Albany and Grasmere Wind Farm Native Vegetation Clearing Permit

Synergy Renewable Energy Developments Pty Ltd

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Abbreviations

Abbreviation	Description
ARVS	Albany Regional Vegetation Survey
BC Act	*Biodiversity Conservation Act 2016*
BOM	Bureau of Meteorology
DAWE	Department of Agriculture, Water and the Environment
ELA	Eco Logical Australia
EP Act	*Environmental Protection Act 1986*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Act 1999*
NVCP	Native Vegetation Clearing Permit
P4	Priority 4
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
TEC	Threatened Ecological Community

1. Introduction

Synergy (the Proponent) is seeking approval to undertake the clearing of native vegetation surrounding a total of 18 Wind Turbine Generators (WTG) (turbines), including 12 existing turbines at the Albany Wind Farm and six existing turbines at Grasmere Wind Farm (the Proposal), to enable essential maintenance and repairs of turbines, on an as required basis, for a duration of up to ten years. A previous clearing permit CPS 8282/1 was issued in January 2019 for two turbines (WTG03 and WTG11) which required urgent maintenance. These turbines are also included in this application and it is envisaged that CPS 8282/1 will be surrendered upon approval of this application.

This application has been prepared to satisfy the requirements of native vegetation clearing guidelines (DER 2014), under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act) to obtain a strategic Native Vegetation Clearing Permit (NVCP) for up to 10 years. This document includes the following:

- overview of the existing environmental conditions;
- evaluation of potential impacts of the vegetation clearing;
- evaluation of compliance of the proposed clearing against the ten clearing principles listed under Schedule 5 of the EP Act; and
- environmental approvals and management requirements.

A Level 1 flora and vegetation survey, a Level 1 fauna survey and a targeted survey for *Zephyrarchaea mainae* (Main's Assassins Spider) have been conducted to inform this application.

1.1 Proposal description

The Proposal area covers a total extent 16.39 ha which includes sufficient area around the base of each wind turbine to allow lowering of the rotor and blades to the ground on an as required basis. Of this extent, 12.81 ha comprises native vegetation, of which 1.72 ha is rehabilitated vegetation. A total of 3.58 ha comprises already cleared areas. Access to the site will be via existing tracks that are owned and managed by the City of Albany. It is anticipated that ongoing maintenance of the surrounding vegetation will be required at the site to maintain the efficacy of the wind farm infrastructure, to establish and maintain firebreaks where necessary. Maintenance is likely to include, but not limited to, 'trimming' trees and regrowth around the access tracks to accommodate vehicle overhang.

1.2 Proposal location, ownership and tenure

The Proposal area is located at the Albany and Grasmere Wind Farm, Lot 105 on Deposited Plan 60582 within the City of Albany (Figure 1), which intersects two separate leases, namely Lease 136136 for Albany Wind Farm and Lease 481515 for the Grasmere Wind Farm. Albany Wind Farm comprises WTG01 to WTG12 and Grasmere Wind Farm comprises WTG13 to WTG18. The closest town to the Proposal area is Albany, located approximately 12 km north-east.

SRV AFWF Pty Ltd. (Trustee for AGWF Trust), a subsidiary company of Bright Energy Investments (BEI) has ownership of Albany Wind Farm. Synergy is engaged by SRV AGWF to provide asset management services and had previous ownership of the Albany Wind Farm. Land ownership information is provided in Table 1-1.

Table 1-1 Land ownership

Subject	Detail
Lot and Parcel Number	Lot 501 on Deposited Plan 60582 WTG01 to WTG12 – Albany Wind Farm (Lease 136136) WTG13 to WTG18 – Grasmere Wind Farm (Lease 481515)
Common name of the site	Lot 8141 Sand Patch Road, Sandpatch, WA, 6330
Current certificate of title	Volume: LR3159, Folio: 806
Current site owner	Crown Land
Status	State of Western Australia
Local Government Authority	City of Albany

1.3 Justification for the Proposal

The Proposal is required to ensure longevity of the existing Albany and Grasmere Wind Farms which were first established in 2001 and 2011 respectively to generate renewable energy for the surrounding community. When the turbines require maintenance and repairs, the blades are lowered to the ground using cranes and scaffolding is built around the blades. This enables the repairs to be conducted safely. The diameter of the blades is 70 m and the current clearing footprints (access tracks and pads) are not large enough to accommodate lowering of the blades.

The Proponent is committed to maintaining the existing turbines for the next 10 years, at a minimum. As a result, approval is sought to enable ongoing vegetation clearing on an as needs basis for this duration, to avoid the need to submit multiple native vegetation clearing permits over this time. This will enable essential maintenance to be undertaken in a timely fashion and avoid lengthy disruptions to power supply.

In the event that maintenance and repairs could not be conducted promptly in response to equipment deterioration or failure, due to an inadequate clearing footprint, the ageing turbines would fall out of service and disrupt the supply network.

While the total Proposal area is 16.39 ha, clearing will occur at the base of each turbine only as required to support maintenance and repairs, such that the full extent will never be cleared simultaneously.

1.4 Previous Clearing Permit Applications

A previous clearing permit application was prepared and approved for WTG03 and WTG11 (CPS 8282/1) in late December 2018 and subsequently approved on 21 January 2019, expiring on 21 January 2024.

This strategic clearing permit application will replace the existing CPS 8282/1, which will be surrendered on receipt of approval for this application.

Figure 1: Proposal Location

Legend

Hub Survey Area

0 0.25 0.5 1

Kilometers

Datum/Projection:
GDA 1994 MGA Zone 50

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Prepared by: GM Date: 29/01/2020

2. Clearing of native vegetation

Excluding activities that are exempt under the clearing regulations (Section 5: Prescribed Clearing), all native vegetation clearing completed by the Proponent will be undertaken in accordance with this NVCP and any potential conditions determined by the City of Albany upon approval.

2.1 Measures to avoid and minimise clearing

All practicable measures to avoid and minimise disturbance and clearing will be undertaken. This includes, but is not limited to:

- clearing of vegetation will be undertaken only when required to enable maintenance and repair of turbines;
- retained vegetation will not be disturbed e.g. do not push cleared vegetation onto surrounding vegetation, and do not drive over vegetation. Cleared material will be stockpiled in existing cleared areas;
- the extent of clearing around a dysfunctional turbine will be the minimum required to undertake works; and
- the total extent of native vegetation clearing (12.81 ha) will not be completed simultaneously.

3. Physical Environment

3.1 Biogeographic and regional setting

The Proposal area is located in the Warren bioregion (Warren 01 subregion, WAR01) under the Interim Biogeographic Regionalisation for Australia (IBRA) (DAWE 2020). This subregion is described as having a moderate Mediterranean climate. According to Little Grove weather station (station number 9766), located approximately 7.5 km east of the Proposal, the area receives a total of 924.2 millimetres of rainfall per year on average (BOM 2020).

The Proposal area is located within an area known as the Southwest Australian Biodiversity Hotspot, which occupies an area of approximately 356,700 km^2 on the southwestern corner of Western Australia.

