



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

<b>Purpose Permit number:</b>	CPS 9305/1
<b>Permit Holder:</b>	SE Campbell Development Pty Ltd
<b>Duration of Permit:</b>	From 15 April 2024 to 15 April 2039

### ADVICE NOTE

#### Monetary contribution to the Offsets Fund

The monetary contribution to the Offsets Fund referred to in condition 8 of this permit is intended to contribute towards the purchase, and conservation in perpetuity of at least 18.97 hectares of *native vegetation* that comprises the Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) Threatened Ecological Community (TEC) in Very Good or better condition and at least 15.61 hectares of *native vegetation* in a Very Good or better (Keighery, 1994) condition that provides significant habitat for forest red-tailed black cockatoo and at least 13.40 hectares of *native vegetation* in a Very Good or better (Keighery, 1994) condition that provides significant habitat for Baudin's cockatoo and Carnaby's cockatoo on the Swan Coastal Plain.

#### Revegetation and rehabilitation offset

The Project Revegetation Plan referred to in condition 9 of this permit is intended to facilitate the *revegetation* and *rehabilitation* of a total of 6.7 hectares of *native vegetation* within Lot 0 on Diagram 685, Bengier that comprises 6.7 hectares of significant foraging habitat for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), and 5.42 hectares of significant foraging habitat for Carnaby's cockatoo (*Zanda latirostris*) and Baudin's cockatoo (*Zanda baudinii*) on the Swan Coastal Plain.

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 an overhead transmission line and associated infrastructure.

#### **2. Land on which clearing is to be done**

Lot 0 on Diagram 685  
 Lot 2 on Diagram 73742  
 Lot 254 on Deposited Plan 416516  
 Lot 255 on Deposited Plan 416516

Lot 41 on Plan 17392  
 Lot 5531 on Deposited Plan 216969 (Crown Reserve 22762)  
 Lot 5409 on Plan 13831 (Crown Reserve 38137)  
 Lot 94 on Plan 21621  
 Devlin Road Reserve (PIN 1352618)  
 Wellesley Road North Road Reserve (PIN 11600326)  
 Bernbrooke Place Road Reserve (PIN 1194584)

**3. Clearing authorised**

The permit holder must not clear more than 4.53 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

**4. Period during which clearing is authorised**

The permit holder must not clear any *native vegetation* after 15 April 2029.

**PART II – MANAGEMENT CONDITIONS**

**5. 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.

**6. 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.

**7. Directional clearing**

The permit holder must:

- (a) conduct clearing activities in a slow, progressive manner towards adjacent *native vegetation*; and
- (b) allow reasonable time for fauna present within the area being cleared to move into adjacent *native vegetation* ahead of the clearing activity.

## 8. Offset- monetary contributions to the Offsets Fund

Prior to undertaking any clearing authorized under this permit and no later than 15 April 2025, the permit holder must provide documentary evidence to the *CEO* that funding of \$266,718.20 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining *native vegetation* as an environmental offset for the *clearing* activities authorised under this permit.

## 9. Offset – revegetation and rehabilitation requirements

Within 12 months of the commencement of clearing and no later than 15 April 2026 at an *optimal time*, the permit holder must implement and adhere to the *Revegetation plan*, including but not limited to the following actions:

- (a) Commence *revegetation* and *rehabilitation* of 6.7 hectares within the areas crosshatched red in Figure 2 of Schedule 1 by:
  - (i) Undertake *weed* control of the offset site to remove existing pasture and *weeds*;
  - (ii) Deliberately *planting native vegetation* that will result in 6.7 hectares of significant foraging habitat for forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), and 5.42 hectares of significant foraging habitat for Carnaby’s cockatoo (*Zanda latirostris*) and Baudin’s cockatoo (*Zanda baudinii*) on the Swan Coastal Plain; and
  - (iii) Ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.
- (b) Rip the offset site to remove any areas of compaction or other obstruction that could prevent root penetration of seedlings.
- (c) Establish a minimum of three 10 x 10 metre quadrat monitoring sites across the offset site and *reference site*.
- (d) Fence the offset site.
- (e) Undertake weed control activities on an ‘as needs’ basis.
- (f) Achieve the Completion Criteria, outlined in Table 1 of Schedule 2 (Completion Criteria) of this permit, after the 5 year monitoring period for areas *revegetated* and *rehabilitated* under this permit.
- (g) Undertake *remedial action* for areas in the offset site where monitoring indicated that *revegetation* has not met the Completion Criteria, outlined in Table 1 of Schedule 2 of this permit, including:
  - (i) *revegetate* the area by deliberately *planting native vegetation* that will result in the minimum target set out in the Completion Criteria and ensuring only *local provenance* seeds and propagating material are used;
  - (ii) undertake further *weed* control activities;
  - (iii) annual monitoring by an *environmental specialist* of the offset site, until the Completion Criteria, outlined in Table 1 of Schedule 2 of this permit, are met; and
  - (iv) where an *environmental specialist* has determined that the completion criteria, outlined in Table 1 of Schedule 2 (Completion Criteria) has been met, that report is to be provided to the *CEO*.

## **PART III - RECORD KEEPING AND REPORTING**

### **10. 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	(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 GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the direction of clearing; (e) the size of the area cleared (in hectares); (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and (g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6.
2.	In relation to the <i>revegetation</i> and <i>rehabilitation</i> of areas pursuant to condition 9.	(a) A description of the <i>revegetation</i> and <i>rehabilitation</i> activities undertaken; (b) The size of the area <i>revegetated</i> and <i>rehabilitated</i> ; (c) The date/s on which the <i>revegetation</i> and <i>rehabilitation</i> was undertaken; (d) The boundaries of the area <i>revegetated</i> and <i>rehabilitated</i> , recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (e) any remediation works undertaken; (f) the date completion criteria are considered to be met; and (g) any other actions taken in accordance with condition 9.

### **11. Reporting**

- (a) The permit holder must provide to the CEO, on or before 30 June of each calendar year, a written report conditioning:
- (i) the records required to be kept under condition 9; and
  - (ii) records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding calendar year.

- (b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken must be provided to the *CEO* on or before 30 June of each calendar year.
- (c) The permit holder must provide to the *CEO*, no later than 90 days prior to the expiry date of the permit, a written report of records required under condition 10, where these records have not already been provided under condition 11(a).

## DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

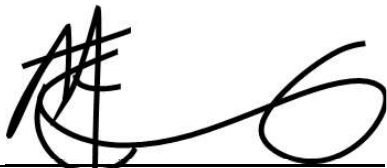
**Table 2: Definitions**

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.
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.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of two (2) years' work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the <i>CEO</i> as a suitable environmental specialist.
fill	means material used to increase the ground level, or to fill a depression.
local provenance	local provenance means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
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.
optimal time	means the period from April to July for undertaking <i>planting</i> and <i>direct seeding</i>
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
reference sites	Means the site in Figure 3 of the <i>Revegetation plan</i> at Lot 1 on Plan 6508, Bengier
regenerate / regenerated / regeneration	means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing mulch.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.

Term	Definition
remedial action/s	means any activity that is required to ensure successful reestablishment of vegetation to its pre-clearing composition, structure and density, and may include a combination of soil treatments and <i>revegetation</i> .
revegetate / vegetated / revegetation	means the re-establishment of a cover of <i>local provenance</i> native vegetation in an area using methods such as natural <i>regeneration</i> , <i>direct seeding</i> and/or <i>planting</i> , so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
Revegetation plan	Means the plan developed by the permit holder for the <i>revegetation</i> and <i>rehabilitation</i> of a site in accordance with condition 9 of this Permit: “ <i>Benger Solar Farm Transmission Line Offset Revegetation Plan Prepared for South Energy Pty Ltd V3.0 (Cape Life Environmental Services, 2023)</i> ”.
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.

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**END OF CONDITIONS**



Mathew Gannaway  
 MANAGER  
 NATIVE VEGETATION REGULATION

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

22 March 2024

# Schedule 1

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

## Plan 9305/1

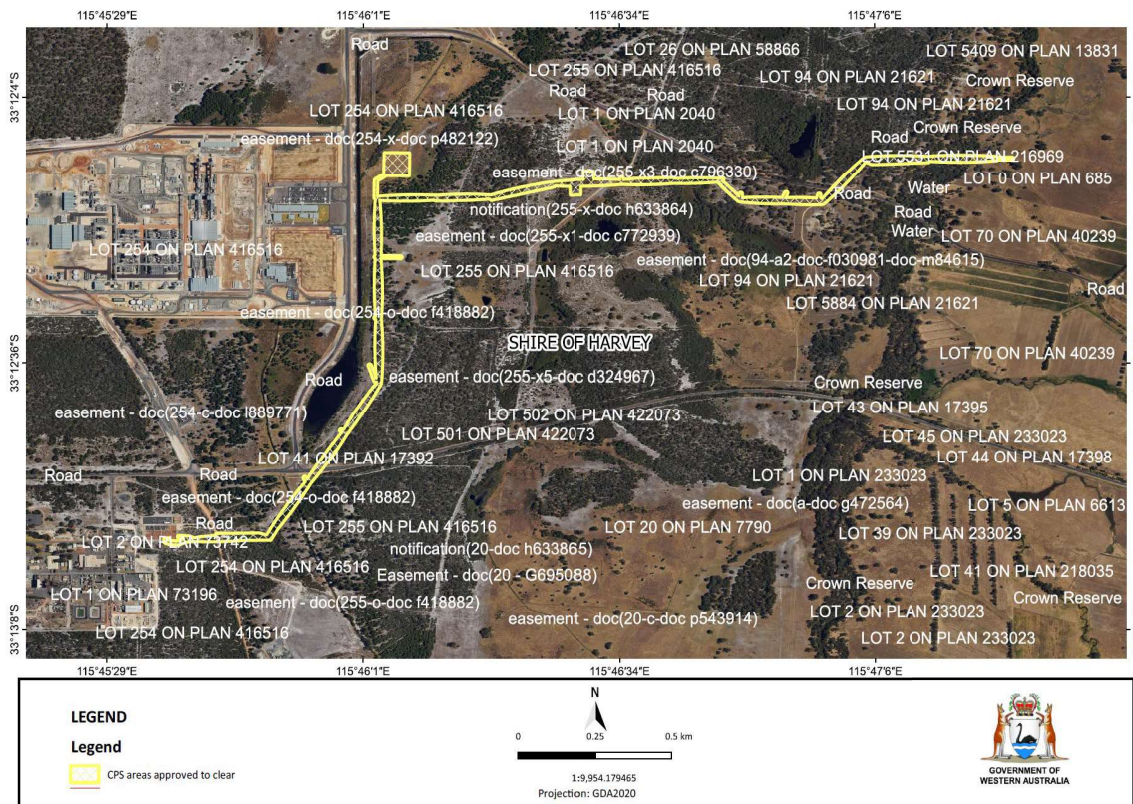
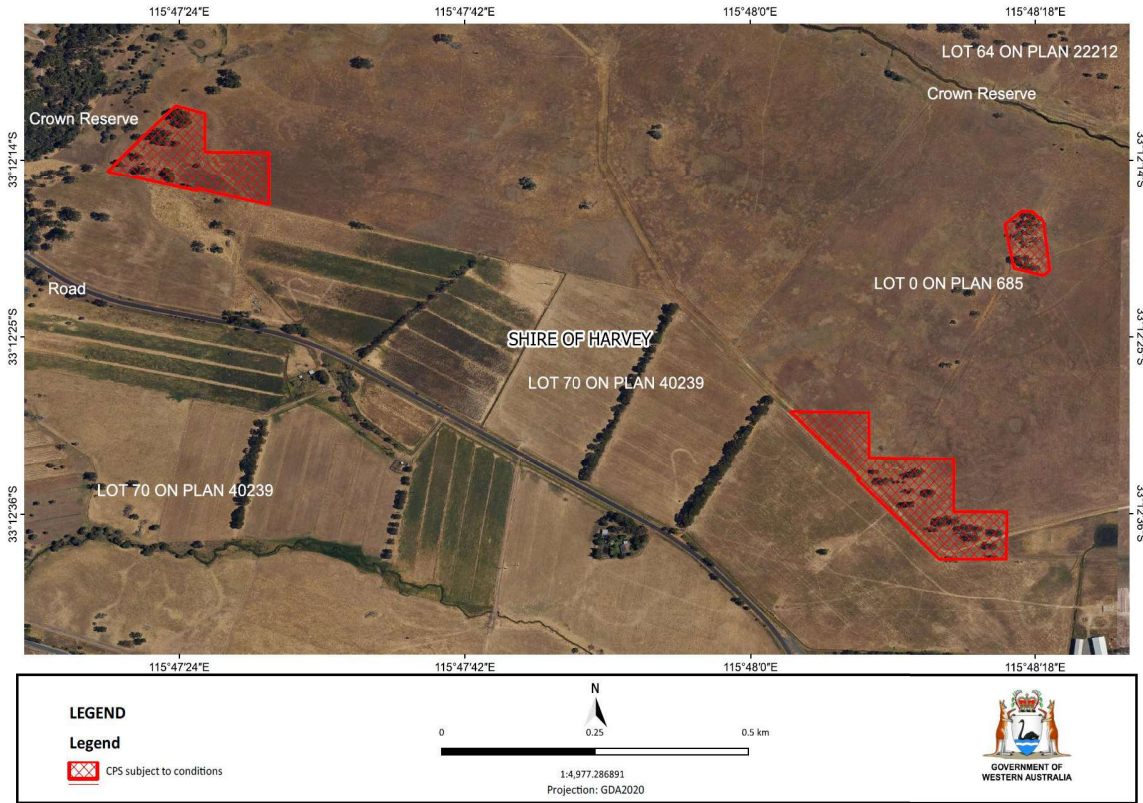


