Prepared for
South Energy
ABN: 87 108 862 295

AECOM

Waroona Solar Farm Transmission Line Clearing Permit Supporting Document

05-Jul-2021
Waroona Solar Farm

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Waroona Solar Farm Transmission Line Clearing Permit Supporting Document

Client: South Energy

ABN: 87 108 862 295

Prepared by

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1.0 Introduction

South Energy on behalf of SE Waroona Development Pty Ltd is planning to construct a transmission line from the Waroona Solar Farm site to Western Power's Landwehr Terminal Station (the Project). The project comprises 4.16 ha on Lot 4 on Plan D034161 (Figure 1).

Clearing up to 0.99 ha of native vegetation is required for the Project. All clearing in Western Australia must be completed under an approved native vegetation clearing permit (NVCP), unless an exemption applied under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. As there are no NVCP exemptions that apply to this proposal, a NVCP is required.

1.1 Purpose

This application was prepared to support an application for a NVCP (purpose permit) for development of the Project. The applicant seeks approval to clear up to 0.99 ha of native vegetation.

1.2 Applicant and Owner Details

The proponent for this vegetation clearing application is:

SE Waroona Development Pty Ltd (South Energy)

The land on which this clearing is being proposed is owned by:

Electricity Networks Corporation (trading as Western Power)

South Energy have been authorised by the land holder to use the land for the purposes of this Project. Certificate of Title and Third party authorisation documentation is attached in Appendix A.

1.3 Site Details

Site details are presented in Table 1.

Table 1 Site Details

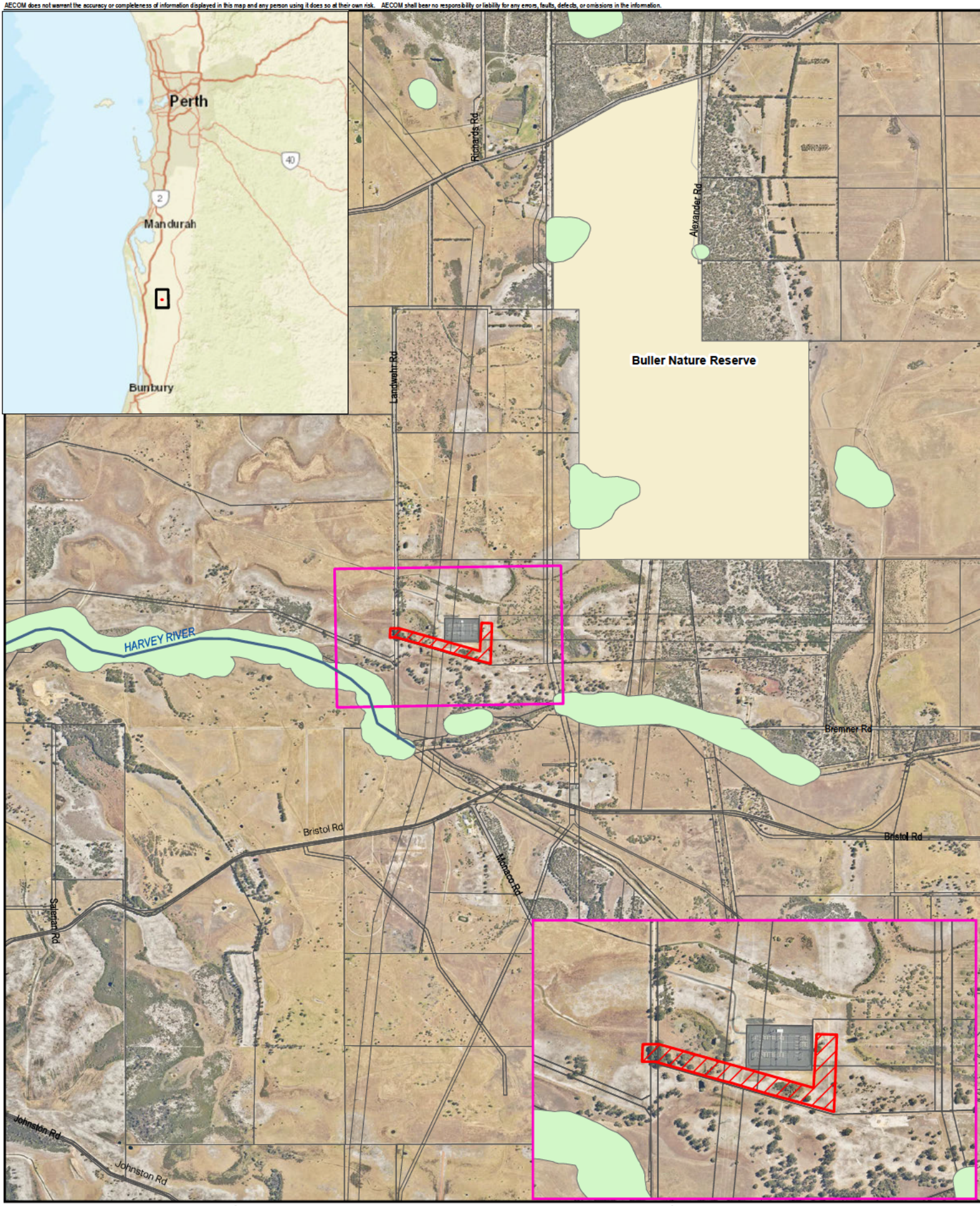
Property	Description
Land Description	Lot 4 on Plan D034161 – Land ID 1217223.
Property Area	85 ha
Clearing Permit Application Area	0.99 ha
Method of Clearing:	Mechanical removal
For the Purpose of:	Power transmission line
Zoning	Rural