3.2 Geologic, landform and soils

The Warren bioregion is characterised by undulating country sloping towards the coast which contains parts of the landforms Leeuwin Complex, Southern Perth Basin (Blackwood Plateau), Yilgarn Craton and western parts of the Albany Orogen (DoCLM 2002).

The region has four main soil types:

- loamy soils which support the Karri forests;
- red laterites supporting Jarrah-Marri forests;
- leached sandy soils in depressions and plains which support low *Eucalyptus marginata* (Jarrah) woodlands and paperbark/sedge swamps; and
- Holocene marine dunes supporting *Agonis flexuosa* (Peppermint) thickets, *Banksia* woodlands and heaths.

3.3 Hydrology

3.3.1 Surface Water

There are no watercourses or wetlands located within the Proposal area. The closest surface water feature is Lake Powell which is located 4 km north east of the Proposal.

3.3.2 Groundwater

The Proposal area is located within an area that has a natural groundwater source which supplies water to the Albany area and as such is classed as a Priority 1 Public Drinking Water Source Area.

There are two known aquifers within the area, Tamala Limestone and Werillup Formation (Water and Rivers Commission 2001). Both of these aquifers are recharged through direct infiltration of rainfall and inferred to be between 35 to 40 metres below ground level.

4. Biological Environment

4.1 Previous ecological surveys

A total of five ecological surveys have been undertaken for the Proposal in relation to flora and vegetation, fauna and ecological communities. These include surveys undertaken by Eco Logical Australia (ELA), BioDiverse Solutions (BDS) and Invertebrate Solutions in 2019 to inform this assessment (Appendix C). A summary of the previous ecological surveys undertaken is detailed in Table 4-1.

Table 4-1: Previous ecological survey descriptions

Author and year	Title	Methods	Key findings	Survey gaps identified
ELA (2020)	Flora and Vegetation Survey – Albany Wind Farm	Desktop assessment was completed to gather information on potentially occurring conservation listed flora species and vegetation associations. Field surveys were conducted over five days, in accordance with the EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016). The field survey included; Relevés for vegetation associations, targeted surveys for conservation listed species, transects to develop a list of flora species and opportunistic records.	No flora species listed under the EPBC Act or BC Act were recorded within the Proposal. Two Priority 4 species listed by the DBCA were recorded (*Adenanthos x cunninghamii* and *Thomasia quercifolia*. Five vegetation associations were recorded across the Proposal area; three defined by ARVS Peppermint Low Forest, Coastal Heath, Coastal Limestone Heath; and two more identified by ELA as revegetated associations, *Eucalyptus angulosa* Low Mallee Woodland and Rehabilitation. No conservation significant communities listed under the EPBC Act, BC Act or by DBCA occur within the Proposal area.	No knowledge gaps were identified for the survey within the scope of works.
Invertebrate Solutions (2020)	Level 1 fauna survey and Targeted Main's Assassin Spider survey	The level 1 fauna survey was undertaken between 20 and 21 December 2019. This survey included habitat assessment and opportunistic searches. A total of approximately 19 hours was spent searching 75 different sites at the turbines. The Main's Assassin Spider survey was undertaken in February 2019. Five plots (10 m x 10 m) with best available habitat, comprising dense *A. flexuosa*, were selected at each wind turbine. Approximately 15 minutes at each plot was spent bush beating onto a tray, totalling 75 minutes of searching at each turbine.	A total of 67 conservation significant vertebrate species were identified during the desktop review of database searches. Of these, six were identified as being likely or potentially occurring within the Proposal area. One of these species was recorded during the field surveys, *Isoodon fusciventer* (Southern Brown Bandicoot or Quenda) (Priority 4). No species listed under the BC Act or EPBC Act were recorded during the field surveys. Only a small area of potential habitat was identified for the Main's Assassin Spider, but no individuals were recorded. Most of the Proposal area did not support the required habitat characteristics (elevated leaf-litter).	No survey knowledge gaps were identified within the scope of works. Accuracy of government databases at a local scale can lead to errors and anomalies of species identified for a localised area.
BDS (2019)	Reconnaissance Flora, Vegetation and Level 1 Fauna Survey Wind Turbine 1, Albany Windfarm	A desktop assessment was undertaken to identify potential flora species. After the assessment targeted field surveys were undertaken for 13 species of Declared Rare Flora, 47 Priority listed species, one presumed extinct species and five TECs/PECs. A desktop assessment was conducted for potential fauna species. A level 1 fauna survey was conducted through	There is potential habitat for 15 of the listed species identified in the desktop assessment in the survey area (Appendix F). Suitable habitat for orchid species, however none have been identified previously at surveyed site. Vegetation community at WTG01 is a mosaic of Peppermint Low Forest with strands of *Eucalyptus megacarpa* in the	Vegetation looked stressed, likely due to a lack of rain, this made it difficult to determine if, and which orchid species were present.

Author and year	Title	Methods	Key findings	Survey gaps identified
		sampling and reconnaissance survey to produce habitat maps and descriptions. Additionally, a targeted survey was undertaken for the Main's Assassin Spider.	gullies south of the turbine. None of the potential PECs or TECs were identified during the field survey. There is potentially suitable habitat for the Main's Assassin Spider at WTG01 but no individuals were recorded.	This is not considered a risk due to the subsequent surveys undertaken in November 2019 (ELA 2020).
BDS (2018)	Level 1 Flora, Fauna and Vegetation Survey Turbines 3 and 11 Albany Windfarm	A desktop assessment was undertaken to review threatened flora, fauna and ecological communities. A detailed flora and vegetation survey was conducted through relevés sampling in vegetation types, targeted flora surveys (13 species of Declared Rare flora, 43 Priority listed species, one presumed extinct species and five TECs and PECs) and mapping of boundaries of vegetation types, and opportunistic flora identification. A level 1 fauna survey was conducted across the survey area through low intensity sampling and reconnaissance surveys. Habitat maps and descriptions were produced. A targeted survey for the Main's Assassin Spider was also undertaken.	The vegetation community at WTG03 is predominantly Coastal Limestone Heath with patches of Coastal Heath. At WTG11 the predominant vegetation community is Peppermint Low Forest and Coastal Heath. Targeted surveys determined there is potential habitat for 18 of the listed species (refer to report for the full list). *Thomasia quercifolia* was recorded at WTG03 and WTG09 individuals within the survey area. No PECs or TECs were identified during field surveys. No individual Main's Assassin Spiders were identified at WTG03 or WTG11.	No survey gaps were identified. Accuracy of government databases at a localised scale can provide information that is incorrect due to local extinctions or no habitat present.
Rix & Harvey (2009)	Populations of Main's Assassin Spider (*Austrarchaea mainae*) near Albany	Survey was conducted over 14 days during March to May 2008 between William Bay National Park and Two People's Bay Nature Reserve. Collecting 40 specimens at 25 different sites across a linear distance of 70 km. Specimens were identified through molecular sequencing techniques.	Specimens were recorded at three sites within the Proposal area (WTG02, WTG03 and WTG05). Majority of the specimens were collected from 16 sites on reserve land west, east and north of the Proposal.	No survey gaps were identified.

