GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8758/1
Permit Holder:	SE Waroona Development Pty Ltd
Duration of Permit:	23 October 2020 to 23 October 2025

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done
Clearing is for the purpose purpose of facilitating construction of Waroona Solar Farm and associated infrastructure.

2. Land on which clearing is to be done
Lot 24 on Plan 59266, Waroona
Lot 25 on Plan 59266, Waroona
Road Reserve (PIN 11601195 and 11601194), Waroona.

3. Area of Clearing
The Permit Holder must not clear more than 8.8 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8758/1.

4. Application
This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise and reduce the impacts and extent of clearing
In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in 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. Dieback and weed control
When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the 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 *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. Wind Erosion Management

The Permit Holder must commence activities related to the purpose of the clearing no later than three (3) months after undertaking the authorised clearing, to reduce the potential for wind erosion.

PART III – RECORD KEEPING AND REPORTING

8. Record keeping

The Permit Holder must maintain the following records in relation to the clearing of native vegetation authorised under this Permit:

(a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
(b) the date(s) that the area was cleared;
(c) the size of the area cleared (in hectares);
(d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with Condition 5 of this Permit;
(e) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with Condition 6 of this Permit; and
(f) activities undertaken in accordance with condition 7 of this permit;

9. Reporting

The Permit Holder must maintain the following records in relation to the clearing of native vegetation authorised under this Permit:

(a) The Permit Holder must provide to the CEO, on or before 31 December of each calendar year, a report containing:
    (i) the records required to be kept under condition 8; and
    (ii) records of activities done by the Permit Holder under this Permit between 1 July of the preceding calendar year and 30 June of the current 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 31 December of each calendar year.
(c) The Permit Holder must provide to the CEO, by 23 July 2025, a written report of records required under condition 8, where these records have not already been provided under condition 9(a).

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

dieback means the effect of *Phytophthora* species on native vegetation;

fill means material used to increase the ground level, or fill a hollow;

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;

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; 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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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

30 September 2020

Plan 8758/1

CPS areas approved to clear

Cadastre - LGATE 218

Local Government Authorities

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Officer delegated under section 20 of the Environmental Protection Act 1986

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MGA Zone 50
Geocentric Datum of Australia 1994

GOVERNMENT OF WESTERN AUSTRALIA

Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 8758/1
Permit type:	Purpose permit
Applicant name:	SE Waroona Developments Pty Ltd
Application received:	12 December 2019
Application area:	8.8 hectares (ha) of native vegetation within a 263.1 ha footprint
Purpose of clearing:	Construction of a solar farm
Method of clearing:	Mechanical removal
Property:	Lot 24 and 25 on Plan 59266 and Road Reserve (PINs 11601195 and 11601194)
Location (LGA area/s):	Shire of Waroona
Localities (suburb/s):	Waroona

1.2. Description of clearing activities

The vegetation applied to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5).

The application proposes to selectively remove the remaining remnant vegetation at the property, including dead stag trees, to allow for the construction of a solar farm (the Waroona Solar Farm). The clearing area covers a large portion Lot 24 and 25 on Plan 59266, the majority of which is cleared farmland and degraded remnant vegetation. The applied clearing area was amended during the clearing permit assessment.

The application was revised during the assessment process in response to the preliminary assessment report and request for further information provided to the applicant for comment. The changes included:

- reduction in the amount of vegetation to be cleared from 19 ha to 8.8 ha;
- retention of 175 of the identified black cockatoo habitat trees;
- removal of the Resource Enhancement wetland (ID 4347) from the clearing area and application of a 50 metre buffer around the Conservation Category Wetland (Harvey Main Drain).

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	30 September 2020
Decision area:	8.8 hectares (ha) of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 12 December 2019. DWER advertised the application for public comment and one submission was received.

In undertaking their assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (see Sections 3 and 4). Consideration of matters raised in the public submission is summarised in Appendix B.