1.4 Environmental Assessments

A targeted Black Cockatoo survey and a reconnaissance flora and vegetation survey was conducted by AECOM Australia Pty Ltd (AECOM) on the 4th June 2021.

This survey was conducted to assess presence and potential utilisation of the Project area by Black Cockatoo species protected under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and classify any native vegetation along the route.

The Waroona Solar Farm is located on the adjacent lot to the Project. A preliminary site investigation including desktop assessment was undertaken on 31 January 2019 and a flora and vegetation assessment and targeted Black Cockatoo survey on 20 June 2019. Both assessments were undertaken by AECOM.



PROJECT ID	P Brendon
CREATED BY	BRANDONP
APPROVED BY	MD
LAST MOD F ED	30 JUN 2021

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Meters

Data sources:

Base Data: © Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2010); Geoscience Australia; Streetpro

LEGEND
- Proposed Disturbance Footprint
- Environmentally Sensitive Areas
- Nature Reserve
- Cadastre

Project Location

SOUTH ENERGY

WAROONA ECOLOGICAL SURVEY 2021

Figure
1

Map Document: C:\Users\BrendonP\Desktop\Waroona_South Energy Substation\Figures\60605060_Fig1_ProjectLocation_simplified.mxd (BrendonP)

A3 size

2.0 Existing Environment

2.1 Soil and Landform Type

The Project is located within the Bassendean System (212Bs), described as sand dunes and sandplains with pale deep sand, semi-wet and wet soil (Purdie et al. 2004).

Two sub-systems are mapped within the Project area, including pale deep sand and semi-wet soils.

2.2 Regional Vegetation

Pre-European vegetation mapping has been undertaken by Beard (1974). This mapping shows one vegetation association within the Project area, described as Association 1000 Low forest or woodland. Mosaic: medium forest; Jarrah-Marri / low woodland; *Banksia*/ Low forest; Teatree (*Melaleuca* spp.).

Heddle et al. (1980) conducted vegetation complex mapping for the Swan Coastal Plain at a scale of 1:250,000. The Project area is mapped with the Southern River Complex (42), described as Open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds. The extent of this association is presented in Table 2.