4.2 Flora and vegetation

4.2.1 Regional vegetation

The high rainfall in the region, paired with the low evaporation rates, allow for the growth of high forests and wetlands which is unique to Western Australia. Many of the plants are endemic including the plant groups Myrtaceae, Rutaceae, Proteaceae, Papillionaceae, Restionaceae, Stylidiaceae and Sterculiaceae.

The Warren subregion is characterised by 'Jarrah-Marri forest on laterite gravels in the west with Bullich and Blackbutt in valleys grading to Wandoo, Marri woodlands on clayey soils in the east, low Banksia woodlands occur throughout the subregion on localised sand sheets, heath found on granite outcroppings particularly in northern and eastern extents' (Williams and Mitchell 2001).

Vegetation types and extents have been mapped on a regional scale and categorised into broad vegetation associations (Beard 1979). On a regional scale, a single vegetation association occurs within the Proposal area; *Torrindup 49* (shrublands and mixed heath). Approximately 97.39% of pre-European extent of the *Torrindup 49* association remains within the Warren subregion (Government of Western Australia 2020).

The Albany Regional Vegetation Survey (ARVS) mapped the region's vegetation into different communities. Three vegetation communities defined by the ARVS, including Peppermint Low Forest, Coastal Heath and Coastal Limestone Heath, are closely aligned to vegetation communities recorded in the Proposal area. Table 4-2 summarises the current extent of these three vegetation communities within a regional context.

Table 4-2: Extents of vegetation communities outside of the Proposal area

Vegetation community	Current extent within the ARVS area (ha)	Current extent in IUCN I-IV Reserves (ha)	Current extent in other Crown Reserves (ha)
Peppermint Low Forest (ARVS)	1232	281 (22.8%)	619 (50.2%)
Coastal Heath (ARVS)	3737	830 (22.2%)	2391 (64%)
Coastal Limestone Heath (ARVS)	1849	740 (40%)	782 (42.3%)

4.2.2 Flora and vegetation of the Proposal area

4.2.2.1 Vegetation

A total of five vegetation communities were mapped within the Proposal area. These are identified in Table 4-3 below.

Approximately 10.5% of the Proposal area comprises rehabilitated vegetation, following historical clearing for the initial construction of the wind farm. Some of the rehabilitated areas do not resemble any vegetation communities defined by the ARVS. *Eucalyptus angulosa* (Ridge-fruited Mallee) and *A. flexuosa* have become established in disturbed areas, including next to access tracks, forming a dense canopy over sparse shrubs and sedges (vegetation community *E. angulosa* Low Mallee Woodland; ELA 2020).

Some rehabilitated areas only support understorey vegetation with no canopy and with low to high densities of weeds (ELA 2020). A further 21.8% of the Proposal area (3.58 ha) is already cleared.

Table 4-3: Vegetation communities within the Proposal area

Vegetation community	Description
Peppermint Low Forest (ARVS)	A dense canopy of *A. flexuosa*, varying from a closed heath on exposed slopes to a low closed forest in swales with shrub species often sub or co-dominant in exposed areas.
Coastal Heath (ARVS)	Mixed open heath above a low open heath and a mixed sedgeland with *Cyathochaeta equitans* prominent and clumps of *A. flexuosa*.
Coastal Limestone Heath (ARVS)	Heterogeneous group that is restricted to yellow-grey and light grey alkaline sands and limestone soils of the coastal fringe
E. angulosa Low Mallee Woodland (ELA)	*Eucalyptus angulosa* low mallee woodland and *A. flexuosa* woodland over *Melaleuca diosmifolia, Hibbertia furfuracea* and *Olearia axillaris* tall sparse heathland over *Lepidosperma squamatum, Lepidosperma gladiatum* (Coastal Sword-sedge) and *Desmocladus flexuosus* low sparse sedgeland. This community represents areas that have been historically cleared and vegetation has re-established.
Rehabilitation (ELA)	Rehabilitated areas with inadequate flora structure and composition to define due to historical clearing of the area.
Cleared	Areas devoid of vegetation including paths, tracks.

Vegetation communities Peppermint Low Forest, Coastal Heath and Coastal Limestone Heath occur as a mosaic of two or all three of these communities through the Proposal area. Appendix B details the extent of the vegetation communities and the mosaic patterns at each wind turbine within the Proposal area. The mosaics of vegetation communities recorded within the Proposal area are as follows:

- Coastal Heath, Coast Limestone Heath and Peppermint Low Forest;
- Coastal Heath and Peppermint Low Forest;
- Coast Limestone Heath and Coastal Heath;
- Coastal Limestone Hearth and Peppermint Low Forest; and
- Peppermint Low Forest and *E. angulosa* Low Mallee Woodland.

Vegetation communities and mosaic compilations have previously been mapped by BDS and ELA across all 18 turbines within the Proposal area. Detailed mapping of the vegetation present within the Proposal area is provided within the reports presented in Appendix C, Appendix F and Appendix G.

4.2.2.2 Vegetation condition

Vegetation condition within the Proposal area is variable, but the majority of vegetation is rated Very Good to Excellent. The condition of vegetation within the Proposal area is provided in Table 4-4 below.

Table 4-4 Vegetation condition within the Proposal area

Vegetation condition	Extent in Proposal area (ha)
Completely degraded	3.58 (21.8%)
Degraded	0.13 (0.8%)
Good	0.35 (2.2%)
Very Good	1.31 (7.9%)
Excellent	6.08 (37.1%)

Vegetation condition	Extent in Proposal area (ha)
Pristine	4.92 (30.0%)

*Historically cleared areas are included

Vegetation conditions were based upon the descriptions in the EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016). For further detail regarding the vegetation conditions within the Proposal area, refer to Appendix C.

4.2.3 Flora

A total of 155 taxa from 106 genera and 49 families were recorded within or in close proximity to the Proposal area from previous assessments and surveys (Table 4-1). The most commonly occurring families are Proteaceae, Fabaceae, Asteraceae, Poaceae, Cyperaceae, Myrtaceae, Ericaceae and Dilleniaceae. The most common genera were: *Banksia*, *Hibbertia, Melaleuca, Acacia, Adenanthos*, *Hakea* and *Leucopogon*.

4.2.3.1 Threatened and Priority species

A likelihood of occurrence assessment for conservation listed flora species identified a total of 12 species with the potential to occur within the Proposal area (Table 4-5) (ELA 2020). The remaining 45 conservation listed species were determined to be unlikely to occur within the Proposal area, based on the location of previous records and known habitat present (Appendix C).