Figure 1: Map of the boundary of the area within which clearing may occur

### Plan 9305/1



**Figure 2: Map of the boundary of the areas (cross-hatched red and) within which condition 9 applies.**



## Schedule 2

### Completion Criteria

**Table 1: Completion criteria for the revegetation within the areas cross-hatched red in Figure 2 of Schedule 1**

Item	Criterion	Completion Targets	Completion criteria	Monitoring
1	Fence	Erection of a suitable perimeter fence to be installed and provide an effective barrier to prevent or reduce impacts to <i>revegetation</i> area.	Fence is maintained with no unauthorized entry.	Annual
2	Baudin's, Carnaby's and forest red-tailed black cockatoo foraging	The site must be fully revegetated using native food plants for Baudin's, Carnaby's and forest red-tailed black cockatoo with high to medium priority food species.	<ul style="list-style-type: none"> <li>- Within 5 years mean Black Cockatoo habitat stems/ha are 70% of <i>reference site</i>.</li> <li>- Within 5 years mean Black Cockatoo foraging stems/hectare are 70% of <i>reference site</i>.</li> <li>- All overstorey species have an average health score (Crown Extent and Density) of &gt;81%;</li> <li>- All understorey species have an average health score (canopy) of &gt;81%.</li> <li>- Vegetation shows consistent growth (height or area) annually or until maturity.</li> <li>- Within 3 years, overstorey species average a minimum of 3 m in height.</li> </ul>	Annual
3	Vegetation composition	Vegetation composition is similar in value to <i>reference site</i> in regard to Black Cockatoo habitat and foraging species richness.	Within 5 years mean species richness is 70% of <i>reference site</i> .	Annual
4	Weeds	<i>Weed</i> control within <i>revegetation</i> area.	<ul style="list-style-type: none"> <li>- Mean <i>weed</i> cover is no more than 30 % Cover.</li> <li>- No declared <i>weeds</i>.</li> </ul>	Annual
5	Dieback	Dieback is not impacting <i>revegetation</i> success.	Dieback is not detected in the <i>revegetation</i> area	Annual



## Clearing Permit Decision Report

### 1 Application details and outcome

#### 1.1. Permit application details

<b>Permit number:</b>	CPS 9305/1
<b>Permit type:</b>	Purpose permit
<b>Applicant name:</b>	SE Campbell Development Pty Ltd (SECD)
<b>Application received:</b>	26 May 2021
<b>Application area:</b>	4.53 hectares of native vegetation (revised)
<b>Purpose of clearing:</b>	An overhead transmission line and associated infrastructure
<b>Method of clearing:</b>	Mechanical
<b>Property:</b>	<p>Lot 0 on Diagram 685</p> <p>Lot 2 on Diagram 73742</p> <p>Lot 254 on Deposited Plan 416516</p> <p>Lot 255 on Deposited Plan 416516</p> <p>Lot 41 on Plan 17392</p> <p>Lot 5531 on Deposited Plan 216969 (Crown Reserve 22762)</p> <p>Lot 5409 on Plan 13831 (Crown Reserve 38137)</p> <p>Lot 94 on Plan 21621</p> <p>Devlin Road Reserve (PIN 1352618)</p> <p>Wellesley Road North Road Reserve (PIN 11600326)</p> <p>Bernbrooke Place Road Reserve (PIN 1194584)</p>
<b>Location (LGA area):</b>	Shire of Harvey
<b>Localities (suburb):</b>	<p>Benger</p> <p>Wellesley</p>

#### 1.2. Description of clearing activities

The vegetation proposed to be cleared is to construct a 3.71-kilometre overhead transmission line, to connect Benger Solar Farm to Western Power's Marriot Road 132kV Terminal Station (see Figure 1, Section 1.5). This connection to Western Power's network is expected to supply renewable electricity for industrial customers and approximately 35,000 homes (GHD, 2021a).

The application area includes a buffer around the proposed powerline corridor to accommodate temporary construction areas, such as laydown areas, maintenance access track, tower and power pads, and brake and winch sites (GHD, 2021a). It also includes areas of plantation and areas that have already been cleared (SE Campbell Development, 2021).

The application was revised during the assessment process. The changes included an initial increase in the clearing footprint to 10.43 hectares and the proposed clearing will not exceed 4.53 hectares within this footprint, however upon review of the revegetation areas it was discovered that the western block of the revegetation area overlapped with the eastern point of the proposed clearing area. This led to the decrease in total area to 10.4 hectares with no change in clearing area (SE Campbell Development, 2023).

### 1.3. Decision on application

<b>Decision:</b>	Granted
<b>Decision date:</b>	22 March 2024
<b>Decision area:</b>	4.53 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 B), relevant datasets (see Appendix G.1), the findings of a flora and vegetation, and fauna survey (see Appendix F), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments, and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the proposed transmission line will provide renewable electricity for industrial customers and approximately 35,000 homes.

The assessment identified that the proposed clearing will result in:

- the loss of 1.83 hectares of native vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) federally listed Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) in Western Australia,
- the loss of 1.81 hectares of native vegetation that provides Poor to Very Poor-quality foraging habitat for forest red-tailed black cockatoo, Carnaby's cockatoo and Baudin's cockatoo,
- the loss of 2.3 hectares of Moderate to Good quality foraging habitat for Carnaby's cockatoo and Baudin's cockatoo, with an additional 0.42 hectares that provides Moderate to Good quality foraging habitat for forest red-tailed black cockatoos only,
- the loss of 0.42 hectares of native vegetation that is significant as remnant of a vegetation complex that has been extensively cleared and is growing in association with Wellesley River,
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values including local conservation areas,
- potential land degradation in the form of wind erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that some of the impacts of the proposed clearing, including direct impacts to individual fauna, indirect hydrological impacts, the risk of land degradation, and the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning and implementation of the applicant's Environmental Management Plan commitments (see Section 3.1). However, impacts to native vegetation that is representative of the Banksia Woodlands TEC, significant foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo remained significant even after the application of minimisation and mitigation measures and constitutes a significant residual impact.

Having considered the environmental impacts outlined above, the applicant's implementation of the mitigation hierarchy and planning and other matters (including the consistency of the proposal with the planning framework and the public benefit of renewable energy), the Delegated Officer determined that, on balance, it was appropriate to grant the clearing permit subject to an adequate environmental offset being provided by the proponent, consistent with the *WA Environmental Offsets Policy* (2011) and the *WA Environmental Offsets Guidelines* (2014), to counterbalance the significant residual impacts to native vegetation that is representative of the Banksia Woodlands TEC, and foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo (see Section 4).

Given the above, the Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback,
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity,

- provide a monetary contribution to the Part V Offsets Fund to fund the purchase of 18.97 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition, of which 15.61 hectares must comprise of Very Good (Keighery, 1994) condition foraging habitat for forest red-tailed black cockatoo, and of this 13.40 hectares must provide Very Good (Keighery, 1994) condition foraging habitat for Carnaby's cockatoo and Baudin's cockatoo,
- revegetate and rehabilitate a total of 6.7 hectares of significant foraging habitat for forest red-tailed black cockatoo, of which must comprise of 5.42 hectares of significant foraging habitat for Carnaby's cockatoo and Baudin's cockatoo within Lot 0 on Diagram 685, Benger,
- retain the vegetative material and topsoil removed by the clearing and stockpile for later use in rehabilitation,
- works to commence within two months of clearing to minimise wind erosion.

**1.5. Site map**

**Plan 9305/1**

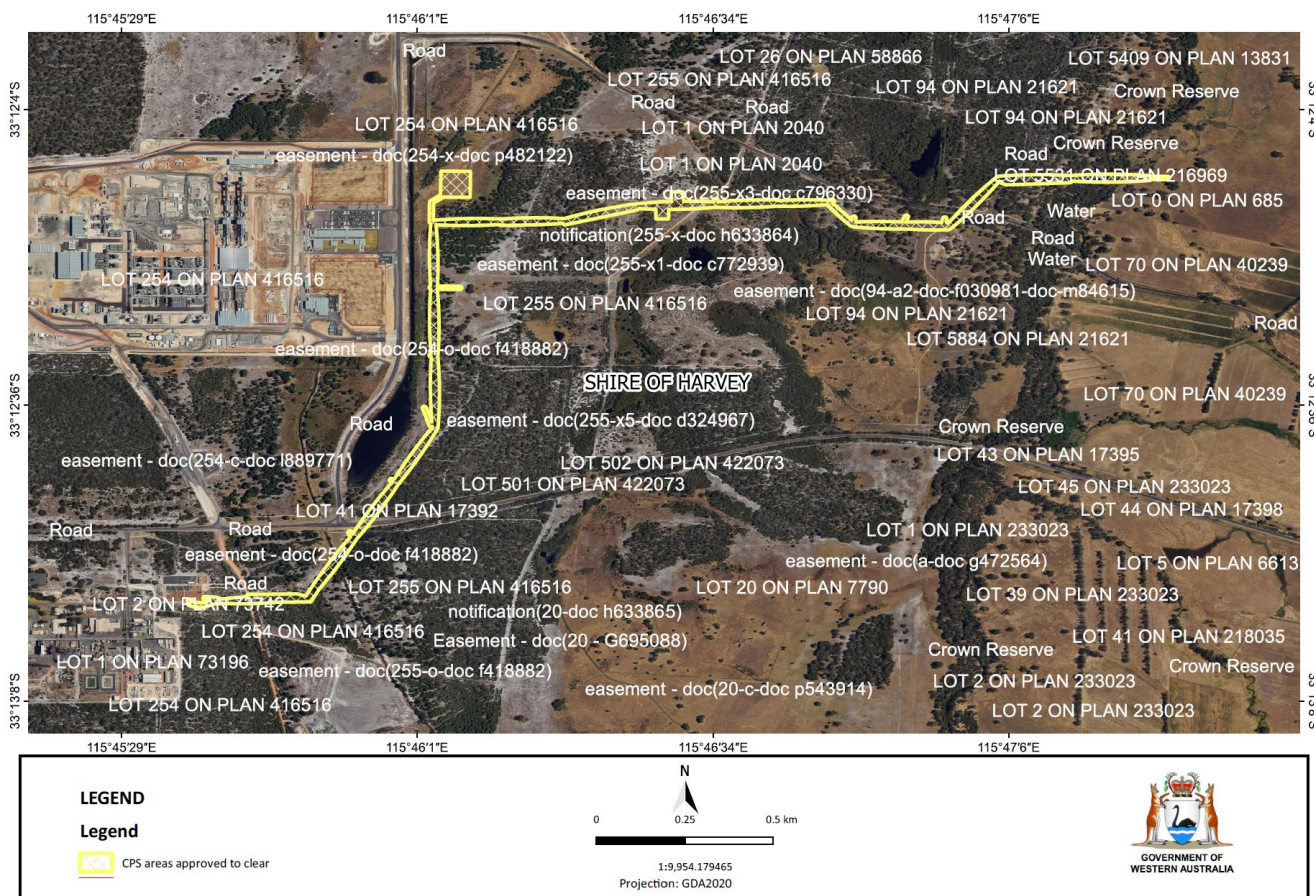


Figure 1. Map of the application area. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit CPS 9305/1.

# Plan 9305/1



Figure 2. Map of the original application area. The area cross hatched blue indicates the area originally applied to clear.

## 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 polluter pays principle
- 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)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI Act)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, 2013)
- *Procedure: Native vegetation clearing permits* (DWER, 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

### 3 Detailed assessment of application

#### 3.1. Avoidance and mitigation measures

The applicant has advised that the selected alignment has taken into consideration the environmental and heritage values present within the local area, and areas of cleared or degraded land has been prioritised during the design process. The applicant has also taken the following measures to avoid and minimise the extent of native vegetation clearing for the proposed transmission line (GHD, 2021a) (SE Campbell Development, 2021):

- Alignment avoids all significant trees (diameter at breast height (DBH) >500 millimetres) with hollows >100 millimetres that may provide breeding and roosting habitat for all three black cockatoo species.
- No power poles to be located within 30 metres either side of the Wellesley River to minimise ground disturbance and impacts to the watercourse.
- Maintain a vegetated 100 metre buffer from a mapped conservation category wetland “Kemerton Wetlands” (UFI 14551).
- Alignment avoids populations of two conservation significant species that were recorded during the survey, being *Pultenaea skinneri* (P4) and *Acacia semitrullata* (P4).

After consideration of avoidance and mitigation measures, it was determined that environmental offsets to counterbalance the significant residual impacts to the following was necessary:

- loss of 1.83 hectares of native vegetation that represents the Banksia Woodlands TEC,
- loss of 1.81 hectares of native vegetation that provides Poor to Very Poor foraging habitat for Carnaby’s cockatoo, Baudin’s cockatoo and the forest red-tailed black cockatoo,
- loss of 2.72 hectares of native vegetation that provides Moderate to Good foraging habitat for forest red-tailed black cockatoo, and
- loss of 2.3 hectares of native vegetation that provides Moderate to Good foraging habitat for Carnaby’s cockatoo and Baudin’s cockatoo.

In accordance with the Government of Western Australia’s *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided is summarised in Section 4.

#### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) 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 C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and ecological communities), 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 (flora and ecological communities) - Clearing Principles (a), (c) and (d)

###### Assessment

A review of the site characteristics and habitat preferences of the conservation significant flora species recorded in the local area (See Appendix B) identified that the application area may provide suitable and potentially significant habitat for the following species:

- *Pultenaea skinneri* (P4)
- *Acacia semitrullata* (P4)

A targeted threatened orchid survey was conducted during 22 to 26 July, and 15 to 16 August 2019, and a detailed and targeted flora and vegetation survey was conducted 29 to 30 October 2019 (ELA, 2020). A total of 130 taxa (94 native and 36 introduced taxa) from 96 genera and 37 families were recorded. The survey recorded two weed species

listed as Declared under the *Biosecurity and Agriculture Management Act 2007*, being *\*Gomphocarpus fruticosus* and *\*Zantedeschia aethiopica*.

No threatened flora species were recorded during the survey (ELA, 2020). Two priority flora species were recorded during the survey, *Pultenaea skinneri* (P4) (one plant) and *Acacia semitrullata* (P4) (eight plants). No *Caladenia speciosa* were recorded during the survey. *Pultenaea skinneri* (P4) was recorded from a plantation and *Acacia semitrullata* was recorded from vegetation community BaEmW (see Appendix F for full vegetation community descriptions) (ELA, 2020). The alignment of the transmission line has been designed to avoid all priority species recorded during the survey (GHD, 2021a).

The vegetation within the application area ranges from Completely Degraded to Very Good (Keighery, 1994) condition. Areas mapped as being in Completely Degraded (Keighery, 1994) condition occurs mostly as cleared land. Of the vegetated areas within the application area, the majority is in a Good (Keighery, 1994) condition.

A desktop assessment identified that two ecological communities of conservation significance, being the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain (Critically Endangered), and the Banksia Woodlands (Endangered), were determined as likely to occur within the survey area. However, it was concluded that the vegetation communities present in the survey area only represented the Banksia Woodlands TEC (ELA, 2020).

According to the approved conservation advice for the Banksia Woodlands TEC, the key diagnostic criterion for the TEC includes the presence of at least one of the four diagnostic *Banksia* species, and distinct low woodland to forest structure comprising a canopy co-dominated by *Banksia attenuata* or *Banksia menziesii*, where the emergent tree layer often includes marri, jarrah, or tuart, over a diverse shrub or herbaceous understorey (DoEE, 2016). The community typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands and is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau (DoEE, 2016). The thresholds for patch size and condition for the Banksia Woodlands TEC state that a patch should meet at least Good (Keighery, 1994) condition to be considered part of the listed community, and minimum patch size is dependent on vegetation condition and its overall contribution to beta diversity, connectivity, and function of the ecological community across the landscape (DoEE, 2016).

BaEmW vegetation community had a strong (predominant) affiliation with FCT 21a – Central *Banksia attenuata* – *Eucalyptus marginata* woodlands, and to a lesser extent FCT 21c – Low lying *Banksia attenuata* woodlands or shrublands (Listed as Priority 3 by DBCA). To be considered as part of the Banksia Woodlands TEC a patch needs to meet at least the 'Good' condition category (DoEE, 2016), therefore areas of Degraded or Completely Degraded condition within the survey area were not included in this assessment. Some areas of BaEmW did not show a clear affiliation to FCT's defined by Gibson et al. (1994), in part due to a high proportion of weed species to the exclusion of natives (ELA, 2020).

### Conclusion

Based on the avoidance and minimisation measures proposed by the applicant, it is considered that the impacts of the proposed clearing on priority flora species can be managed through implementing appropriate weed and dieback control measures. However, based on the above assessment, the proposed clearing will result in the loss of 1.83 hectares of native vegetation that is representative of the Banksia Woodlands TEC and PEC. For the reasons set out above, it is considered that the impacts of the proposed clearing on the Banksia Woodlands TEC constitutes a significant residual impact. In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014). This significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

### Conditions

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

- offset – monetary contribution to the Part V Offsets Fund, which requires the applicant to fund the purchase of 18.67 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition,
- weed and dieback management measures will be required as a condition on the clearing permit to mitigate impacts to adjacent vegetation,
- rehabilitation of temporarily cleared areas.

### 3.2.2. Biological (fauna) - Clearing Principles (a) and (b)

#### Assessment

Noting the findings of the Detailed and Targeted Flora and Vegetation Survey and Level 1 Fauna Survey (ELA, 2020), the site characteristics (Appendix B), and the habitat preferences of the conservation significant fauna species recorded in the local area (10-kilometre radius), the application area was considered to contain suitable habitat for the following fauna species:

- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) VU
- *Dasyurus geoffroi* (chuditch) VU
- *Falco peregrinus* (peregrine falcon) OS
- *Isodon fusciventer* (quenda) P4
- *Phascogale tapoatafa wambenger* (south-western brush-tailed phascogale) CD
- *Pseudocheirus occidentalis* (western ringtail possum) CR
- *Westralunio carteri* (Carter's freshwater mussel) VU
- *Zanda baudinii* (Baudin's cockatoo) EN
- *Zanda latirostris* (Carnaby's cockatoo) EN

The south-western brush-tailed phascogale and western ringtail possum are arboreal mammals, typically associated with woodlands dominated by a variety of canopy species, but often characterised by the presence of hollow-bearing trees, as well as high canopy cover and connectivity (DEC, 2012b; DPAW, 2017). The chuditch and quenda are ground dwelling marsupials, typically associated with riparian jarrah forest or other forest, woodland or shrubland habitats that contain suitable den sites, including hollow logs and tree hollows, and sufficient prey biomass that are usually associated with watercourses (DEC, 2012a). Given that the application area comprises mature marri (*Corymbia calophylla*) and *Eucalyptus* spp., the application area may contain suitable habitat for these four conservation significant fauna species. However, the vegetation ranged from Completely Degraded to Excellent (Keighery, 1994) condition within the application area and is unlikely to provide continuous canopy or connectivity to larger remnants of native vegetation permanent habitat, making it unlikely that arboreal mammals would be utilising the trees. The proposed clearing is also not likely to significantly impact the fauna's ability to move north to south along the vegetated corridor. The application area is not considered likely to comprise significant habitat for the south-western brush-tailed phascogale, western ringtail possum, quenda or chuditch.

The peregrine falcon is found in most habitats, from rainforests to the arid zone and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Australian Museum, 2020). This species is widespread, highly mobile and is found in various habitats. The application area may comprise suitable habitat for this species, however, noting habitat preferences and the extent of the proposed clearing, the application area is unlikely to comprise significant habitat for this species.

Carter's freshwater mussel (CFM) inhabits sandy/muddy sediments of freshwater lakes, rivers and streams usually associated with woody debris and overhanging riparian vegetation. The current distribution of CFM is bounded by Gingin Brook in the north to the Kent, Goodga and Waychinicup Rivers in the south, within 50-100 metres of the coast (TSSC, 2018). Given the application area intersects the Wellesley River, the application area may contain suitable habitat for CFM. However, it is unlikely that the proposed clearing will have significant impact on CFM noting applicant's commitment to not install power poles within 30m of Wellesley River.

#### Black cockatoos

Collectively known as black cockatoo species, the forest red-tailed black-cockatoo, Baudin's cockatoo and Carnaby's cockatoo are known to nest in hollows of live and dead trees, including marri, jarrah (*Eucalyptus marginata*), karri (*Eucalyptus diversicolor*), wandoo (*Eucalyptus wandoo*), tuart (*Eucalyptus gomphocephala*), flooded gum, 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 six kilometre 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 12 kilometres of the application area, making it a suitable location for breeding if appropriate hollows are present. The application area is also mapped within the known breeding range of Carnaby's cockatoo and within the predicted occurrence and potential breeding range for both Baudin's cockatoo and the forest red-tailed black cockatoo (Commonwealth of Australia, 2012).



The black cockatoo habitat assessment (ELA, 2020) identified:

- Three forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) individuals were observed roosting in marri trees within the survey area, and marri nuts chewed by forest red-tailed black cockatoos were observed during the field survey.
- 145 potentially significant trees within the survey area. These trees comprised 59 Marri (*Corymbia calophylla*), 59 Jarrah (*Eucalyptus marginata*) and 27 Flooded Gums (*Eucalyptus rudis*) trees. Of the 145 potentially suitable breeding trees recorded, nine had hollows over 100 mm (trunk and/or spout hollows) visible from the ground.
- The Black Cockatoo Habitat Assessment also noted that feeding residue of pine cones were observed which indicate Carnaby's cockatoo potentially utilising the pine plantations within the survey area. Carnaby's cockatoos have previously been recorded 300 metres from the survey area.

Noting the applicant has avoided all significant trees (diameter at breast height (DBH) >500 millimetres) with hollows >100 millimetres that may provide breeding and roosting habitat for all three black cockatoo species, significant impacts to breeding and roosting habitat is not expected to occur.

Black cockatoo species are noted to forage on a range of plant species, predominantly the seeds and flowers of marri, jarrah and proteaceous species (e.g., *Banksia* spp., *Hakea* spp. and *Grevillea* spp.) (Commonwealth of Australia, 2012). As the application area contains marri and *Eucalyptus* spp. and is mapped within 10 kilometres of known roosting sites (the closest being 2.5 kilometres away), the application area is likely to provide significant foraging habitat for black cockatoo species, by supporting a roosting population.

The Black Cockatoo Habitat Assessment examined the quality of foraging habitat within the application area and surrounding vegetation, using parameters broadly consistent with the Commonwealth of Australia's draft referral guidelines for black cockatoo species. These parameters include the flora species present, proximity to suitable nest hollows and known roosting or breeding sites, presence of potential breeding habitat, proximity to other foraging habitat, and evidence of foraging by black cockatoo species (Commonwealth of Australia, 2017). The proposed clearing significant foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo is considered to represent a significant residual impact.

#### Conclusion

Based on the above assessment, the proposed clearing will result in:

- loss of 1.81 hectares of native vegetation that provides Poor to Very Poor foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and the forest red-tailed black cockatoo,
- loss of 2.72 hectares of native vegetation that provides Moderate to Good foraging habitat for forest red-tailed black cockatoo, and
- loss of 2.3 hectares of native vegetation that provides Moderate to Good foraging habitat for Carnaby's cockatoo and Baudin's cockatoo.
- clearing of habitat for chuditch, quenda, south-western brush-tailed phascogale, peregrine falcon, western ringtail possum and Carter's freshwater mussel, although impacts to these species is unlikely to be significant.

For the reasons set out above, it is considered that the impacts of the proposed clearing on black cockatoos constitutes a significant residual impact that requires an offset (refer to Section 4 for further details). Impacts to other fauna species identified above can be managed by permit conditions, as identified below.

In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), this significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

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 guideline for 3 WA threatened black cockatoo species* (DAWE, 2022). The applicant has been advised to contact the federal Department of Water, Agriculture and the Environment (DAWE) to discuss EPBC Act referral requirements.

#### Conditions

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

- Offset – revegetation and rehabilitation, which requires the revegetation and rehabilitation of a total of 6.70 hectares of significant foraging habitat for Carnaby's cockatoo and 6.64 hectares of significant foraging habitat for forest red-tailed black cockatoo within Lot 0 on Diagram 685, Bengier,

- Offset – monetary contribution to the Part V Offsets Fund, which requires the applicant to fund the purchase of 15.61 hectares must comprise of Very Good (Keighery, 1994) condition foraging habitat for forest red-tailed black cockatoo, and of this 13.40 hectares must provide Very Good (Keighery, 1994) condition foraging habitat for Carnaby's cockatoo and Baudin's cockatoo,
- Directional clearing, which requires slow progressive, one directional clearing to allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing.

### 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). The current vegetation extent for the mapped Swan Coastal Plain vegetation complexes (Bassendean Complex-Central and South and Guildford) fall below the 30 per cent threshold (see Appendix B.2). Noting that the application area includes vegetation that comprises significant foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo, provides suitable habitat for other conservation significant fauna and is representative of the Banksia Woodlands TEC, the application area is considered to be a significant remnant of vegetation.

The Swan Coastal Plain IBRA bioregion retains approximately 38.62 per cent of its pre-European extent of native vegetation. The mapped vegetation complexes Bassendean Complex-Central and South retains 26.87 per cent of its pre-European extent and Guildford retains 5.09 per cent of its pre-European extent. The local area retains approximately 32 per cent remnant vegetation.

The Guildford Complex is described as a mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark). Approximately 0.68 hectares of the application area is mapped within this complex. The vegetation types recorded within this area are CcOW, described as *Corymbia calophylla* open woodland over a low grassland (0.26 hectares), and ErMrW, described as *Eucalyptus rudis* and *Melaleuca raphiophylla* closed forest over a low sparse forbland (0.42 hectares). Vegetation type CcOW is in degraded (Keighery, 1994) condition and therefore is unlikely to still represent the Guildford Complex. Vegetation type ErMrW is in good (Keighery, 1994) condition, and represents the minor component of the Guildford Complex.

Vegetation type ErMrW is also associated with a South West Regional Ecological Linkage (SWREL) axis, defined and mapped by Molloy et al. (2009) as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape". The linkage runs north south and follows the Wellesley River and intersects the application area at the eastern extent. The proposed clearing will be limited to temporary infrastructure, and no power poles are proposed within 30 metres of Wellesley River. Noting this, and that the immediate vicinity where the SWREL axis intersects the application area is comprised of native vegetation, the proposed clearing is unlikely to reduce the effectiveness of the linkage or significantly impact surface water quality of Wellesley River.

#### Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 0.42 hectares of native vegetation that is representative of the Guildford Complex, which has been extensively cleared. Noting the offset measures already conditioned on the permit requiring the revegetation of native vegetation and noting the nature of the proposed clearing being limited to temporary infrastructure, and that no power poles are proposed within 30 metres on either side of Wellesley River, it is considered that the impacts of the proposed clearing on the ecological linkage to not be significant. The proposed clearing does not constitute a significant residual impact to significant remnant vegetation within an extensively cleared area.

#### 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. Land and water resources - Clearing Principles (f), (g) and (i)**

Assessment

The application area intersects a major perennial watercourse, being Wellesley River, and approximately 0.3 hectares of the application area is located within an area subject to inundation that is associated with Wellesley River. The application area also intersects various Resource Enhancement and Multiple Use geomorphic wetlands (Figure 2).

There is one Conservation Category sumpland associated with the Kemerton Wetlands (UFI 14551) that is located approximately 100 metres north of the application area. The transmission line alignment has been designed to ensure a 100-metre buffer between the application area and this wetland is maintained.

Acid Sulphate Soil (ASS) risk mapping indicates that the application area has a moderate to high-risk potential ASS. Areas of high ASS risk is associated with the above-listed geomorphic wetlands and Wellesley River. It is noted that the applicant has considered ASS risk in the design and is limiting the placement of power poles within the higher risk areas (GHD, 2021a). Two power poles of the 20 proposed are in areas mapped as having high to moderate risk.

Two vegetation types, ErMrW and MpW, recorded during the survey were identified as growing in association with the Wellesley River or one of the above geomorphic wetlands. Approximately 0.84 hectares of the application area is mapped as either ErMrW or MpW. The applicant has committed to avoiding placing power poles within 30 metres either side of Wellesley River (GHD, 2021a; GHD, 2021b). In addition, all temporary construction areas will be required to be rehabilitated and revegetated. Noting this, and that the immediate vicinity where the SWREL axis intersects the application area is comprised of native vegetation, the proposed clearing is unlikely to reduce the effectiveness of the linkage or significantly impact surface water quality of Wellesley River.

According to available databases, clearing of the proposed native vegetation is likely to have a moderate to high risk of wind erosion if bare ground is left exposed to weathering for an extended period after clearing, due to the sandy nature of the topsoil across the area. Due to the extent of the clearing, rehabilitation and management plans in place, it is unlikely that there will be any long-term adverse impacts from wind erosion. However, ensuring works commence within two months of clearing, will minimise the exposure of bare soils and minimise the risk of wind erosion.,

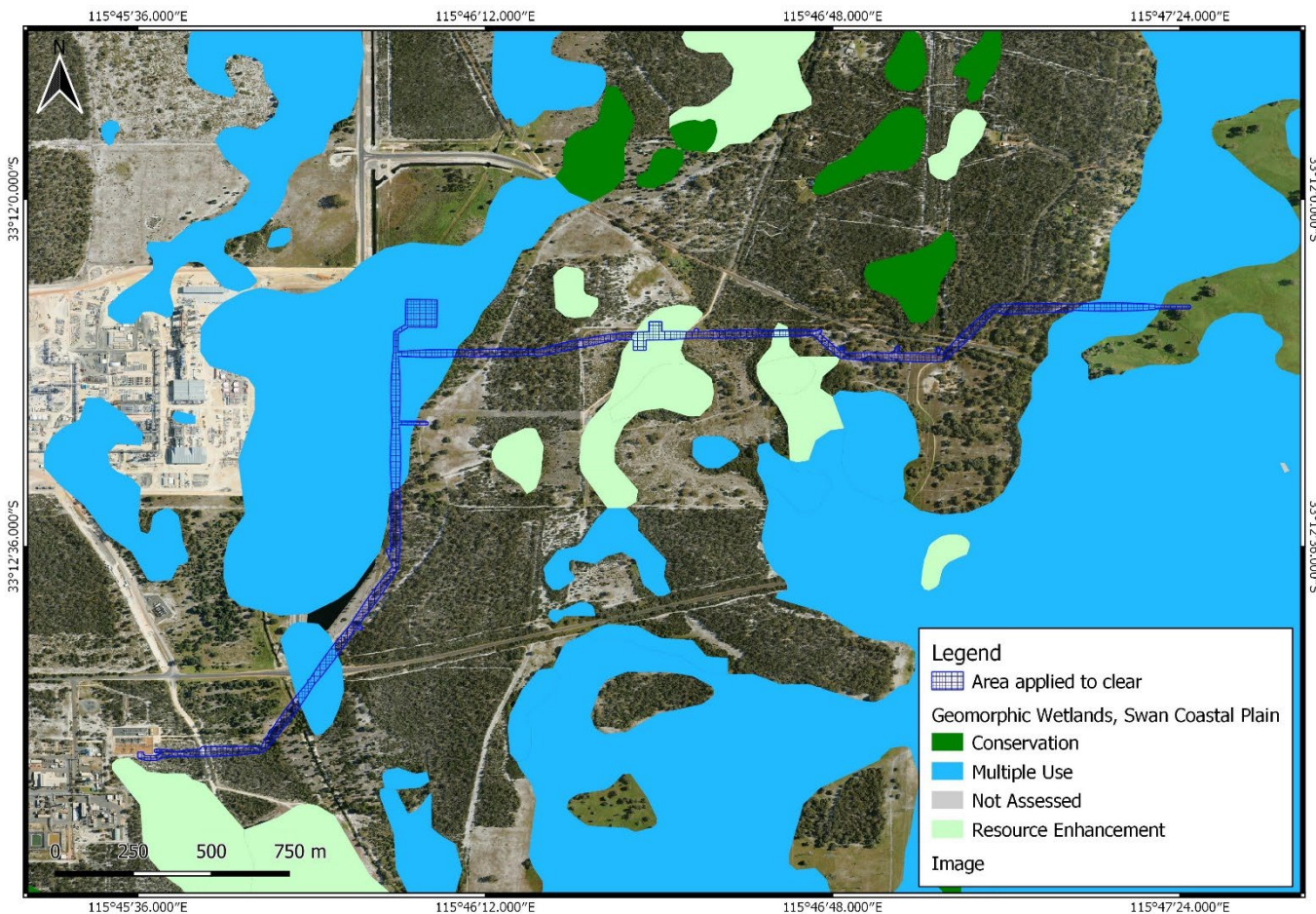


Figure 3. Geomorphic wetlands mapped across the application area.

### Conclusion

Based on the above assessment, the proposed clearing will result in the loss of up to 0.84 hectares of vegetation growing in association with a watercourse or wetland. The management measures proposed by the applicant are considered adequate to manage the indirect impacts to the significant wetland vegetation in adjacent areas as well as the long-term impacts of land degradation.

For the reasons set out above, it is considered that the impacts of the proposed clearing on water resources, riparian vegetation, watercourses and geomorphic wetlands can be managed by minimising ground disturbance adjacent to Wellesley River, retaining the 100-metre buffer to the Conservation Category sumpland to the north, and requiring the applicant to undertake revegetation and rehabilitation of all temporarily cleared areas.

### Conditions

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

- Watercourse management condition that restricts the clearing for power poles within 30 metres of the mapped Wellesley River.
- The permit holder must commence construction no later than two (2) months after undertaking the authorised clearing activities to reduce the potential of wind erosion.
- Revegetation and rehabilitation of all temporarily cleared areas.

### **3.3. Relevant planning instruments and other matters**

A Development Approval (P215/20) has been issued by the Shire of Harvey for the proposed Benger Solar Farm Transmission Line. The Shire of Harvey has advised DWER that the proposed clearing is consistent with this Development Approval (P215/20) and did not have any objections to the proposed clearing (Shire of Harvey, 2021).

The project was referred to the former Australian Government, Department of Agriculture, Water and the Environment (DAWE) under the EPBC Act (EPBC2020/8763). DAWE determined that the proposed action is not a controlled action on 19 October 2020.

One Aboriginal site of significance, Wellesley River Waugal, intersects 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.

## **4 Suitability of offsets**

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- loss of 1.83 hectares of native vegetation that represents the Banksia Woodlands of the Swan Coastal Plain TEC,
- loss of 1.81 hectares of native vegetation that provides Poor to Very Poor foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and the Forest red-tailed black cockatoo,
- loss of 2.72 hectares of native vegetation that provides Moderate to Good foraging habitat for forest red-tailed black cockatoo, and
- loss of 2.3 hectares of native vegetation that provides Moderate to Good foraging habitat for Carnaby's cockatoo and Baudin's cockatoo.

The applicant proposed an environmental offset consisting of two components:

- A monetary contribution to the Part V Offsets Fund to fund the purchase of 18.67 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition, to be protected in perpetuity, of which 15.61 hectares must comprise of Very Good (Keighery, 1994) condition foraging habitat for forest red-tailed black cockatoo, and of this 13.40 hectares must provide Very Good (Keighery, 1994) condition foraging habitat for Carnaby's cockatoo and Baudin's cockatoo, and
- The revegetation and rehabilitation of a total of 6.7 hectares of significant foraging habitat for forest red-tailed black cockatoo, Carnaby's cockatoo and Baudin's cockatoo within Lot 0 on Diagram 685, Benger.

The proposed revegetation is supported by a Revegetation Plan (Cape Life Environmental Services, 2023) that is consistent with DWER's Guide to preparing Revegetation Plans for Clearing Permits. DWER considers the methods, species lists, reference site and monitoring methodology are sufficient to ensure the offset can be achieved.

Given the above, the Delegated Officer considers the proposed offset is consistent with the *WA Environmental Offsets Policy (2011)* and the *WA Environmental Offsets Guidelines (2014)*, and that it adequately counterbalances the significant residual impacts to native vegetation that is representative of the Banksia Woodlands TEC and foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo. The justification for the values used in the offset calculation is provided in Appendix F.

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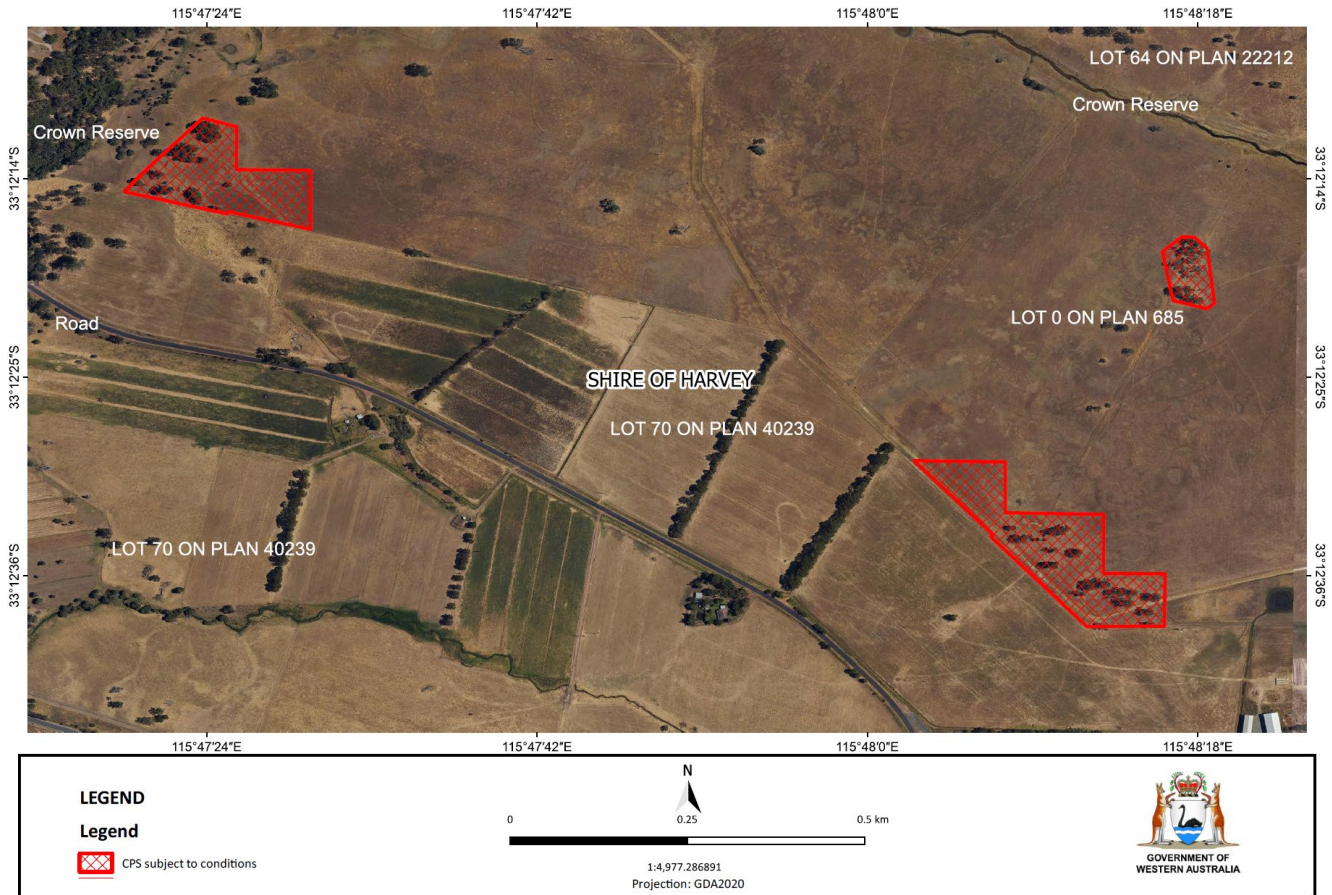


Figure 4. Map of the revegetation offset area at Lot 0 on Diagram 685, Benger. The areas cross hatched red indicates the areas to be revegetated.