In particular, the Delegated Officer has determined that:

- the clearing is not likely to have a significant impact on any breeding, roosting or foraging habitat for black cockatoos at the site. The applicant has committed to retaining all of the mappped foraging habitat at the site, as well as 175 of the 201 potential habitat trees identified. None of the 26 habitat trees proposed to clear contain hollows and all are indicative of dead stag trees;
- the area to be cleared indicates a moderate risk of wind erosion. A wind erosion management condition will ensure that risks are mitigated by imposing a requirement that construciton commences within three (3) months of the proposed clearing;
- the implementation of a suitable weed and dieback management condition is appropriate to mitigate the impact of spreading weeds into adjacent vegetation (see Section 3.2.1);
- the applicant has suitably demonstrated avoidance and minimisation measures (see Section 3.1)

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

1.5. Site map

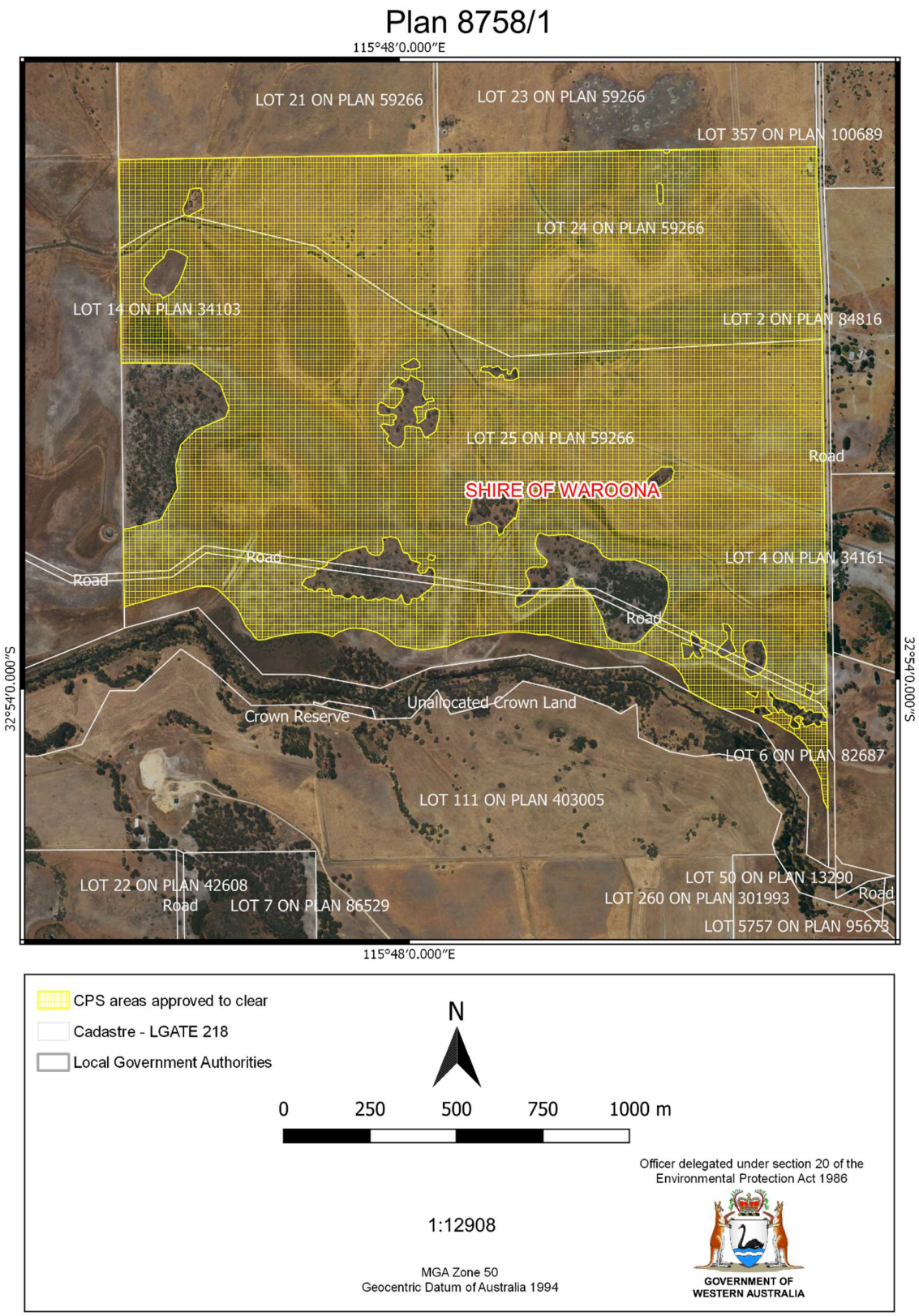


Figure 1. Map of the application area.

The area cross-hatched yellow indicates the areas authorised to be cleared under the granted clearing permit.