Table 4-5: Conservation significant flora species with potential to occur in the Proposal area

Scientific name	Common name	EPBC	BC	Likelihood of Occurrence
Calectasia cyanea	Blue Tinsel Lily	CR	S1	**Potential** – Suitable habitat Nearest record approximately 0.3 km to the east of the Proposal area
Chordifex abortivus	Manypeaks rush	EN	S3	**Potential** – Suitable habitat Nearest record approximately >10 km from the Proposal area
Caladenia evanescens	Semaphore Spider Orchid		P1	**Potential** – Suitable habitat Nearest record approximately >10 km from the Proposal area
Synaphea incurva			P1	**Potential** – Suitable habitat Nearest record approximately 7.5 km to the north-west of the Proposal area
Conospermum quadripetalum			P2	**Potential** – Suitable habitat Nearest record approximately 7.1 km to the east of the Proposal area
Gyrostemon thesioides			P2	**Potential** – Suitable habitat Nearest record approximately 8.3 km to the north-east of the Proposal area
Thelymitra variegata			P2	**Potential** – Suitable habitat Nearest record approximately 8.3 km to the north-east of the Proposal area
Austrostipa mundula			P3	**Potential** – Suitable habitat

Scientific name	Common name	EPBC	BC	Likelihood of Occurrence
				Nearest record approximately 6.5 km to the east of the Proposal area
Adenanthos x *cunninghamii*			P4	**Species detected within Proposal area**
Corybas limpidus	Crystal Helmet Orchid		P4	**Potential** – Suitable habitat One record approximately 9.3 km to the north-east of the Proposal area however the attributes of this point describe the location as Ledge Beach, Albany. Ledge Beach is 18.5 km east north-east of the Proposal area.
Gahnia sclerioides			P4	**Potential** – Suitable habitat Nearest record approximately 6.3 km to the east of the Proposal area
Kunzea pauciflora	Mt Melville Kunzea		P4	**Potential** – Suitable habitat Nearest record approximately 8.3 km to the north-east of the Proposal area
Thomasia quercifolia			P4	**Species detected within Proposal area**
Thomasia solanacea			P4	**Potential** – Suitable habitat Nearest record approximately 5.3 km to the east of the Proposal area

No flora species listed as Threatened under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) were recorded within the Proposal area during any of the previous flora and vegetation survey (BDS 2018, BDS 2019, ELA 2020). Two Priority four (P4) species, including *Adenanthos* x *cunninghamii* and *Thomasia quercifolia*, listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were recorded (Table 4-6).

Two individuals of *A.* x *cunninghamii* were recorded at WTG09. An additional two plants were recorded just outside of the Proposal area. The records of *T. quercifolia* were recorded around WTG03, WTG08 and WTG09. They were found in large populations and it was difficult to distinguish individual plants amongst the clumps. The populations also extended outside of the survey boundary. Occurrences located outside of the Proposal area were not included in this population estimation. No priority species were recorded at the remaining turbines.

Table 4-6: Priority species recorded within the Proposal area

Species	BC	Habitat	Number of individuals within the Proposal area
Adenanthos x cunninghamii	P4	Predominantly recorded within Coastal Limestone Heath on mid-slopes	2
Thomasia quercifolia	P4	Recorded on shallow soils limestone in Coastal Limestone Heath. Large populations of *T. quercifolia* were recorded and individuals were difficult to distinguish from clumps	500-1000

4.2.3.2 Introduced species

A total of 22 introduced species were identified within the Proposal area (Table 4-7) (ELA 2020). None of these species are listed as Weeds of National Significance or Declared under the *Biosecurity and Agriculture Management Act 2007*.

Table 4-7: Weed species recorded within the Proposal area

Scientific name	Common name	Ecological impact	Invasiveness
Avena barbata	Slender Wild Oat	Medium	Moderate
Bartsia trixago		Unknown	Rapid
Brassica tournefortii	Asian Mustard, Pale Cabbage, African Mustard and Sahara Mustard	Unknown	Unknown
Briza maxima	Blowfly Grass	Low	Moderate
Centaurium erythraea	Common Centaury and European Centaury	Unknown	Rapid
Carpobrotus aequilaterus	Sea Fig	Unknown	Moderate
Carpobrotus edulis	Hottentot-fig, Ice Plant, Highway Ice Plant and Pigface	Unknown	Moderate
Catapodium rigidum		High	Moderate
Conyza bonariensis		Unknown	Rapid
Dittrichia viscosa	False Yellowhead, Woody Fleabane, Sticky Fleabane and Yellow Fleabane	Unknown	Rapid
Eragrostis curvula	Weeping Lovegrass	High	Moderate
Hypochaeris glabra	Smooth Cat's Ear	Unknown	Rapid
Lagurus ovatus	Hare's Tail, Hare's Tail Grass or Bunnytail	Low	Rapid
Lotus angustissimus		Unknown	Unknown
Lysimachia arvensis	Common Broomrape	Unknown	Rapid
Orobanche minor		Unknown	Rapid
Pelargonium capitatum	Rose Geranium	Medium	Rapid
Plantago lanceolata	Ribwort Plantain, Narrowleaf Plantain, English Plantain, Ribleaf and Lamb's Tongue	Medium	Unknown
Psoralea pinnata	Blue Pea	High	Moderate
Senecio elegans	Redpurple Ragwort, Purple Groundsel, Wild Cineraria and Purple Ragwort	Unknown	Rapid
Sonchus oleraceus	Sowthistle	Unknown	Rapid
Zantedeschia aethiopica	Calla Lily or Arum Lily	High	Moderate

The weeds within the Proposal area were dense around the fringes of cleared areas and tracks, within rehabilitated areas and were almost entirely absent in established vegetation.

4.3 Terrestrial Fauna

4.3.1 Desktop assessment

BDS undertook a Level 1 fauna survey at WTG01, WTG03 and WTG11 within the Proposal area in November 2018 and January 2019 (BDS 2018, BDS 2019). Invertebrate Solutions undertook a Level 1 vertebrate fauna survey within the Proposal area at the remaining 15 turbines in December 2019 (Invertebrate Solutions 2020a). During the desktop assessment, a total of 67 conservation significant vertebrate fauna species were identified as potentially occurring.

A search of the DAWE Protected Matters Search Tool (PMST) was conducted as part of the desktop assessment. The PMST is the Australian Government's publicly available database which provides information on the on likelihood of occurrence, ecology, distribution and threats of Matters of National Environmental Significance (MNES). The information provided by a PMST search is only indicative and should be used in conjunction with other databases and should be validated by field survey.

The EPBC PMST is not entirely based upon points but broader information which can be inaccurate at local scales. Consequently, PMST results can include species which do not occur in a specific area for reasons such as the required habitat is not available, or the species is locally extinct. Reasons for species being omitted from further discussion in this Proposal are explained below.

Waterbirds that were identified during the initial database search were omitted due to habitat requirements. Although the coast is located 300 m from the Proposal area, the required wetland habitat is not present. There were multiple seabirds and migratory birds also identified in this initial search, including Albatross, Petrels and Shearwaters which are all oceanic birds. These species feed at sea, generally nest on islands and are rarely seen. Due to these characteristics and the lack of suitable habitat present within the Proposal area, these birds were also omitted from further discussion.