**End**

## Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Additional information provided by the applicant in response to the Department's request for further information on the 22 October 2021.	Refer to Section 3.1 and 4.
A rehabilitation plan for the proposed offset areas, Cape Life Environmental Services (2023)	Refer to Appendix F, Figure 9
Offset proposal provided by the applicant in support of the application SE Campbell Development Pty Ltd (2021)	Refer to Section 4.

## Appendix B. Site characteristics

### B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

Characteristic	Details
Local context	<p>The majority of the application area is located in the Kemerton Strategic Industrial Area, within the intensive land use zone of the Swan Coastal Plain region of Western Australia. This industrial area is still mostly comprised of intact remnant vegetation. Access tracks and sealed roads intersect the application area at various locations. The application area extends into pasture at the most eastern extent.</p> <p>Spatial data indicates the local area (10-kilometre radius from the perimeter of the application area) retains approximately 32 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area intersects a South West Regional Ecological Linkage (SWREL) axis at the eastern extent, which runs along Wellesley River. The proposed clearing will not significantly impact fauna movement across the landscape; however, it may impact on riparian vegetation.
Conservation areas	There are no conservation areas within the application area. However, there are multiple conservation areas within the local area, with the nearest being Kalgulup Regional Park and Bengier Swamp Nature Reserve, which are located approximately 3.54 kilometres and 4.8 kilometres from the application area, respectively.
Vegetation description	<p>Six vegetation types were recorded within the application area during a targeted flora and vegetation survey (ELA, 2020). The full survey descriptions and maps are available in Appendix F.</p> <ul style="list-style-type: none"> <li>BaEmW: <i>Banksia attenuata</i> and <i>Eucalyptus marginata</i> woodland over tall and low sparse shrubland.</li> <li>CcOW: <i>Corymbia calophylla</i> open woodland over a low grassland.</li> <li>EmAfW: <i>Eucalyptus marginata</i> and <i>Agonis flexuosa</i> woodland over tall sparse shrubland, over a mid-sparse grassland.</li> <li>ErMrW: <i>Eucalyptus rudis</i> and <i>Melaleuca raphiophylla</i> closed forest over a low sparse forbland.</li> <li>MpW: <i>Melaleuca preissiana</i> woodland over a tall sparse shrubland, over a tall open sedgeland.</li> <li>Plantation: <i>Pinus</i> spp. and <i>Eucalyptus</i> spp.</li> </ul> <p>This is consistent with the mapped broad-scale vegetation types (Heddle et al., 1980):</p>

Characteristic	Details
	<ul style="list-style-type: none"> <li>Bassendean Complex-Central and South: vegetation ranges from woodland of <i>Eucalyptus marginata</i> (Jarrah) - <i>Allocasuarina fraseriana</i> (Sheoak) - <i>Banksia</i> species to low woodland of <i>Melaleuca</i> species, and sedgelands on the moister sites. This area includes the transition of <i>Eucalyptus marginata</i> (Jarrah) to <i>Eucalyptus tottiana</i> (Pricklybark) in the vicinity of Perth.</li> <li>Guildford Complex: a mixture of open forest to tall open forest of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus wandoo</i> (Wandoo) - <i>Eucalyptus marginata</i> (Jarrah) and woodland of <i>Eucalyptus wandoo</i> (Wandoo) (with rare occurrences of <i>Eucalyptus lane-poolei</i> (Salmon White Gum)). Minor components include <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca raphiophylla</i> (Swamp Paperbark).</li> </ul> <p>The mapped vegetation types retain approximately 26.87 and 5.09 per cent of the original extent, respectively (Government of Western Australia, 2019b).</p>
Vegetation condition	<p>Photographs supplied by the applicant and a vegetation survey (ELA, 2020) indicate the vegetation within the proposed clearing area ranges from Completely Degraded to Excellent (Keighery, 1994-) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix D.</p> <p>Representative photos and the full survey descriptions and mapping are available in Appendix F.</p>
Soil description	<p>The majority of the application area is located within the Bassendean System, which consists of sand dunes and sandplains with pale deep sand, semi-wet and wet soil. The eastern extent of the application area (approximately 430 metres) extends into the Pinjarra System, which consist of poorly drained coastal plain with variable alluvial and aeolian soils (DPIRD, 2021).</p> <p>The application area is located within the following subsystems (Schoknecht et al., 2004):</p> <ul style="list-style-type: none"> <li>Bassendean B6 Phase: Sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands.</li> <li>Bassendean B3a Phase: Broad depression and narrow swales between sand ridges with poor to very poorly drained grey and brown sands, with an iron-organic (or siliceous) hardpan at generally less than one metre.</li> <li>Bassendean B1 Phase: 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.</li> <li>Bassendean B1b Phase: Very low relief dunes of undulating sand plain with deep bleached grey sandy A2 horizons and pale-yellow B horizons.</li> <li>Pinjarra P10 Phase: Gently undulating to flat terraces adjacent to major rivers, but below the general level of the plain, with deep well drained uniform brownish sands or loams subject to periodic flooding.</li> <li>Pinjarra P2 Phase: Flat to very gently undulating plain with deep alkaline mottled yellow duplex soils which generally consist of shallow pale sand to sandy loam over clay.</li> </ul>
Land degradation risk	<p>The soils mapped within the application area are mapped as being moderately to highly susceptible to wind erosion but have low risk of water erosion and flooding. Risk of waterlogging across the application area is low to moderate, except for in areas where inundation occurs, where waterlogging risk is mapped as being high (DPIRD, 2021).</p>
Waterbodies	<p>The application area is surrounded by perennial wetlands, swamps, and areas that are subject to inundation. The application area intersects one perennial major river, Wellesley River, and the following wetlands:</p>

Characteristic	Details																											
	<table border="1"> <thead> <tr> <th data-bbox="416 165 794 210">Category</th> <th data-bbox="794 165 948 210">Type</th> <th data-bbox="948 165 1075 210">UFI</th> <th data-bbox="1075 165 1477 210">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="416 210 794 255">Multiple Use</td> <td data-bbox="794 210 948 255">Sumpland</td> <td data-bbox="948 210 1075 255">1502</td> <td data-bbox="1075 210 1477 255">Unknown</td> </tr> <tr> <td data-bbox="416 255 794 300">Multiple Use</td> <td data-bbox="794 255 948 300">Dampland</td> <td data-bbox="948 255 1075 300">1699</td> <td data-bbox="1075 255 1477 300">Unknown</td> </tr> <tr> <td data-bbox="416 300 794 344">Multiple Use</td> <td data-bbox="794 300 948 344">Palusplain</td> <td data-bbox="948 300 1075 344">7936</td> <td data-bbox="1075 300 1477 344">Unknown</td> </tr> <tr> <td data-bbox="416 344 794 389">Resource Enhancement</td> <td data-bbox="794 344 948 389">Sumpland</td> <td data-bbox="948 344 1075 389">6634</td> <td data-bbox="1075 344 1477 389">Kemerton Wetlands</td> </tr> <tr> <td data-bbox="416 389 794 434">Resource Enhancement</td> <td data-bbox="794 389 948 434">Sumpland</td> <td data-bbox="948 389 1075 434">11615</td> <td data-bbox="1075 389 1477 434">Kemerton Wetlands</td> </tr> </tbody> </table>	Category	Type	UFI	Name	Multiple Use	Sumpland	1502	Unknown	Multiple Use	Dampland	1699	Unknown	Multiple Use	Palusplain	7936	Unknown	Resource Enhancement	Sumpland	6634	Kemerton Wetlands	Resource Enhancement	Sumpland	11615	Kemerton Wetlands			
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	Resource Enhancement	Sumpland	6634	Kemerton Wetlands																								
Resource Enhancement	Sumpland	11615	Kemerton Wetlands																									
<p>There is also one conservation category sumpland (UFI 12607) associated with the Kemerton Wetlands located within 100 metres of the application area.</p>																												
Hydrogeography	<p>The application area is located within the South West Coastal Groundwater Area, Bunbury Groundwater Area, and partly within the Collie River Irrigation District and Brunswick River and Tributaries surface water areas, all proclaimed under the RIWI Act. The application area is not located within any Public Drinking Water Source Area (PDWSA).</p>																											
Flora	<p>The desktop assessment identified that a total of 25 conservation significant flora species have been recorded within the local area, comprising of seven threatened flora species and 18 priority flora species (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of <i>Pultenaea skinneri</i> approximately 0.5 kilometres from the application area.</p> <p>With consideration for the relevant datasets (see Appendix G.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (ELA, 2020), the application area may provide habitat for conservation significant flora species and impacts to these flora species required further consideration (see Section 3.2.1).</p>																											
Ecological communities	<p>The desktop assessment identified that the application area is mapped within an occurrence of the Banksia Woodlands TEC, which is listed as Endangered under the Commonwealth EPBC Act and is considered a Priority 3 PEC by DBCA in Western Australia.</p> <p>The vegetation assessments of the application area confirmed that BaEmW vegetation type showed primary affiliations with Floristic Community Types 21a, and to a lesser extent 21c, which are both recognised as being subcomponents of the Banksia Woodlands TEC (ELA, 2020).</p>																											
Fauna	<p>The desktop assessment identified that a total of 49 conservation significant fauna species have been recorded within the local area including 22 threatened species, nine priority species and 18 migratory species. None of these existing records occur within the application area, with the closest being an occurrence of <i>Isoodon fusciventer</i> approximately 155 metres south of the application area (DBCA, 2007-).</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1) and the habitat preferences of the aforementioned species, and biological survey information (ELA, 2020), the application area is likely to provide significant habitat for conservation significant fauna species and impacts to these fauna species required further consideration (see Section 3.2.2).</p>																											



**B.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
Vegetation complex					
Bassendean Complex-Central and South	87,476.26	23,508.66	26.87	4,377.36	5.00
Guildford Complex	90,513.13	4,607.91	5.09	287.49	0.32
Local area					
10km radius	33492.27	10,747.04	32.09	-	-

\*Government of Western Australia (2019a)

**B.3. Flora analysis table**

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, 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 (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia semitrullata</i>	4	Y	Y	Y	Recorded during survey	7	Y
<i>Caladenia speciosa</i>	4	Y	Y	Y	Previously recorded within application area	6	Y
<i>Carex tereticaulis</i>	3	Y	Y	Y	3.6	1	Y
<i>Diuris micrantha</i>	T	Y	Y	Y	2.8	1	Y
<i>Drakaea elastica</i>	T	Y	Y	Y	4.1	13	Y
<i>Drakaea micrantha</i>	T	Y	Y	Y	5.2	16	Y
<i>Pterostylis frenchii</i>	2	Y	Y	Y	7.2	1	Y
<i>Pultenaea skinneri</i>	4	Y	Y	Y	Recorded during survey	6	Y
<i>Verticordia attenuata</i>	3	Y	Y	Y	3.5	2	Y

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

**B.4. Fauna analysis table**

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following conservation significant flora 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 (total)	Are surveys adequate to identify? [Y, N, N/A]
Baudin's cockatoo ( <i>Zanda baudinii</i> )	EN	Y	Y	3.4	3	Y
Carnaby's cockatoo ( <i>Zanda latirostris</i> )	EN	Y	Y	0.4	40	Y
Carter's freshwater mussel ( <i>Westralunio carteri</i> )	VU	Y	N	7.1	3	Y
Chuditch ( <i>Dasyurus geoffroii</i> )	VU	Y	Y	3.7	3	Y
Forest red-tailed black cockatoo ( <i>Calyptorhynchus banksii naso</i> )	VU	Y	Y	1.4	12	Y
Peregrine falcon ( <i>Falco peregrinus</i> )	OS	Y	Y	2.4	3	Y
Quenda ( <i>Isoodon fusciventer</i> )	P4	Y	Y	0.16	34	Y
South-western brush-tailed phascogale ( <i>Phascogale tapoatafa wambenger</i> )	CD	Y	Y	0.56	26	Y
Western ringtail possum ( <i>Pseudocheirus occidentalis</i> )	CR	N	Y	2.7	170	Y

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

### B.5. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Community name	Conservation status (WA, Commonwealth)	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 (total)	Are surveys adequate to identify? [Y, N, N/A]
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	P3, EN	Y	Y	Y	Recorded during survey	418	Y
Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain	P3, CR	Y	Y	Y	2.6	94	Y

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

### Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><b>Principle (a):</b> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><b>Assessment:</b> The area proposed to be cleared contains regionally significant vegetation and locally significant habitats, including vegetation that is representative of the Banksia Woodlands TEC, foraging habitat for black cockatoo species and vegetation that is representative of an extensively cleared vegetation complex.</p>	At variance	Yes Refer to Section 3.2.1, above.
<p><b>Principle (b):</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."</p>	At variance	Yes Refer to Section 3.2.2, above.