2. Legislative context

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

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

1. the precautionary principle;
2. the principle of intergenerational equity;
3. the principle of the conservation of biological diversity and ecological integrity; and

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)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 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

In response to the Request for Information (RFI) issued by DWER, the applicant provided evidence demonstrating that they had removed and retained all of the mapped Black Cockatoo foraging habitat contained at Lot 24 and 25. This included a total of 4.39 ha of vegetation mapped in varying quality for black cockatoo foraging. Also, the amended clearing footprint had removed 175 of the 201 black cockatoo habitat trees, with the remaining 26 containing no hollows suitable for use by black cockatoos. The remaining 26 habitat trees were all recorded as dead stags with limited surrounding vegetation (one of the trees has fallen since the assessment began).

The applicant also removed the Resource Enhancement Wetland from the clearing footprint as per the conditions of the DA from the Shire of Waroona and implemented a 50m buffer of no clearing from the Conservation Category Wetland to the south of the application area.

DWER requested more information on the screen planting as conditioned under the DA from the Shire of Waroona, given the potential for this vegetation to be used to mitigate the removal of black cockatoo habitat. The applicant provided DWER with the *Waroona Solar Farm Landscape Revegetation and Screening Plan* (AECOM, 2020), which outlined some species, numbers and approximate locations of the planting. The plan proposed the planting of black cockatoo foraging species such as *Allocasuarina fraseriana, Banksia ilicifolia, Banksia littoralis, Banksia sessilis, Casuarina obesa* and breeding and foraging species such as *Corymbia calophylla, Eucalyptus marginata* and *Eucalyptus rudis.* The plan also proposed the planting of other native species such as *Acacia pycnantha, Astartea scoparia, Kunzea glabrescens, Ficinia nodosa, Meeboldina cana* and *Lepidosperma longitudinale* (AECOM, 2020a). The specific numbers of each and maps are located in Appendix H.

The Delegated Officer is satisfied that all reasonable efforts had been taken to avoid and minimise potential impacts of the clearing on environmental values.

3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix C) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix D.

This assessment identified that the clearing may pose a risk to the environmental values including biological values, significant remnant vegetation and land and water resources, and that these required further consideration. The detailed consideration and assessment of the clearing impacts against the specific environmental values is provided below. Where the assessment found that the clearing presents an unacceptable risk to environmental values, conditions aimed at controlling and/or ameliorating the impacts have been imposed under sections 51H and 51I of the EP Act. These are also identified below.

3.2.1. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment: A review of the available databases identified twenty-four conservation significant fauna recorded in the local area as listed under the provisions of the *Biodiversity Conservation Act 2016* and/or the *Environment Protection and Biodiversity Conservation Act 1999,* or as Priority species in the state context. Of those, one species was listed as conservation dependent, one Critically Endangered, three Endangered, three Vulnerable, eight under International Agreement, two Priority 3, five Priority 4 and one other specially protected species. The closest conservation significant fauna species is mapped as Carnaby's Cockatoo, recorded approximately 600 metres away.

Based on the above data, habitat preferences and habitat requirements of the species listed under Principle (a), the proposed clearing contains suitable habitat for the following species:

- **Peregrine Falcon** - *Falco peregrinus* (Migratory and Marine): may utilise the larger eucalypts;
- **Western Brush Wallaby** - *Notamacropus Irma* (Priority 4): which may utilise the areas of mixed trees and adjacent paddocks;
- **South-western Brush-tailed Phascogale** - *Phascogale tapoatafa subsp. wambenger* (Conservation Dependent) and the **Western Ringtail Possum** - *Pseudocheirus occidentalis* (Critically Endangered): may utilise the areas of mixed trees, though these are generally smaller patches that are very isolated and of poor quality;
- **Western False Pipistrelle** (*Falsistrellus mackenziei*) and **Southern Brown Bandicoot** (*Isoodon fusciventer*): may utilise remnant patches of vegetation located at Lot 24 and 25;
- **Water Rat/Rakali** (*Hydromys chrysogaster*): may utilise the wetland vegetation contained within Lot 24 and 25;
- wetland bird species including the **Glossy Ibis** - *Plegadis falcinellus* (Migratory), **Curlew Sandpiper** - *Calidris ferruginea* (Critically Endangered and Migratory) and **Common Greenshank** - *Tringa nebularia* (Migratory): some of these species may utilise the poor quality drainage and wetland habitats, and areas within the paddocks which are highly modified but likely to flood over winter.