Other species that were omitted include multiple species identified during the database search that are now locally extinct, an example of this is the Dibbler (*Parantechinus apicalis*). Alternatively, if a species listed under the DBCA had only two or less records within 7 km of the Proposal area, they were also omitted. An exception to this was the *Notamacropus irma* (Western Bush Wallaby) due to the proximity of the record to the Proposal area (within 500 m).

Of the initial 67 species identified during the database search and after omitting several species due to the reasons discussed above, a total of 11 conservation significant vertebrate fauna species were further considered during the likelihood assessment, in addition to one invertebrate species (Table 4-8).

Table 4-8: Likelihood of occurrence of Threatened and Priority fauna species within the Proposal area

Scientific name	Common name	EPBC Act	BC Act	DBCA	Likelihood
Apus pacificus	Fork-tailed Swift		Migratory		**Unlikely**
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	Vulnerable	Vulnerable		**Likely**
Calyptorhynchus baudini	Baudin's Cockatoo	Endangered	Endangered		**Likely**
Calyptorhynchus latirostris	Carnaby's Cockatoo	Endangered	Endangered		**Likely**
Dasyornis longirotris	Western Bristlebird	Endangered	Endangered		**Unlikely**
Haliaeetus leucogaster	White-bellied Sea Eagle	Marine			**Unlikely**

Scientific name	Common name	EPBC Act	BC Act	DBCA	Likelihood
Merops ornatus	Rainbow Bee-eater	Marine			**Unlikely**
Pandion haliaetus	Osprey	Migratory			**Unlikely**
Notamacropus Irma	Western Bush Wallaby			P4	**Potential**
Isoodon fusciventer	Southern Brown Bandicoot			P4	**Recorded**
Pseudocheirus occidentalis	Western Ringtail Possum	Critically Endangered	Critically Endangered		**Potential**
Zehyrarchaea mainae	Main's Assassin Spider		Vulnerable		**Potential**

4.3.2 Fauna values of the Proposal area

The initial desktop and database searches identified 169 vertebrate species within 7 km of the Proposal area (Appendix D). This was represented by 156 bird species, eight mammals and seven reptiles.

Of the conservation significant species identified above, only the species considered as potentially or likely to occur, or already recorded within the Proposal area are considered further.

One species of conservation significance was recorded during the recent fauna survey, *Isoodon fusciventer* (Southern Brown Bandicoot), three further species were identified as being likely and three as potentially occurring, (Appendix D). This assessment was based on the location of previous records, known habitat preferences and availability within the Proposal area and behavioural characteristics.

These species are described further below.

4.3.2.1 Forest Red-tailed Black Cockatoo - Likely occurring

Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo) is located throughout humid and subhumid habitats in south-west WA. Inhabiting dense *E. marginata*, *Eucalyptus diversicolor* (Karri) and *Corymbia calophylla* (Marri) forests which receive more than 600 mm rainfall annually. This species are monogamous and form nests in old matures trees with hollows which are between 6.5 to 33 m above the ground. Primary food resources for this species include *E. marginata* and *C. calophylla* fruit, but also *Eucalyptus gomphocephala* (Tuart) and *Eucalyptus pilularis* (Blackbutt), *Eucalyptus staeri* (Albany Blackbutt), *E. diversicolor*, *Allocasuarina fraseriana* (Sheoak), and *Persoonia longifolia* (Snottygobble) (Johnstone et al. 2013b; as cited in Invertebrate Solutions 2020a).

The Proposal area is located within the known distribution of the Forest Red-tailed Black Cockatoo and suitable foraging habitat is present within the surrounding and Proposal areas (in the form of *A. flexuosa* and *B. sessilis*). However, it is important to note the foraging habitat within the Proposal area does not consist of the species preferred food sources which are *E. marginata* and *C. calophylla*. Breeding habitat consists of large Eucalypt trees with hollows and these are not present within the Proposal area.

The DBCA threatened fauna database identified a total of six records of Forest Red-tailed Cockatoo within 7 km of the Proposal area, the closest of which is located approximately 4.2 km northwest. Consequently, this species is considered likely to occur within the Proposal area as intermittent foraging individuals only. No Forest Red-tailed Black Cockatoos, or evidence of foraging, were recorded during the 2019 Level 1 vertebrate survey (Invertebrates Solutions 2020a).

Given the amount of vegetation clearance proposed and the 'as required' nature of clearing works, the Proposal is considered to have little to no impact on this species locally or regionally.

4.3.2.2 Baudin's Cockatoo – Likely occurring

Calyptorhynchus baudini (Baudin's Cockatoo) occurs throughout the south-western corner of WA in humid and subhumid zones. They predominantly forage within Eucalypt forests and feed on *C. calophylla* seeds, flowers, nectar and buds. They also feed on seeds from other Eucalyptus, Banksia, Hakea and Pine species. This species of Cockatoo will forage at all levels of the forest (canopy to forest floor).

This species has been recorded using large, mostly vertical hollows of *E. diversicolor*, *C. colyphylla* and *Eucalyptus wandoo* (Wandoo) trees. The breeding biology of this species is largely unknown; however, it is likely they breed in monogamous pairs (Johnstone & Kirkby 2008; as cited in Invertebrate Solutions 2020a).

The DBCA threatened fauna database identified there being 57 records of the Baudin's Cockatoo within 7 km of the Proposal area which indicates this species is likely to occur.

Potential foraging habitat is present within the Proposal area; however, breeding habitat is not. The foraging habitat within the Proposal area consists of *A. flexuosa* and *B. sessilis* both of which are not the preferred food sources. No Baudin's Cockatoos or evidence of foraging were recorded within the Proposal area during the recent fauna surveys (Invertebrate Solutions 2020a).

Given the amount of vegetation clearance proposed and the 'as required' nature of clearing works, the Proposal is considered to have little to no impact on this species locally or regionally.

4.3.2.3 Carnaby's Cockatoo – Likely occurring

Calyptorhynchus latirostris (Carnaby's Cockatoo) is distributed through the south-west of WA. Foraging habitat includes Eucalyptus species such as *C. colyphylla*, *E. marginata*, *Eucalyptus patens* (Swan River Blackbutt), *Eucalyptus todtiana* (Coastal Blackbutt), *Eucalyptus caesia* (Caesia) and *Eucalyptus salmonophloia* (Salmon Gum) as well as Pine trees, Grevillea, Allocasuarina, and Hakea species. Carnaby's Cockatoos form monogamous pairs and nest within the hollows of smooth-barked Eucalyptus species (Johnstone & Kirkby 2011; as cited in Invertebrate Solutions 2020a).

The DBCA threatened fauna database identified a total of 92 records of the Carnaby's Cockatoo within 7 km of the Proposal area. Consequently, it is considered to likely occur within the Proposal area.

The field survey identified limited foraging habitat area and no breeding habitat for the Carnaby's Cockatoo within the Proposal area. The potential foraging area consists of *A. flexuosa* and *B. sessilis*, both of which are not the preferred foraging sources for Carnaby's Cockatoos. The preferred foraging species are *E. marginata* and *C. calophylla*. In addition, no Carnaby's Cockatoo were recorded during the recent fauna surveys (Invertebrate Solutions 2020a).