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Assessment:</u> The area proposed to be cleared contains significant foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo, as well as suitable habitat for several conservation significant fauna species.</p>		
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."  <u>Assessment:</u> The area proposed to be cleared was identified as providing habitat that is suitable for threatened flora species (see Appendix F). However, the targeted survey did not record any threatened flora within the application area (ELA, 2020).</p>	Not likely to be at variance	Yes Refer to Section 3.2.1, above.
<p><u>Principle (d):</u> "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."  <u>Assessment:</u> The area proposed to be cleared contains approximately 1.83 hectares of native vegetation that is representative of the Banksia Woodlands TEC.</p>	At variance	Yes Refer to Section 3.2.3, above.
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> "Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."  <u>Assessment:</u> The local area retains approximately 32 per cent remnant vegetation. The mapped broad-scale vegetation complexes, Bassendean Complex-Central and South, Guildford Complex, and Swan Coastal Plain IBRA bioregion retains 26.87, 5.09 and 38.62 per cent of their pre-European extent of native vegetation, respectively. The extent of the mapped Guildford Complex is inconsistent with the national objectives and targets for biodiversity conservation in Australia.</p>	May be at variance	Yes Refer to Section 3.2.4, above.
<p><u>Principle (h):</u> "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."  <u>Assessment:</u> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not likely to be at variance	No
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> "Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."  <u>Assessment:</u> Two vegetation types recorded within the application area, ErMrW and MpW, were recorded as growing in association with the Wellesley River and geomorphic wetlands intersecting the application area.</p>	At variance	Yes Refer to Section 3.2.4, above.
<p><u>Principle (g):</u> "Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."  <u>Assessment:</u> The mapped soils are moderately to highly susceptible to wind erosion but have low risk of water erosion and flooding. Waterlogging may occur in areas that are subject to inundation, associated with geomorphic wetlands and Wellesley River. The extent of the proposed clearing is limited to linear infrastructure, pads and access tracks. The applicant has also committed to not installing power poles 30 metres on either side of the Wellesley River (GHD, 2021b). The applicant will also be required to undertake revegetation and rehabilitation of all temporarily cleared areas. However the sandy soils may be prone to wind erosion if left exposed for an extended period of time.</p>	May be at variance	Yes Refer to Section 3.2.4, above.

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (i):</u> “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.”</p> <p><u>Assessment:</u> The application area is located within the South West Coastal Groundwater Area, Bunbury Groundwater Area, and partly within the Collie River Irrigation District and Brunswick River and Tributaries surface water areas, all proclaimed under the RIWI Act.</p> <p>ASS mapping indicates that there is moderate to high ASS risk in areas where the application area intersects geomorphic wetlands and Wellesley River. Minimising ground disturbance within these areas and requiring the applicant to undertake revegetation and rehabilitation of temporarily cleared areas will reduce the risk of causing significant deterioration in the quality of surface or groundwater.</p>	May be at variance	Yes  Refer to Section 3.2.4, above.
<p><u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment:</u> The soils mapped across the majority of the application area have low risk of flooding. Risk of waterlogging is moderate to high in areas that are subject to inundation. The extent of the proposed clearing is limited to linear infrastructure, pads and access tracks. The applicant has also committed to not installing power poles 30 metres on either side of the Wellesley River (GHD, 2021b). Noting this, it unlikely that the proposed clearing will contribute to waterlogging, or increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

**Appendix D. 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.

Condition	Description
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 E. Offset calculator value justification

### WA Environmental Offsets Calculator Rationale for scores used in the offset calculator

#### Monetary Fund

Calculation	Score/Area	Rationale
<b>Significant impact - Conservation significance</b>		
Threatened Ecological Community (TEC)	1.83 hectares	Vegetation representative of the Endangered Banksia Woodlands TEC, in a very good condition (Keighery, 1994).
Forest red-tailed black cockatoo foraging habitat	1.81 hectares	Poor to Very Poor foraging habitat for the Vulnerable forest red-tailed black cockatoo.
Carnaby's cockatoo and Baudin's cockatoo foraging habitat	1.81 hectares	Poor to Very Poor foraging habitat for the Endangered Carnaby's cockatoo and Baudin's cockatoo.
<b>Significant impact – Quality</b>		
Threatened Ecological Community (TEC)	7	Vegetation representative of the Banksia Woodlands TEC, ranging from Good to Excellent condition (Keighery, 1994).
Forest red-tailed black cockatoo foraging habitat	6	The Detailed and Targeted Flora and Vegetation Survey and Level 1 Fauna Survey Benger Solar Farm (ELA, 2020) identified that 1.81 hectares of foraging habitat within the application area is of Poor to Very Poor quality, where there is less than 20% foliage cover of suitable foraging species and food sources are only present in one stratum (i.e., canopy) for forest red-tailed black cockatoo within the application area. However, the proposed clearing is located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited. Therefore, any foraging habitat present within the application area regardless of quality, is likely to be significant. Further the application area is located within six kilometres of a confirmed roost site and may support foraging by roosting individuals. The application is also likely to provide landscape-level connectivity as an ecological linkage for forest red-tailed black cockatoos moving through the local area between foraging, breeding and roosting sites.
Carnaby's cockatoo and Baudin's cockatoo foraging habitat	5	The Detailed and Targeted Flora and Vegetation Survey and Level 1 Fauna Survey Benger Solar Farm (ELA, 2020) identified that 1.81 hectares of foraging habitat within the application area is of Poor to Very Poor quality, where there is less than 20% foliage cover of suitable foraging species and food sources are only present in one stratum (i.e., canopy) for Carnaby's cockatoo and Baudin's cockatoo within the application area. However, the proposed clearing is located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited. Therefore, any foraging habitat present within the application area regardless of quality, is likely to be significant. Further the

Calculation	Score/Area	Rationale
		application area is located within six kilometres of a confirmed roost site and may support foraging by roosting individuals. The application is also likely to provide landscape-level connectivity as an ecological linkage for Carnaby's cockatoos and Baudin's cockatoos moving through the local area between foraging, breeding and roosting sites.
<b>Offset</b>		
Description	-	A single offset involving the acquisition and conservation in perpetuity of an offset site that contains native vegetation that is representative of the Banksia Woodlands TEC and contains suitable foraging habitat for forest red-tailed black cockatoo, Carnaby's cockatoo and Baudin's cockatoo.
Proposed offset (area in hectares)	18.97	The acquisition and conservation of 18.97 hectares of native vegetation that is representative of the Banksia Woodlands TEC is required to offset the residual impacts to this community.
	15.61	The acquisition and conservation of 15.61 hectares of native vegetation that is representative of Very Good (Keighery, 1994) condition foraging habitat for forest red-tailed black cockatoo, and of this
	13.40	The acquisition and conservation of 13.40 hectares of native vegetation that is representative of Very Good (Keighery, 1994) condition foraging habitat for Carnaby's cockatoo and Baudin's cockatoo
Current quality of offset site	7	Afforded to Banksia Woodlands TEC as the vegetation is considered to be in very good to excellent condition.
	7	It is assumed that the native vegetation that provides significant foraging habitat for forest red-tailed black cockatoo within the offset site will comprise Banksia Woodland in at least Very Good (Keighery, 1994) condition and will be of better quality than the Poor to Very Poor-quality foraging habitat within the application area.
	7	It is assumed that the native vegetation that provides significant foraging habitat for Carnaby's cockatoo and Baudin's cockatoo within the offset site will comprise Banksia Woodland in at least Very Good (Keighery, 1994) condition and will be of better quality than the Poor to Very Poor-quality foraging habitat within the application area.
Future quality WITHOUT offset	7	Afforded to Banksia Woodlands TEC as the offsite site would likely be rural-zoned freehold land and therefore the quality of vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain TEC is unlikely to change significantly over a one-year period in the absence of the offset.
	7	It is assumed that the offset site would likely be rural-zoned freehold land and therefore, the quality of vegetation that provides significant foraging habitat for forest red-tailed black cockatoo is unlikely to change significantly over a one-year period in the absence of the offset.
	7	It is assumed that the offset site is would likely be rural-zoned freehold land and therefore, the quality of vegetation that provides significant foraging habitat for Carnaby's cockatoo and Baudin's cockatoo is unlikely to change significantly over a one-year period in the absence of the offset.
Future quality WITH offset	7	Afforded to Banksia Woodlands TEC as the offset site will be transferred into conservation estate following purchase and will be managed to maintain the quality of the existing values, including native vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain TEC.
	7	It is assumed that the offset site will be transferred into conservation estate following purchase and will be managed to maintain the

Calculation	Score/Area	Rationale
		quality of the existing values, including native vegetation that provides significant foraging habitat for forest red-tailed black cockatoo.
	7	It is assumed that the offset site will be transferred into conservation estate following purchase and will be managed to maintain the quality of the existing values, including native vegetation that provides significant foraging habitat for Carnaby's cockatoo and Baudin's cockatoo.
Time until ecological benefit (years)	1	The reduction in risk of loss will occur as soon as the land is covenanted, and management actions are undertaken.
Confidence in offset result (%)	90%	There is a high level of confidence that the offset will be achieved and that conservation of the offset site (in perpetuity) would successfully mitigate the future risk of loss of the site.
Duration of offset implementation (maximum 20 years)	20	The offsite site will be transferred into conservation estate following purchase and will be managed in perpetuity. Therefore, the maximum of 20 years is applied.
Time until offset site secured (years)	3	It is assumed that the offset site will be purchased and secured in conservation estate within 3 years of the proposed clearing commencing.
Risk of future loss WITHOUT offset (%)	15.0%	It is assumed that the offset site to be acquired is currently zoned rural or similar and is not subject to any existing planning approvals.
Risk of future loss WITH offset (%)	5.0%	The future conservation (in perpetuity) of the offset site would result in increased security and substantially reduce the risk of loss.

#### Revegetation and Rehabilitation

Calculation	Score/Area	Rationale
<b>Significant impact - Conservation significance</b>		
Forest red-tailed black cockatoo foraging habitat	2.72 hectares	Native vegetation that comprises significant foraging habitat for forest red-tailed black cockatoo in Moderate to Good quality is proposed to be cleared for the purpose of installing an overhead transmission line and associated infrastructure.
Carnaby's cockatoo and Baudin's cockatoo foraging habitat	2.30 hectares	Native vegetation that comprises significant foraging habitat for Carnaby's cockatoo and Baudin's cockatoo in Moderate to Good quality is proposed to be cleared for the purpose of installing an overhead transmission line and associated infrastructure.
<b>Significant impact – Quality</b>		
Forest red-tailed black cockatoo foraging habitat	8	The Detailed and Targeted Flora and Vegetation Survey and Level 1 Fauna Survey Bengar Solar Farm (ELA, 2020) identified that 2.72 hectares of foraging habitat within the application area is of Moderate to Good quality, where there is 20-60% foliage cover of suitable foraging species and food sources are present at one or two strata (i.e., canopy and mid-storey). However, the proposed clearing area is located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited. Therefore, any foraging habitat present within the application area, regardless of quality, is likely to be significant for the forest red-tailed black cockatoo. Further, evidence of individual forest red-tailed black cockatoos foraging with the application area was observed during the survey, as well as the fact that the application is located within six kilometres of a confirmed roost site and may support foraging by roosting individuals. The application is also likely to provide landscape-level connectivity as an ecological linkage for forest red-tailed black

Calculation	Score/Area	Rationale
		cockatoos moving through the local area between foraging, breeding and roosting sites.
Carnaby's cockatoo and Baudin's cockatoo foraging habitat	7	The Detailed and Targeted Flora and Vegetation Survey and Level 1 Fauna Survey Benger Solar Farm (ELA, 2020) identified that 2.30 hectares of foraging habitat within the application area is of Moderate to Good quality, where there is 20-60% foliage cover of suitable foraging species and food sources are present at one or two strata (i.e., canopy and mid-storey). The proposed clearing area is located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited. Therefore, any foraging habitat present within the application area, regardless of quality, is likely to be significant for Carnaby's cockatoo and Baudin's cockatoo. Further, the application is located within six kilometres of a confirmed roost site and may support foraging by roosting individuals. The application is also likely to provide landscape-level connectivity as an ecological linkage for Carnaby's cockatoo and Baudin's cockatoo moving through the local area between foraging, breeding and roosting sites
<b>Offset</b>		
Description	0	A single offset involving the revegetation of an offset site with native species that comprise foraging habitat for forest red-tailed black cockatoo, Carnaby's cockatoo and Baudin's cockatoo.
Proposed offset (area in hectares)	6.70	The revegetation and rehabilitation of 6.70 hectares of native vegetation that comprises significant foraging habitat for forest red-tailed cockatoo, and 5.42 hectares of native vegetation that comprises significant foraging Carnaby's cockatoo and Baudin's cockatoo is required to offset the residual impacts to this environmental value.
Current quality of offset site	1	The revegetation offset area has been historically cleared and is in Completely Degraded (Keighery, 1994) condition, consisting of marri and flooded gum trees over weeds, according to the Benger Solar Farm Transmission Line Offset Revegetation Plan (the Revegetation Plan).
	1	The revegetation offset area has been historically cleared and is in Completely Degraded (Keighery, 1994) condition, consisting of marri and flooded gum trees over weeds, according to the Benger Solar Farm Transmission Line Offset Revegetation Plan (the Revegetation Plan).
Future quality WITHOUT offset	1	The revegetation offset site is currently rural-zoned freehold land and is subject to a development approval for a solar farm. However, the revegetation area is in Completely Degraded (Keighery, 1994) condition and contains limited native vegetation. Therefore, it is not expected that the quality of the site will significantly change over a one-year period, in the absence of the offset.
	1	The revegetation offset site is currently rural-zoned freehold land and is subject to a development approval for a solar farm. However, the revegetation area is in Completely Degraded (Keighery, 1994) condition and contains limited native vegetation. Therefore, it is not expected that the quality of the site will significantly change over a one-year period, in the absence of the offset.
Future quality WITH offset	5	The Revegetation Plan utilises a reference site within Lot 1 on Plan 6508, Benger, which contains black cockatoo foraging habitat (jarrah, marri, <i>Banksia attenuata</i> , and <i>Banksia ilicifolia</i> ) in Excellent (Keighery, 1994) condition. The Revegetation Plan proposes to establish black cockatoo foraging habitat within the revegetation area at a density (stems/ha) and species richness that reflects a minimum of 70% of the reference site by means of infill planting,