Black Cockatoos

Carnaby's cockatoo and Baudin's cockatoo are listed as Endangered and Forest Red-Tailed black cockatoo are listed as Vulnerable under the provisions of the Western Australian *Biodiversity Conservation Act 2016*. All three have the same listing categories under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Black Cockatoos nest in hollows in live or dead trees of Karri, Marri, Wandoo, Tuart, Salmon Gum, Jarrah, Flooded Gum, York Gum, Powder Bark, Bullich and Blackbutt (DotEE, 2017). Breeding habitat or a 'habitat tree' is defined in the EPBC Act referral guidelines as 'trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow' (DotEE, 2017). The amended clearing area proposes to remove 26 identified habitat trees, all of which are recorded as dead stags. One of the trees proposed to be cleared has since fallen, identified in a follow up survey by Simon Cherriman (AECOM, 2020a). Given that dead vegetation is still classified as 'native vegetation' under the EP Act, the removal of this fallen tree was still assessed as clearing.

The assessment included utilising existing information from the previous AECOM (2019a) survey and conducting a field assessment of 27 potential breeding habitat trees that may be cleared for the Solar Farm. The field assessment was conducted on 11 July 2020 by Simon Cherriman using an 18m telescopic pole with an attached high-resolution camera. The 27 trees were distributed across the project site with five located in a patch in the south, nine trees distributed across the north and nine trees clustered in the northeast (AECOM, 2020a). Of the 27 trees assessed, one of them had since fallen and one was proposed for retention (ID 112) (AECOM, 2020a). Only one potential breeding tree (FID 112) was assessed as having the 'potential' to be utilised as a current nest site, however, the entrance to this hollow was 150 mm and at the minimum threshold for use by black cockatoos (AECOM, 2020a). This tree was removed from the clearing area so that none of the trees to proposed to clear contain suitable hollows. The results of the follow up survey indicate the 26 trees to be cleared do not provide suitable breeding hollows for black cockatoos and if cleared will not constitute a loss of valuable habitat for the species (AECOM, 2020a).

A review of the available data indicated the applied clearing area is within 6 to 11 kilometres of three mapped and confirmed black cockatoo roost sites. There are also approximately 550 historic black cockatoo sightings in the local area. The referral guidelines indicate while breeding, black cockatoos will generally forage within a 6–12 km radius of their nesting site. Following breeding, birds assemble into flocks and move through the landscape searching for food, usually foraging within 6 km of a night roost (DSEWPC, 2012). The closest of the confirmed roosts is mapped 6.4 km west of the application area. This variable range indicates large areas of foraging habitat are required to support black cockatoo populations. Cumulative impacts of the loss of remnant vegetation on the Swan Coastal Plain restrict the availability of food sources for black cockatoos.

The applicant has committed to retaining all of the foraging resources for Black Cockatoo's contained within Lot 24 and 25, mapped during the original survey (AECOM, 2019a). This included 4.39 hectares of foraging habitat for the three black cockatoo species, as described in the original survey as:

- Carnaby's cockatoo (*Calyptorhynchus latirostris)*
  - 1.80 ha of High Quality foraging habitat; and
  - 2.59 ha of Quality foraging habitat.
- Forest Red-tailed black cockatoo (*Calyptorhynchus banksii naso*)
  - 3.75 ha of Quality foraging habitat; and
  - 0.64 ha of Low Quality foraging habitat.
- Baudin's cockatoo *(Calyptorhynchus baudinii)*
  - 1.80 ha of High Quality foraging habitat; and
  - 2.59 ha of Quality foraging habitat.

Given the above, the clearing proposed would not impact on habitat considered to be significant for Carnaby's, Baudin's or Forest Red-Tailed Black Cockatoos.

Western Ringtail Possum

Large habitat trees, especially those with hollows and *Agonis flexuosa* (Peppermint tree) offer vital habitat for *Pseudocheirus occidentalis* - Western Ringtail Possums (WRP's), listed as critically endangered under the provisions of the *Biodiversity Conservation Act 2016*. The applied clearing area is not part of the Swan Coastal Plain Management zone for WRP. Habitat critical to survival comprises long unburnt mature remnant peppermint woodlands with high canopy continuity and high nutrient foliage with minimal periods of summer moisture stress, and habitat connecting patches of remnants (Jones *et al.* 1994, Jones *et al*. 2004, Wayne *et al.* 2006). However, any habitats where western ringtail possums occur naturally are considered critical and worthy of protection (DPaW, 2017). Several of the mapped fauna habitats from the Ecology Assessment indicated the presence of stands of *Agonis flexuosa* (Peppermint tree) which have the potential to be utilised by WRP's.