Given the amount of vegetation clearance proposed and the 'as required' nature of clearing works, the Proposal is considered to have little to no impact on this species locally or regionally.

4.3.2.4 Southern Brown Bandicoot - Recorded

The Southern Brown Bandicoot inhabits scrubby vegetation with a dense understorey up to about 1 m. It occurs from Guilderton southwards on the Swan Coastal Plain within *E. marginata* and *E. diversicolor* forests and east along the south coast to Cape Arid National Park within adjacent coastal vegetation (BDS 2019). The Southern Brown Bandicoot constructs nests on the ground, occasionally using the burrows created by other species. Foraging habitat includes adjacent forests and woodlands recently burnt and agricultural areas (pastures and crops). They are omnivorous and often feed on fruits, seeds and insects near wetlands with dense vegetation. Foraging behaviour includes digging in leaf-litter and soil to find insects, fungi, plant root nodules and bulbs (Woinarski *et al.* 2014).

Suitable habitat is located within the Proposal area and diggings were observed at WTG01, WTG04, WTG06 and WTG11 (BDS 2018, BDS 2019, Invertebrate Solutions 2020a). In addition to these recent records, the DBCA Threatened fauna database has 28 records of the Southern Brown Bandicoot with 7 km of the Proposal area.

It is important to note that even though the Proposal area provides some potential habitat, the scale of vegetation clearing is very limited and will not fragment or isolate suitable habitat and is unlikely to impact the species locally or regionally.

4.3.2.5 Western Bush Wallaby – Potentially occurring

Little is known about the Western Bush Wallaby habitat preferences, particularly preferred food resources. They inhabit a wide range of habitats and appear to prefer open grass areas without a dense understorey.

The DBCA threatened fauna database identified a single record of Western Bush Wallaby within 500 m of the Proposal area. Consequently, it is considered to have potential to occur. No Western Bush Wallaby were recorded during the recent fauna survey (Invertebrate Solutions 2020a) and this species requires a substantially larger home range than what is within the Proposal area.

Given the amount of vegetation clearance, proposed and the 'as required' nature of clearing works, the Proposal is considered to have little to no impact on this species locally or regionally.

4.3.2.6 Western Ringtail Possum – Potentially occurring

Pseudocheirus occidentalis (Western Ringtail Possum) was historically distributed across the south-west corner of WA, however, recently this range has been declining due to clearing and fragmentation of habitat. The highest population densities are now located around the Bunbury to Dunsborough coastal strip. The main component that forms suitable habitat for this species is *A. flexuosa* which can form a dominant woodland species or as an understorey component of taller Eucalyptus woodlands (Jones et al. 1994; as cited in Invertebrate Solutions 2020a). Other woodland species associated with the Western Ringtail Possum include *E. marginata*, *C. colyphylla*, *E. gomphocephala* and various Melaleuca species. The dominant food resource of the Western Ringtail Possum is *A. flexuosa* leaves.

The DBCA threatened fauna database identified 69 records of the Western Ringtail Possum within 7 km of the Proposal area. Consequently, this species is considered to potentially occur. The Proposal area does support some suitable habitat, scattered *Eucalyptus megacarpa* (Bullich) and *A. flexuosa*, however, there were this species was not identified in the recent fauna survey (Invertebrate Solutions 2020a).

Given the amount of vegetation clearance and the location of the populations with the highest densities, the Proposal is predicted to have little to no impact on this species locally or regionally.

4.3.2.7 Main's Assassin Spider – Potentially occurring

Zephyrarchaea mainae (Main's Assassin Spider) is known from the greater Albany region and occurs along the south coast of WA. This species has been recorded in sedges, *Empodisma gracilimum* (Curly Grass) and low shrubs in dense coastal or near coastal grove of *Agonis* sp. (Rix and Harvey 2012). The Main's Assassin Spider requires a specific microhabitat consisting of elevated leaf-litter layer. This microhabitat forms protected, shaded habitats that would otherwise be exposed.

The location of the turbines is predominantly located on geographic rises which exposes the landscape to strong winds from the west. Three records of the Main's Assassin Spider were recorded during the 2009 targeted field surveys (Rix & Harvey 2009). These records are from within gullies located between WTG02 and WTG04 providing protection from strong winds which enables the formation of the microhabitat and elevated leaf litter. Since then, the species has not been recorded within close proximity to or in the Proposal area, including from the most recent targeted survey conducted in December 2019.

The majority of sites surveyed in December 2019 were found to have large areas of *Agonis* sp. present but were mostly lacking the specific microhabitat required by *Z. mainae* which consists of an elevated leaf-litter layer (Invertebrate Solutions 2020).

4.4 Threatened and Priority Ecological Communities

No Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) have been identified as being present within the Proposal area (ELA 2020).

5. Assessment against the Ten Clearing Principles

An assessment of the proposed vegetation clearing of 12.81 ha against the Ten Clearing Principles contained in Schedule 5 of the EP Act is provided in Sections 5.1 to 5.10. A summary of this assessment is provided in Table 5-1 below.

Table 5-1: Summary of assessment against the ten clearing principles

Clearing Principle	Is not at variance	May be at variance
1. Native vegetation should not be cleared if it comprises a high level of biological diversity.	X	
2. Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	X	
3. Native vegetation should not be cleared if it includes, or is necessary for the continued existence of Rare flora.	X	
4. Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of a threatened ecological community (TEC).	X	
5. Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.	X	
6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	X	
7. Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.	X	
8. 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.	X	
9. 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.	X	
10. Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.	X	

5.1 Comprises high level of biological diversity

'Principle 1: Native vegetation should not be cleared if it comprises a high level of biological diversity.'

The vegetation communities described within the Proposal area are common throughout the wider Albany region and are not unique to the specific area. Of the 12.81 ha of native vegetation which could be subject to clearing, approximately 1.72 ha is rehabilitated vegetation, which has recovered following clearing for the initial construction of the wind farm in 2001. Rehabilitated vegetation demonstrates variable condition.

The vegetation within the Proposal area is not of unusually high biological diversity and the proposed clearing is not considered at variance with this Principle.

5.2 Potential impact to any significant habitat for fauna indigenous to Western Australia

'Principle 2: Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.'

Only one species of conservation significance, Southern Brown Bandicoot (P4) has been recorded in the Proposal area during recent surveys.

The Main's Assassin Spider has previously been recorded between WTG02 and WTG04 (outside of the Proposal area) during a 2009 targeted field surveys (Rix & Harvey 2009); however, the species has not been recorded in the Proposal area, despite targeted survey effort across multiple years. The previous records are located within gullies outside of the Proposal area where the habitat is protected from coastal winds. Subsequent surveys have identified the habitats present as of marginal value to the species (BDS 2018, 2019; Invertebrate Solutions 2020).