Table 2 Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Vegetation Association No. 1000 - Bassendean	Statewide	99,836	27,769	27.81	5.19
	IBRA Bioregion Swan	94,175	24,869	26.41	5.06
	IBRA Sub-region Perth	94,175	24,869	26.41	5.06
	Local Government Authority Shire of Waroona	15,267	2,289	14.99	2.79

2.3 Vegetation Survey Results

Three native vegetation communities were mapped within the Survey Area extending 0.99 ha which represents 23.6% of the total Survey Area (Table 3, Figure 2).

An ecological assessment was undertaken for the Waroona Solar Farm Project by an AECOM Ecologist. The ecological survey identified the following environmental values:

- No significant flora species were found within the Survey Area. These species are considered as 'unlikely to occur' following the site inspection as no suitable habitat was present.
- A total of 0.99 ha of remnant native vegetation was mapped, in Degraded condition. None of this vegetation represented a Threatened Ecological Community (TEC) or a Priority Ecological Community (PEC).
- Understorey was predominantly absent in all communities, with common pasture weeds and grasses throughout.
- No TECs or PECs were recorded in the Survey Area.
- The degraded condition of the wetlands within the Survey Area has reduced vegetation to common pasture weeds and some remnant native sedges. The continued eroding processes would consider the area unsuitable for representing the Clay Pans TEC.
- Threatened flora species listed under the EPBC Act and Biodiversity Conservation Act (BC Act) considered 'likely to occur' or 'may occur' within the Survey Area are listed in Table 4. The Threatened flora species identified during desktop assessments are considered unlikely to occur following the field survey due to degraded nature of the remnant native vegetation.

A copy of the Ecological Study is provided as Appendix B.

Table 3 Vegetation communities mapped within the Survey Area

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

Table 4 Threatened and Priority flora species that are 'likely to occur' or 'may occur' within the Survey Area

Taxon	State BC Act / DBCA	Federal EPBC Act	Likelihood of Occurrence	Post-2019 Survey Likelihood
Andersonia gracilis	Vulnerable	Endangered	Likely to occur	Unlikely to occur
Diuris micrantha	Vulnerable	Vulnerable	Likely to occur	May occur
Diuris purdiei	Endangered	Endangered	Likely to occur	Unlikely to occur
Drakaea elastica	Critically Endangered	Endangered	Likely to occur	Unlikely to occur
Drakaea micrantha	Endangered	Vulnerable	Likely to occur	Unlikely to occur
Synaphea sp. Fairbridge Farm (D. Papenfus 696)	Critically Endangered	Critically Endangered	Likely to occur	Unlikely to occur
Synaphea sp. Pinjarra Plain (A.S. George 17182)	Endangered	Endangered	Likely to occur	Unlikely to occur
Synaphea stenoloba	Critically Endangered	Endangered	Likely to occur	Unlikely to occur

PROJECT ID 60605068
CREATED BY [redacted]
APPROVED BY CH
LAST MODIFIED 17 JUN 2021

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Datum: GDA 1994 MGA Zone 50
0 20 40 60 80
metres

Data sources:

Base Data: (c) Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2021),Geoscience Australia, Streetpro

LEGEND
Survey Area
Vegetation Community
CcJp
KgAa
MrJp
Planted
Cleared

Vegetation Communities

SOUTH ENERGY

WAROONA ECOLOGICAL SURVEY 2021

Figure 2

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LEGEND

Fauna Observation

Potential Black Cockatoo Breeding Tree

- Marri (Corymbia calophylla)
- Stag (old dead tree, unknown species)
- Introduced

Survey Area

Vegetation Community Quality

Carnaby's Black Cockatoo and Baudin's Black Cockatoo

- High Quality

Vegetation Community Quality

Forest Red-Tailed Black Cockatoo

- Quality

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APPROVED BY CH
LAST MODIFIED 17 JUN 2021

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Datum GDA 1994 MGA Zone 50

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metres

Data sources:

