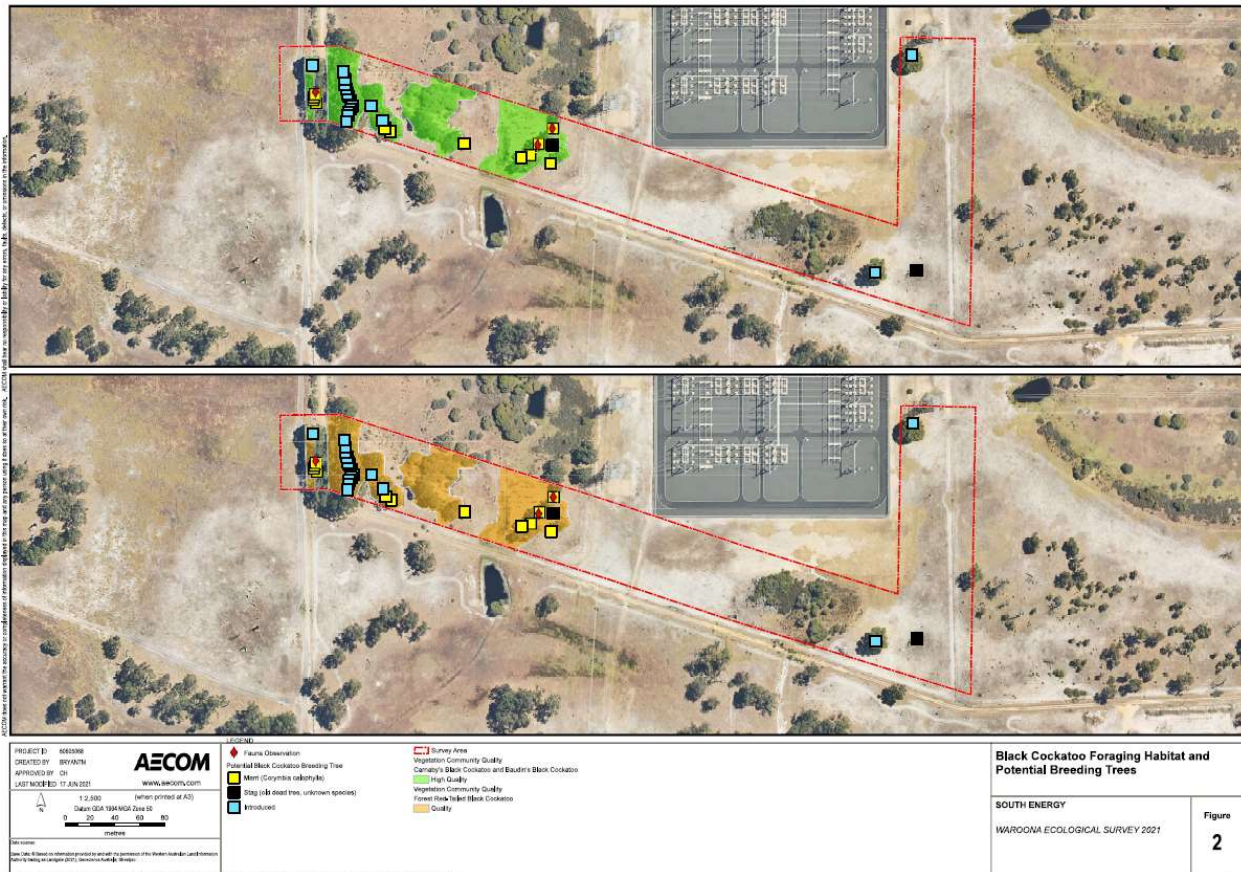


Figure 2. Black cockatoo foraging habitat and breeding trees mapped within the application area (AECOM, 2021a).

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from <https://www.data.wa.gov.au/>):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Bush Forever Areas 2000 (DPLH-019)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- CAWSA Part 2A Clearing Control Catchments (DWER-004)
- Consanguineous Wetlands Suites (DBCA-020)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- DBCA Statewide Vegetation Statistics
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography, Linear (Hierarchy) (DWER-031)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics (DPIRD-006)

- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Systems (DPIRD-064)
- Vegetation Complexes - Swan Coastal Plain (DBCA-046)

Restricted GIS Databases used:

- Conservation Covenants Western Australia (DPIRD-023)
- Contaminated Sites Database - Restricted (DWER-073)
- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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