The most recent targeted survey for Main's Assassin Spider included approximately 19 hours spent actively searching 75 different sites at 15, of the 18 turbines undertaken by Dr Timothy Moulds (Invertebrates Solution). Given the comprehensive survey effort, and the ability to detect the species' presence year-round, the species was not recorded. The turbines are located on geographic rises in the landscape and exposed to strong winds, making them unsuitable habitat for the species (Invertebrate Solutions 2020). It is therefore considered that there is no potential for impact to the species and if the species was present within the Proposal area, it would have been detected during this targeted survey.

Potential foraging areas for the three species of Black Cockatoo was found within the Proposal area, however, no individuals or evidence of activity were recorded (BDS 2018, BDS 2019, Invertebrate Solutions 2020a). The potential foraging habitat identified does not include the preferred food sources which are *E. marginata* and *C. calophylla.* Even with potential foraging habitat being identified within the Proposal area it is unlikely to cause any adverse impacts due to the limited scale of clearing and the 'as required' basis in which clearing might occur. In a local or regional context, the Proposal is relatively minor and significant foraging areas adjacent and surrounding the area will remain undisturbed.

Given the lack of recent records of fauna of conservation significance and scale of vegetation clearing, the Proposal is not at variance with this Principle.

5.3 Potential impact to any rare flora

'Principle 3: Native vegetation should not be cleared if it includes or is necessary for the continued existence of Rare flora.'

No flora listed as Threatened under the EPBC Act or Priority under the BC Act were recorded within the Proposal area.

Due to the lack of any Threatened or Priority species of flora, the Proposal is not considered to be at variance with this Principle.

5.4 Potential of any threatened ecological communities

'Principle 4: Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of a threatened ecological community (TEC).'

There were no TECs or PECs identified within the Proposal area.

The Proposal is not at variance with this Principle.

5.5 Significance as a remnant of native vegetation in the area that has been extensively cleared

'Principle 5: Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.'

Five vegetation communities were identified within the Proposal area, in addition to mosaic representations of these. The extent of each vegetation community and mosaic to be cleared is identified in Table 5-2 below. A further breakdown of the extent of each vegetation community at each turbine is presented in 0.

Table 5-2: Extent of proposed vegetation clearing in the Proposal area (ha)

Vegetation community	Extent in proposal area (ha)
Mosaic: Coastal Heath, Coast Limestone Heath and Peppermint Low Forest	0.52
Mosaic: Coastal Heath and Peppermint Low Forest	7.40
Mosaic Coast Limestone Heath and Coastal Heath	0.33
Mosaic: Coastal Limestone Hearth and Peppermint Low Forest	0.85
Peppermint Low Forest	0.70
Coast Limestone Heath	0.25
E. angulosa Low Mallee Woodland	0.97
Rehabilitation	1.72
Tracks	0.07
Cleared	3.58
Total	16.39

Two vegetation associations, *E. angulosa* Low Mallee Woodland and Rehabilitation are both associated with previously cleared areas. The remaining three vegetation associations are not restricted to the Proposal area and are widely represented across the region (Table 4-3) (BDS 2018; BDS 2019; ARVS 2010; ELA 2020).

The Proposal is located within an area of largely intact coastal vegetation which spans much of the south coast of Western Australia, east of Frenchman Bay. Vegetation within the Proposal area will only be cleared as and when maintenance and repairs are required for each turbine. The total extent of native vegetation clearing at any one time will therefore be significantly less than 12.81 ha.

The Proposal area is not considered to be at variance with this Principle.

5.6 Impact on any watercourses and/or wetlands

'Principle 6: Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.'

There are no watercourses or wetlands located within the Proposal area. The closest is Lake Powell which is located 4 km north east. Given the distance of the Proposal area from the closest surface water feature and the nature of the Proposal, comprising limited native vegetation clearing, it is not likely there will be any impacts on watercourse and/or wetlands.

The Proposal is not considered to be at variance with this Principle.

5.7 Potential to cause appreciable land degradation

'Principle 7: Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.'

Vegetation within the Proposal area will only be cleared as and when maintenance and repairs are required for each turbine. The full extent of proposed vegetation clearing will not be fully completed at any one time. The total extent of clearing at any one time will therefore be significantly less than 12.81 ha.

The potential impacts of any clearing will be managed by undertaking standard avoidance and mitigation measures applicable such as rehabilitation of cleared areas once no longer required for maintenance and only clearing vegetation when required. Any cleared vegetation will be stockpiled and replaced to cleared areas upon completion of works, to minimise the extent of exposed surfaces which may become vulnerable to weed incursion. The spreading of cleared vegetation may also encourage rehabilitation.

The Proponent commits to implement targeted weed control along the clearing edge at the time of clearing works, to avoid and minimise potential spread of weeds into adjacent retained vegetation.

Any proposed clearing to be undertaken within the Proposal area, will be completed in accordance with appropriate hygiene measures to prevent the introduction of dieback to the area. Any vehicles and equipment brought into the area for the purposes of clearing or turbine maintenance, will be cleaned prior to entry to prevent the introduction of contaminated material.

The Proposal is not anticipated to cause any appreciable land degradation and is not considered at variance to this Principle.

5.8 Potential to impact on the environmental values of adjacent or nearby conservation areas

'Principle 8: 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.'

There are no conservation areas within or adjacent to the Proposal area. The nearest conservation areas to the Proposal are Tondirrup National Park (2.1 km southeast) and Lake Powell Nature Reserve (2.3 km northwest). It is therefore not anticipated that the Proposal will cause direct or indirect impacts on environmental values in any conservation area.

This Proposal is not considered to be at variance with this Principle.

5.9 Potential deterioration in the quality of surface or underground water

'Principle 9: 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.'

There are no watercourses or wetlands within the Proposal area. The closest water feature is Lake Powell located approximately 4 km to the north east. There is no opportunity for vegetation clearing within the Proposal area to result in deterioration in quality to Lake Powell.

The groundwater aquifers in proximity to the Proposal area are shown to be at a depth of 35 to 40 m below ground level and is noted to be a Priority 1 Public Drinking Water Source Area. The proposed vegetation clearance will not involve activities below the water table, nor is it likely to result in contamination or deterioration of the quality of groundwater in the vicinity.

The Proposal is not at variance with this Principle.

5.10 Potential of clearing to cause, or exacerbate, the incidence of flooding

'Principle 10: Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.'

The landscape features of the Proposal area would result in any surface water quickly infiltrating the groundwater aquifers, rather than flooding. These features include gently undulating plains sloping to the coast which are dominated by coastal dune systems, limestone headlands and cliffs or granite/gneiss headlands and hills. The predominant soil type within the Proposal area is sandy limestone which allow surface water to rapidly infiltrate the water table. The Proposal is not anticipated to significantly impact surface hydrology.

The Proposal is not considered at variance with this Principle.

6. Stakeholder consultation

The Proponent has historically undertaken consultation with the City of Albany prior to lodging previous clearance permits. These historic permits were granted for the initial construction of the wind farm and more recent maintenance and repair conducted on WTG03 and WTG11.