Calculation	Score/Area	Rationale
		direct seeding, fencing, and weed control. It is assumed that with the revegetation measures outlined in the Revegetation Plan, the site will improve in condition and provide foraging habitat for the forest red-tailed black cockatoo, with the potential to increase from a Completely Degraded to a Good (Keighery, 1994) condition.
	5	The Revegetation Plan utilises a reference site within Lot 1 on Plan 6508, Benger, which contains black cockatoo foraging habitat (jarrah, marri, <i>Banksia attenuata</i> , and <i>Banksia ilicifolia</i> ) in Excellent (Keighery, 1994) condition. The Revegetation Plan proposes to establish black cockatoo foraging habitat within the revegetation area at a density (stems/ha) and species richness that reflects a minimum of 70% of the reference site by means of infill planting, direct seeding, fencing, and weed control. It is assumed that with the revegetation measures outlined in the Revegetation Plan, the site will improve in condition and provide foraging habitat for Carnaby's cockatoo, with the potential to increase from a Completely Degraded to a Good (Keighery, 1994) condition.
Time until ecological benefit (years)	11	It is assumed that the benefits of revegetation of foraging habitat will be available after 11 years, given the planting list outlined in the Revegetation Plan includes proteaceous species.
Confidence in offset result (%)	80%	There is a moderate level of confidence that the offset will achieve the predicted result, given revegetation will be undertaken in accordance with the Revegetation Plan that follows the department's Guide to preparing revegetation plans for clearing permits (2018).
Duration of offset implementation (maximum 20 years)	20	The revegetation offset site will be placed under a conservation covenant in perpetuity. Therefore, the maximum of 20 years is applied.
Time until offset site secured (years)	3	It is assumed that the revegetation offset site will be placed under a conservation covenant within 3 years of clearing, when the revegetation has begun to establish.
Risk of future loss WITHOUT offset (%)	20%	The revegetation offset site is currently zoned rural and is subject to a development approval for a solar farm. However, the revegetation occurs within vegetation retention areas that are not earmarked for clearing under the proposed development and there is a moderate risk that the site could be cleared in the future.
Risk of future loss WITH offset (%)	5.0%	The future conservation (in perpetuity) of the offset site would result in a substantial increased security and substantially reduce the risk of loss.

## Appendix F. Biological survey information excerpt (ELA, 2020)

### Executive Summary

Eco Logical Australia (ELA) was engaged by South Energy to undertake a Detailed and Targeted flora survey and Level 1 Fauna survey of a proposed powerline route between Benger Solar Farm (in development) and the Marriot Road 132kV Terminal Station. The field survey was conducted in spring from 29<sup>th</sup> to 30<sup>th</sup> October 2019, with 13 10 x 10 metre quadrats being established. ELA previously undertook targeted flora surveys within the survey area and broader Kemerton area from 22<sup>nd</sup> to 26<sup>th</sup> July and 15<sup>th</sup> to 16<sup>th</sup> August 2019. The results of these winter surveys have been included in this report where they relate to the survey area.

A total of 130 taxa (94 native and 36 introduced taxa) from 96 genera and 37 families were recorded across the survey area, both from quadrats and opportunistic collections.

No Threatened (Declared Rare) flora species were recorded within the survey area. Two Priority 4 flora species were recorded within the survey area, namely *Pultenaea skinneri* (one individual plant) and *Acacia semitrullata* (8 individual plants).

Six vegetation communities were delineated and mapped within the survey area:

- Vegetation community CcOW: Mid *Corymbia calophylla* open woodland over a low *\*Hordeum leporinum* and *\*Lolium rigidum* grassland;
- Vegetation community ErMrW: Mid *Eucalyptus rudis* and *Melaleuca raphiophylla* closed forest over a low *Alternanthera nodiflora* and *Cassytha racemosa* forma *racemosa* sparse forbland;
- Vegetation community MpW: Mid *Melaleuca preissiana* woodland over a tall *Kunzea glabrescens* and *Astartea scoparia* sparse shrubland over a tall *Juncus pauciflorus* and *Lepidosperma longitudinale* open sedgeland;
- Vegetation community BaEmW: Mid *Banksia attenuata* and *Eucalyptus marginata* woodland over a tall *Kunzea glabrescens* sparse shrubland over a low *Xanthorrhoea gracilis* and *Gompholobium tomentosum* sparse shrubland;
- Vegetation community EmAfW: Mid *Eucalyptus marginata* and *Agonis flexuosa* woodland over a tall *Kunzea glabrescens* and *Hardenbergia comptoniana* sparse shrubland over a mid *\*Ehrharta calycina* sparse grassland; and
- Vegetation community Plantation: Plantation of *Pinus* spp. and *Eucalyptus* spp.

Quadrats within vegetation communities BaEmW showed primary affiliations with Floristic Community Types 21a, and to a lesser extent 21c, which are both recognised as being subcomponents of the 'Banksia Woodlands of the Swan Coastal Plain' ecological community, listed as Threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and as Priority 3 by the Department of Biodiversity Conservation and Attractions.

Following assessment of vegetation within the survey area against key diagnostic characteristics outlined in the Threatened Species Scientific Committee '*Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*', the BaEmW vegetation community was considered to represent floristic aspects of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community, listed as Endangered under the Commonwealth

*Environment Protection and Biodiversity Conservation Act 1999*. Approximately 14.3 hectares of this Threatened Ecological Community was mapped across the survey area.

Vegetation condition within the survey area ranged from Completely Degraded to Excellent condition, based on the Keighery (1994) vegetation scale provided in the EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). The majority of the survey area consisted of plantations of *Pinus* spp. and *Eucalyptus* spp. and areas considered to be Completely Degraded (including tracks and other cleared areas). Disturbances within the survey area included the presence of cleared areas, paddocks, sumps, weeds, rubbish dumping, feral fauna (scats, tracks or diggings) and the presence of tracks. Some vegetation health decline was recorded (dead or dying species) which may be attributed to drought or potential disease (dieback).

A total of 36 introduced (weed) species were recorded and of these, two species are listed as a Declared Plants under the BAM Act, namely \**Gomphocarpus fruticosus* s22(2) (C3) and \**Zantedeschia aethiopica* s22(2) (Exempt).

A total of 31 native fauna species were recorded during the field survey, comprising twenty-five birds, four mammals and two reptiles. Three introduced (pest) fauna species were recorded within the survey area, *Felis catus* (cat), *Oryctolagus cuniculus* (rabbit) and *Vulpes vulpes* (fox).

One Threatened fauna species, Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*), was observed within the survey area. This species is listed as Vulnerable under the EPBC Act and as Schedule 3 'fauna that is rare or is likely to become extinct as vulnerable fauna' under the BC Act. Three individuals of this species were observed roosting in Marri trees within survey area and recent feeding residue was also observed. Although not directly observed (or heard) within the survey area, feeding residue of pinecones was recorded which indicate that Carnaby's Black Cockatoo potentially utilise the pine plantations within the survey area as foraging habitat. Carnaby's Black Cockatoo have previously been recorded 0.3km from the survey area.

In addition to Forest Red-tailed Black Cockatoo and Carnaby's Black Cockatoo, the desktop assessment also identified Carter's freshwater mussel (*Westralunio carteri*), Brush-tailed Phascogale (*Phascogale tapoatafa* subsp. *wambenger*) and Quenda (*Isodon obesulus fusciventer*) as being likely to occur within the survey area; this assessment was based on presence of suitable habitat and proximity of previous records.

The black cockatoo breeding habitat assessment identified 145 potentially significant trees within the survey area. These trees comprised 59 Marri (*Corymbia calophylla*), 59 Jarrah (*Eucalyptus marginata*) and 27 Flooded Gums (*Eucalyptus rudis*) trees. Of the 145 potentially suitable breeding trees recorded, nine had hollows over 100 mm (trunk and/or spout hollows) visible from the ground.

For the purposes of a Detailed and targeted flora and vegetation survey and Level 1 Fauna survey, adequate data was collected to define and assess the presence, extent and significance of flora and vegetation communities within the project area.

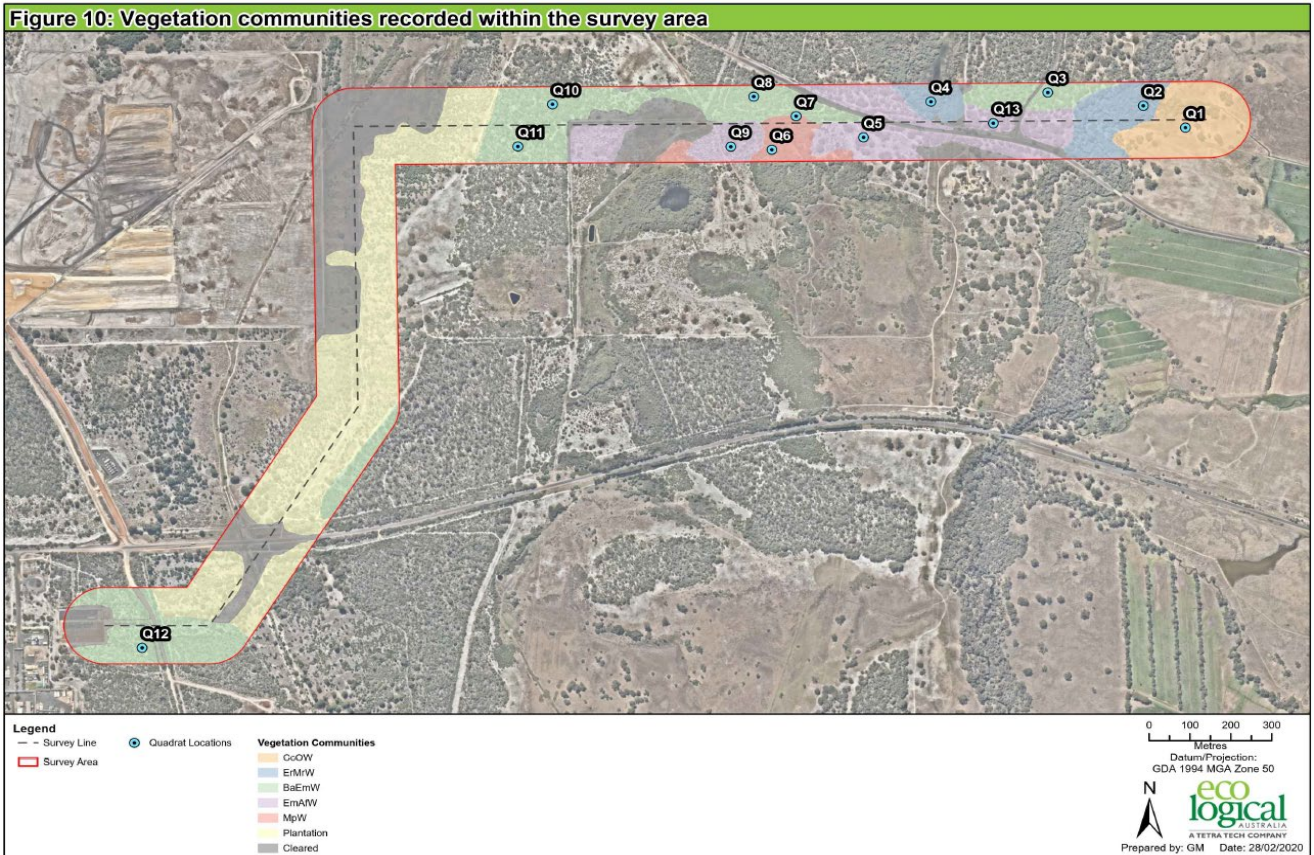


Figure 5. Vegetation communities within the application area (ELA, 2020)

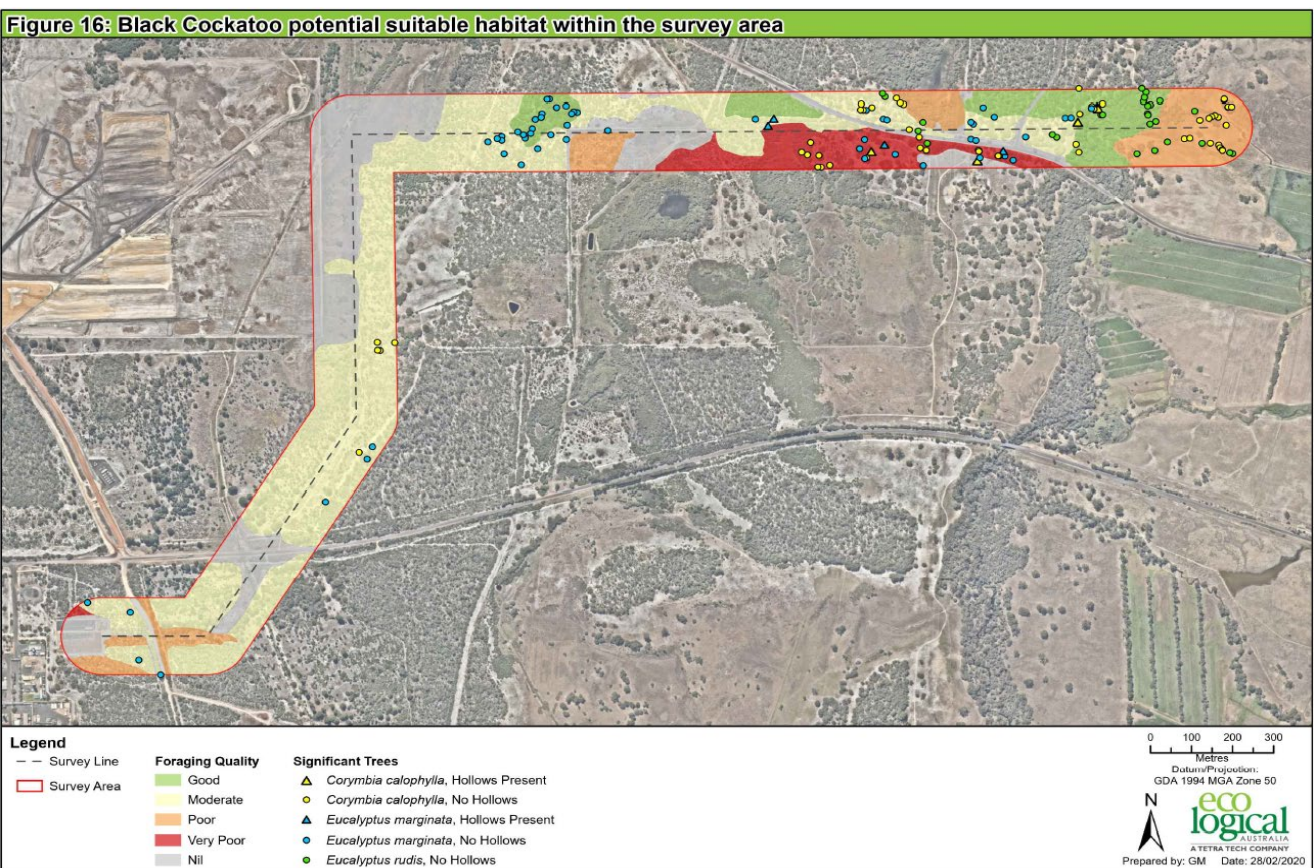


Figure 6. Black cockatoo suitable habitat within the application area (ELA, 2020)