Base Data: © Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2021), Geoscience Australia, Streetpro

Black Cockatoo Foraging Habitat and Potential Breeding Trees

SOUTH ENERGY

WAROONA ECOLOGICAL SURVEY 2021

Figure 3

Map Document: \\aumel1fp001\projects\60X\60605068\900_CAD_GIS\20_GIS\02_MXDs\06_WaroonaEcologicalSurvey2021\60605068_WaroonaEcologicalSurvey2021.aprx (BryantM)

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2.4 Fauna and Black Cockatoo Species

2.4.1 Fauna Species Likely to Occur

A previous ecological assessment completed by AECOM in 2019 identified the following as having the potential to occur:

- Threatened and Priority species including:
  - 26 listed fauna species (three considered 'likely to occur', seven 'may occur')
  - 39 Threatened and Priority flora species (eight considered 'likely to occur').

Following the site inspection in 2019, the likelihood of occurrence was amended, resulting in the following:

- Fauna:
  - three species are 'likely to occur'
  - seven species 'may occur' (Table 5).

Habitat for these species is generally limited, of poor quality and highly modified.

Table 5 Conservation significant fauna species considered as 'likely to occur' or 'may occur' within the Survey Area

Species	State BC Act / DBCA	Federal EPBC Act
Calidris ferruginea Curlew Sandpiper	Critically Endangered	Migratory
Calyptorhynchus banksii naso Forest Red-tailed Black Cockatoo	Vulnerable	Vulnerable
Calyptorhynchus baudinii Baudin's Cockatoo	Endangered	Vulnerable
Calyptorhynchus latirostris Carnaby's Cockatoo	Endangered	Endangered
Falco peregrinus Peregrine Falcon	Other specially protected fauna	-
Plegadis falcinellus Glossy Ibis	Migratory	Migratory
Tringa nebularia Common greenshank	Migratory	Migratory
Notamacropus Irma Western Brush Wallaby	Priority 4	-
Phascogale tapoatafa subsp. *wambenger* South-western Brush-tailed Phascogale	Species of special conservation interest	Vulnerable
Pseudocheirus occidentalis Western Ringtail Possum	Critically Endangered	Critically Endangered

With the exception of the Carnaby's Cockatoo, Forest Red-Tailed Black Cockatoo and Baudin's Cockatoo, none of the species were identified in the 2021 Ecological Survey.

2.4.2 Black Cockatoo Habitat

Breeding

31 potential breeding habitat trees (DBH>500 mm) were recorded within the Survey Area. No potentially suitable hollows were identified within these trees.

The observed trees included 12 Marri *Corymbia calophylla*, 2 stags (deceased, unidentifiable trees) and 17 introduced *Eucalyptus*. The majority of these trees were located in the western portion of the Survey Area (Figure 3).

Foraging

Black Cockatoo foraging habitat within the Survey Area predominantly comprises isolated patches of Marri trees within paddocks.

Three observations of recent potential black cockatoo foraging evidence were recorded in the western portion of the Survey Area. These observations were for the Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* and Baudin's Cockatoo *Calyptorhynchus baudinii*..

The Survey Area contains Carnaby's Cockatoo (*Calyptorhynchus latirostris)* foraging habitat (Figure 3), comprising:

- 0.83 ha of High Quality foraging habitat

No Carnaby's Cockatoo foraging evidence was recorded in the Survey Area.

The Survey Area contains Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso)* foraging habitat (Figure 3), comprising:

- 0.83 ha of Quality foraging habitat

The Survey Area contains Baudin's Cockatoo (*Calyptorhynchus baudinii)* foraging habitat (Figure 3), comprising:

- 0.83 ha of High Quality foraging habitat.

2.5 Heritage

A search of the PMST database and the Aboriginal Heritage Inquiry System returned no results for World, Commonwealth, National or Aboriginal Heritage Places/Properties/Sites within the Survey Area. The Survey Area occurs within or adjacent to the Gnaala Karla Booja Indigenous Land Use Agreement.