In April 2020, the Proponent consulted with the City of Albany on the Proposal and sought feedback regarding appropriate weed and dieback management actions, which have since been incorporated into this application. The Proponent is committed to ongoing consultation with the City of Albany in relation to future maintenance of the facility and will provide at a minimum of 10 working days notification to the City prior to the commencement of any clearing works.

References

BioDiverse Solutions (BDS) 2018, *Level 1 Flora, Fauna and Vegetation Survey Turbines 3 and 11 Albany Windfarm*. Report prepared for Eco Logical Australia.

BioDiverse Solutions (BDS) 2019, *Reconnaissance Flora, Vegetation and Level 1 Fauna Survey Wind Turbine 1, Albany Windfarm*. Report prepared for Eco Logical Australia.

Bureau of Meteorology (BOM) 2020, Climate Data Online: Little Grove (9766). Available: http://www.bom.gov.au/climate/data/?ref=ftr. Accessed December 2019.

Commonwealth of Australia 2001, *National Objectives and Targets for Biodiversity Conservation 2001–2005*. Commonwealth of Australia, Canberra.

Department of Conservation and Land Management ed. McKenzie, N.L, May, J.E, KcKenna, S. (DoCLM) 2020, *Bioregional Summary of the 2002 Biodiversity Audit for Western Australia*, Department of Conservation and Land Management.

Department of Agriculture, Water and the Environment (DAWE) 2019, *EPBC Act Protected Matters Report*. Australian Government, Canberra.

Department of Agriculture, Water and the Environment (DAWE) 2020, *Australia's bioregions (IBRA)*. Available: https://www.environment.gov.au/land/nrs/science/ibra.

Department of Environment Regulation (DER) 2014, *A guide to the assessment of applications to clear native vegetation Under Part V Division 2 of the Environmental Protection Act 1986*, Government of Western Australia, Perth.

Eco Logical Australia (ELA) 2020, *Memorandum: Flora and Vegetation survey – Albany Wind Farm*.

Environmental Protection Authority (EPA) (2016, *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment*. Government of Western Australia.

Government of Western Australia 2019, *Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report).* Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions.

Invertebrate Solutions 2020a, *Level 1 Vertebrate Fauna Survey for the Albany Wind Farm, Albany, Western Australia*. Report prepared for Eco Logical Australia.

Invertebrate Solutions 2020b, *Targeted Survey for Main's Assassin Spider (Zehyrarchaea mainae) for the Albany Wind Farm, Albany, Western Australia*. Report prepared for Eco Logical Australia.

Sandiford, E.M. and Barrett, S. 2010, *Albany Regional Vegetation Survey, Extent Type and Status.* Unpublished report prepared for the Department of Environment and Conservation, Western Australia

Shepherd, D.P, Beeston, G.R, and Hopkins, A.J.M. 2002, *Native Vegetation in Western Australia – Extent, Type and Status*. Resource Management Technical Report 249, Department of Agriculture, Western Australia.

Water and Rivers Commission 2001, *South Coast Water Reserve and Limeburners Creek Catchment Area Water Source Protection Plan: Albany Water Supply*. Water and Rivers Commission. Water Resource Protection Series No WRP 44.

Williams, K, Mitchell, D. 2001, *Warren (WAR) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*. Department of Conservation and Land Management.

Woinarski, J.C.Z., Burbidge, A.A. & Harrison, P.L. 2014, *The action plan for Australian Mammals 2012*. CSIRO Publishing.

Appendix A Proposed clearing areas

Turbine number	Area proposed to be cleared (ha)
WTG01	0.70
WTG02	0.66
WTG03	0.33
WTG04	0.75
WTG05	0.61
WTG06	0.81
WTG07	0.86
WTG08	0.85
WTG09	0.69
WTG10	0.59
WTG11	0.67
WTG12	0.82
WTG13	0.79
WTG14	0.76
WTG15	0.66
WTG16	0.71
WTG17	0.92
WTG18	0.63
Total	**12.81**

Appendix B Vegetation communities and extent within the Proposal area

Turbine	CH, CLH & PLF	CH & PLF	CLH	CLH & PLF	Ea	PLF	CLH & CH	Rehabilitation	Cleared	Tracks	Total
WTG01						0.70 (83.48%)			0.14 (16.52%)		0.84
WTG02		0.41 (53.64%)		0.13 (16.79%)	0.09 (11.87%)			0.03 (4.11%)	0.10 (12.56%)	0.01 (1.03%)	0.76
WTG03							0.33 (61.11%)		0.21 (38.87%)		0.54
WTG04		0.39 (41.89%)		0.07 (7.51%)	0.14 (15.20%)			0.14 (15.42%)	0.19 (19.98%)		0.93
WTG05		0.45 (58.76%)			0.13 (17.50%)			0.01 (1.83%)	0.15 (19.82%)	0.02 (2.09%)	0.76
WTG06		0.59 (62.69%)			0.17 (18.12%)			0.05 (5.67%)	0.13 (13.52%)		0.94
WTG07		0.46 (43.53%)	0.25 (23.69%)		0.08 (7.87%)			0.04 (4.08%)	0.20 (18.59%)	0.02 (2.23%)	1.05
WTG08		0.36 (34.25%)		0.45 (42.69%)				0.03 (2.92%)	0.21 (20.14%)		1.06
WTG09		0.55 (63.98%)			0.12 (14.25%)			0.02 (2.52%)	0.17 (19.25%)		0.86
WTG10	0.34 (43.44%)	0.12 (15.62%)			0.11 (13.60%)			0.02 (2.21%)	0.20 (25.12%)		0.79
WTG11		0.67 (100%)									0.67
WTG12		0.65 (66.62%)			0.08 (8.43%)			0.09 (9.22%)	0.15 (15.72%)		0.97
WTG13		0.61 (55.88%)						0.17 (15.64%)	0.30 (27.56%)	0.01 (0.92%)	1.09
WTG14	0.11 (10.42%)	0.46 (44.96%)						0.19 (18.50%)	0.26 (25.82%)	0.00 (0.30%)	1.02
WTG15		0.39 (40.80%)						0.27 (28.81%)	0.29 (30.40%)		0.95
WTG16	0.08 (7.43%)	0.38 (37.70%)			0.04 (3.71%)			0.20 (19.74%)	0.31 (30.09%)	0.01 (1.32%)	1.02
WTG17		0.52 (41.64%)		0.20 (15.77%)				0.21 (16.85%)	0.32 (25.74%)		1.24
WTG18		0.40 (44.43%)						0.23 (25.21%)	0.27 (30.36%)		0.90
Total	**0.52 (3.20%)**	**7.40 (45.14%)**	**0.25 (1.52%)**	**0.85 (5.16%)**	**0.97 (5.90%)**	**0.7 (4.28%)**	**0.33 (2.00%)**	**1.72 (10.48%)**	**3.58 (21.88%)**	**0.07 (0.45%)**	**16.39**

CLH – Coastal Limestone Heath; CH – Coastal Heath; PLF – Peppermint Low Forest; Ea – *Eucalyptus angulosa low Mallee Woodland*