Figure 9: Conservation significant flora recorded within the survey area

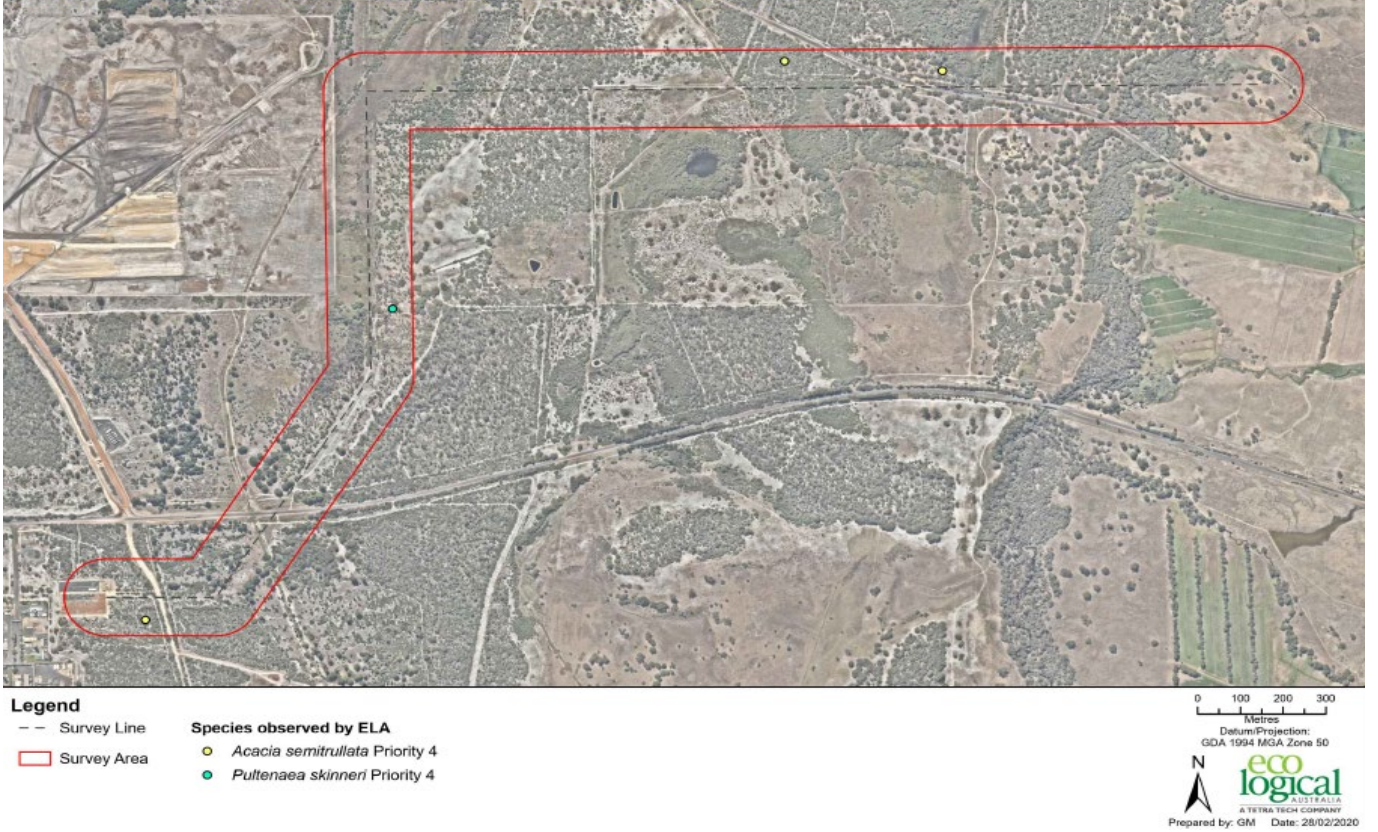


Figure 7. Conservation significant flora habitat within the application area (ELA, 2020)

Figure 12: Vegetation condition recorded within the survey area

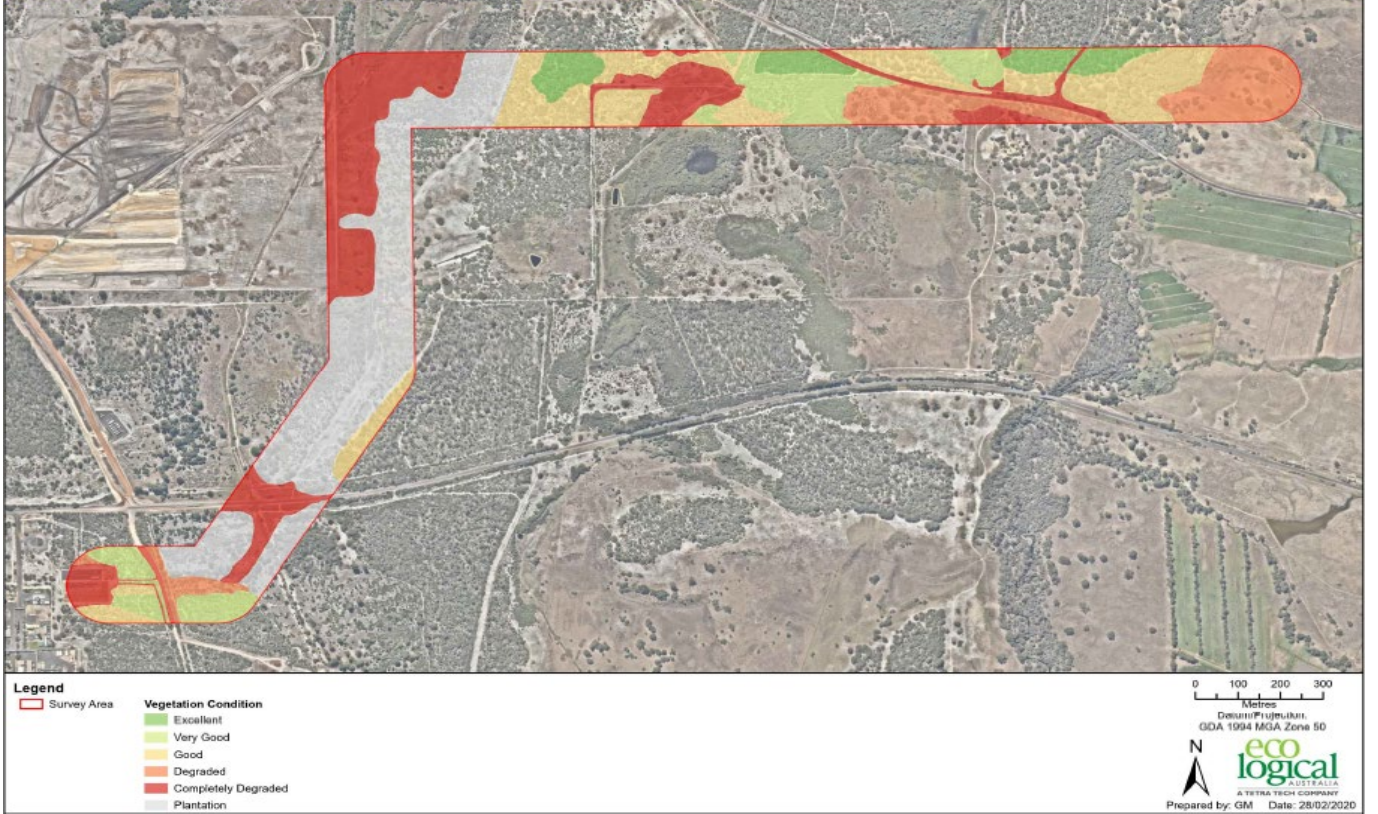


Figure 8. Vegetation condition within the application area (ELA, 2020)

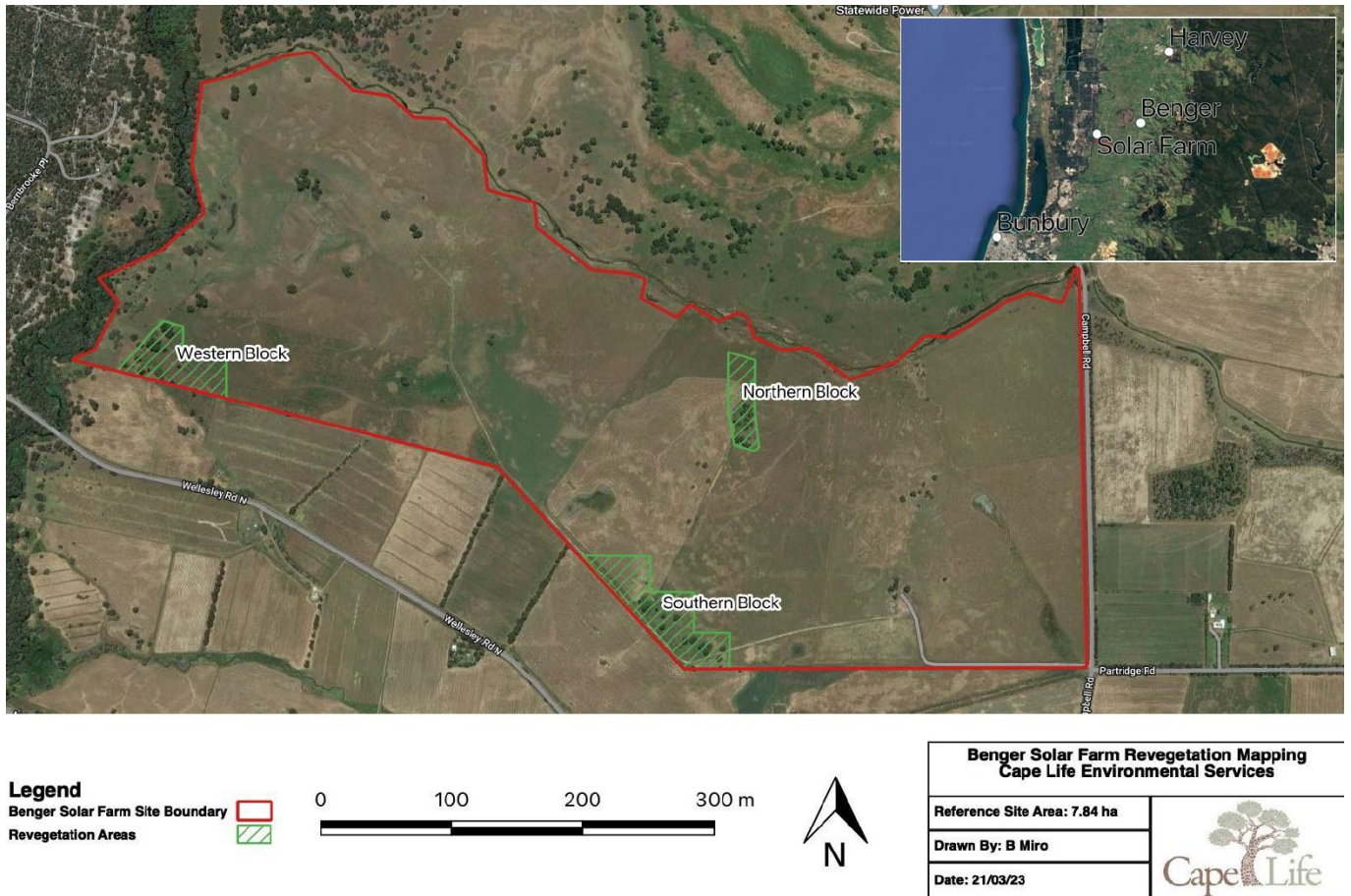


Figure 9. Benger Solar Farm Site Map showing revegetation areas (Cape Life, 2023).

## Appendix G. Sources of information

### G.1. GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- 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
- 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
- Soil Landscape Mapping – Systems

#### Restricted GIS Databases used:

- 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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