3.0 Avoidance and Minimisation Measures

The clearing has been minimised by selecting the shortest path to the transmission station from the solar farm. South Energy will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. No other alternatives are available.

4.0 Assessment Against Ten Clearing Principles

To confirm that clearing is acceptable under the CPS, clearing is assessed against the Ten Clearing Principles. This assessment is undertaken in the Sections below.

South Energy proposes to clear 0.99 ha of native vegetation for connection of Waroona Solar Farm to the Landwehr Transmission Station.

Assessment against the 10 clearing principles identified that proposed clearing is not likely to be at variance with eight of the clearing principles. Proposed clearing may be at variance with principle e, which relates to the clearing of significant remnants of native vegetation in areas that have been extensively cleared.

4.1 (a) Native vegetation should not be cleared if it comprises a high level of biological diversity

Comments	Proposed clearing is not likely to be at variance to this Principle.
Summary	Vegetation on the site is in a Degraded state. While two Threatened Ecological Communities listed under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) occur within 10 km of the project, the vegetation on the site does not resemble any TEC or PECs or contain any conservation significant flora. As a consequence, the vegetation does not comprise a high level of biological diversity. Given the degraded nature of the undergrowth, the vegetation is unlikely to provide significant habitat for fauna. All of the vegetation was in a degraded condition and was considered unlikely to support a biodiverse fauna assemblage with the exception of high mobility avifauna.
Methodology	Ecological Assessment (undertaken 4 June 2021)

4.2 (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia

Comments	Proposed clearing is not likely to be at variance to this Principle.
Summary	Vegetation contains 0.83 ha of very good quality foraging habitat suitable for the three conservation significant species of Black Cockatoo (Figure 3). The vegetation also contains 31 potential Black Cockatoo breeding trees, without any hollows. Use of these trees by Black Cockatoos is considered to be limited. The area of habitat to be removed is relatively small and is not considered to represent a significant area of habitat for Black-Cockatoo species. In addition to the Black Cockatoo species, there is the potential for presence of seven other threatened fauna species. Habitat for terrestrial fauna species is generally limited, of poor quality and highly modified. Use of these trees by Black Cockatoos is considered limited and the clearing will not have a significant impact on the species as the area of habitat to be cleared is less than 1 ha and no trees with hollows will be cleared. The site does not provide habitat that is necessary for the maintenance of Conservation Significant fauna species populations.
Methodology	Ecological Assessment (undertaken 4 June 2021) *EPBC Act referral guidelines for three threatened black cockatoo species* (DSEWPaC, 2012).

4.3 (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora

Comments	Proposed clearing is not at variance to this Principle.
Summary	A desktop assessment identified 8 Conservation Significant flora species that may potentially occur on the site (Table 4). No Conservation Significant flora was identified during the Ecological survey of the site. These species are considered as 'unlikely to occur' following the site inspection due to the highly degraded nature of the vegetation present.
Methodology	Ecological Assessment (undertaken 4 June 2021)

4.4 (d) 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

Comments	Proposed clearing is not at variance to this Principle.
Summary	No TECs or vegetation resembling a TEC was identified during the Ecological survey of the site. There are no known TECs within 500 m of the site.
Methodology	Ecological Assessment (undertaken 4 June 2021)

4.5 (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments	Proposed clearing may be at variance to this Principle.
Summary	The National Objectives and Targets for Biodiversity Conservation 2001-2005 (Commonwealth of Australia, 2001) recognised that the retention of 30% or more of the pre-clearing extent of each ecological community is necessary if Australia's biodiversity is to be protected. According to the Government of Western Australia (2018), 27.8% of vegetation association 1000 remains intact. This is below the recommended target of retaining 30% of vegetation at a local level (Table 2). The proposed clearing may be at variance with this principle because it requires clearing below the national target and objective for biodiversity conservation. Although this vegetation association is already below the 30% target, the proposed clearing comprises a series of small patches of degraded vegetation that have limited conservation value as an ecological community and are likely to continue to decline from impacts caused by farming practices. The proposal may be at variance with principle e because it requires removal of 0.99 ha of a vegetation association that has been already been cleared below the national target and objective for biodiversity conservation, which is retention of 30% or more of the pre-clearing extent of each ecological community.
Methodology	Ecological Assessment (undertaken 4 June 2021) *Statewide Vegetation Statistics 2018* (Government of Western Australia 2018).

4.6 (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments	Proposed clearing is not at variance to this Principle.
Summary	The proposed clearing is located approximately 30 m from a Multiple Use Category wetland and is bisected by an artificial drain. No conservation significant wetland vegetation is proposed for clearing. Clearing is not expected to have a significant impact on any important wetlands or watercourses. This proposal is therefore not at variance with this principle.
Methodology	Ecological Assessment (undertaken 4 June 2021) Geomorphic Wetlands, Swan Coastal Plain dataset (DBCA, 2020)

4.7 (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments	Proposed clearing is not likely to be at variance to this Principle.
Summary	Clearing proposed involves removal of small, isolated patches of native vegetation scattered throughout an extensively cleared landscape. The small amount of clearing is not likely to result in significant changes to soil erosion, soil acidity or salinity. The clearing of vegetation is therefore not likely to cause appreciable land degradation and not likely to be at variance to this principle.
Methodology	Ecological Assessment (undertaken 4 June 2021) Environmental Geology Mapping

4.8 (h) 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

Comments	Proposed clearing is not at variance to this Principle.
Summary	The nearest conservation area is Buller Nature Reserve (R 22199), which is located approximately 900 m east of the site. The separation distance between Buller Nature Reserve and the site is considered sufficient to prevent significant adverse impacts. The Harvey River, 400 m to the south contains riparian vegetation along the Harvey River is likely to provide an ecological linkage for local fauna. This area is protected as an ESA. The distance between the site and the Harvey River is considered adequate to prevent significant adverse impacts from the clearing. Given the nature and scale of clearing proposed it is unlikely this proposal would result in significant impacts to offsite receptors such as nearby conservation areas. The proposal is therefore not likely to be at variance with this principle.
Methodology	Ecological Assessment (undertaken 4 June 2021) DBCA Legislated Lands and Waters (DBCA-011)

4.9 (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

Comments	Proposed clearing is not likely to be at variance to this Principle.
Summary	The Proposed Clearing is not located within 5 km of a groundwater or surface water reserve. The clearing of the vegetation is not located on a creekline or natural waterway. Due to the history of eutrophication of the Peel-Harvey Inlet, potential for clearing to increase nutrient loading in the Harvey River has been considered. Potential for the clearing to cause significant changes to downstream water quality is low. The site is not used for agriculture and consequently not fertilised. The soil types present are not prone to erosion. Clearing proposed is therefore not likely to cause significant changes to nutrient loads discharged to Harvey River is low. Other water quality parameters considered include potential for acidification from disturbance of ASS. Only shallow disturbance of soil in a small area with a low to moderate risk of ASS. Consequently, potential for disturbance from ASS is considered unlikely. No significant changes to the hydrological regime (including water quality) are expected to result from the proposed clearing. This proposal is therefore not likely to be at variance to this principle.
Methodology	Ecological Assessment (undertaken 4 June 2021) Public Drinking Water Source Areas (DWER-033)

4.10 (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding

Comments	Proposed clearing is not likely to be at variance to this Principle.
Summary	The vegetation is not associated with a mapped floodplain. The clearing of the vegetation is not anticipated to result in increased runoff flow rates or volumes from the site. Given the nature and scale of clearing proposed, it is unlikely the proposal would exacerbate the incidence or intensity of flooding.
Methodology	Ecological Assessment (undertaken 4 June 2021) FPM Floodplain Area (DWER-020)