Of the 8.8 hectares to be cleared, 3.36 ha is mapped as Mixed Trees (AECOM, 2019a) and recorded as degraded to completely degraded (Keighery, 1994). The aerial imagery indicates that these areas mapped as 'Mixed Trees' within the clearing area are isolated small remnant patches, disconnected from the larger remnant patches in the western and southern portions of Lot 25 and 25. Given the isolated location of these patches within the context of the existing remnant vegetation at the property, it is unlikely that the vegetation proposed to clear is critical for the survival of WRP populations in the area.

Other Conservation Fauna

According to the Ecology Assessment, the survey area indicates marginal, poor quality and highly modified habiat for the following conservation significant species: Peregrine Falcon (*Falco peregrinus),* Western Brush Wallaby (*Notamacropus Irma),* South-western Brush-tailed Phascogale (*Phascogale tapoatafa subsp. wambenger*) and wetland bird species Glossy Ibis (*Plegadis falcinellus*), Curlew Sandpiper (*Calidris ferruginea*) and Common Greenshank (*Tringa nebularia*). A desktop assessment by the DWER assessing officer also identified that the southern brown bandicoot (*Isoodon fusciventer*) and western false pipistrelle (*Falsistrellus mackenziei*) have the potential to occur at the property given the species habitat preferences, vegetation located at the property and previous records in the local area.

DBCA advice received on 22 May 2020 indicated the proximity of the proposed clearing and construction activities to the Harvey River Main Drain may result in siltation. Increased amounts of sediments such as fine dust, particles or other organic materials would increase the turbidity of the water. This may impact on aquatic fauna such as freshwater fish, Carter's freshwater mussel and water rats (Rakali - *Hydromys chrysogaster*) uitilising the Harvey River Main Drain for habitat. The applicant has committed to implementing a 50 metre buffer from the Harvey River Main Drain to ensure the impacts of the clearing area minimised to acceptable levels.

The southern brush-tailed phascogale (*Phascogale tapoatafa subsp. wambenger*) is a small arboreal dasyurid. In south west Western Australia, it is often observed in dry sclerophyll forests and open woodlands that contain hollow bearing trees. Habitat clearing, fragmentation, and alteration by logging and mining are the greatest threats to this species (DEC, 2012b). Given the greatest threat appears to be the reduced availability of trees with hollows in suitable habitat, and the application area containing over 201 potential habitat trees (22 of which contain hollows), the applied clearing may impact on habitat for this species. The loss of habitat trees as a result of the 2016 Yarloop fire may also have impacted on the availability of habitat for this species, and any further clearing of hollow bearing trees would further reduce the availability. However, the degraded condition, highly modified composition and fragmented location of the remnant vegetation would limit the significance of the habitat and related environmental risks of clearing.

The western brush wallaby is a medium to small grazer similar to larger kangaroos. Their range has been seriously reduced and fragmented due to clearing for agriculture and there is a significant decline in abundance within most remaining habitat. The western brush wallaby is now distributed across the south-west of Western Australia from north of Kalbarri to Cape Arid (DEC, 2012). Their optimum habitat is open forest or woodland, particularly favouring open, seasonally-wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heath-land and is uncommon in karri forest. DBCA advice indicated the isolated trees, 'clumps of eucalypts' and small patches of vegetation, with no or little understorey are unlikely to be of value to the threatened and priority mammals and are usually avoided as they do not offer protection from predators (DBCA, 2020). Given the majority of the site indicates open paddock with minimal areas of forbland and shrubland, the application area is unlikely to provide significant habitat for this species.

The Peregrine Falcon (*Falco peregrinus*) is a well-known falcon, the Peregrine inhabits a vast array of environments in Australia. Usually uncommon and migratory (Pizzey & Knight, 2007). This species lays its eggs in recesses of cliff faces, tree hollows or large abandoned nests (Bamford, 2008). As this is migratory and uncommon, the application is unlikely to support significant habitat for this species.

The Glossy Ibis (*Plegadis falcinellus*), Curlew Sandpiper (*Calidris ferruginea*) and Common Greenshank (*Tringa nebularia*) are are wetland bird species who may utilise the poor quality drainage areas and seasonally inundated or waterlogged areas of the application area (AECOM, 2019a). As discussed under Principle (f), given the degraded nature and lack of current value of the wetland areas, the application area is unlikely to offer significant habitat for the conservation significant water bird species listed above.

F. mackenziei is known to inhabit mostly wet Karri (*Eucalyptus diversicolor*) sclepyphyll forest or high rainfall zones of Jarrah (*Eucalyptus marginata*) dry sclerophyll forest; also Tuart (*Eucalyptus gomphocephala*) and adjacent woodlands (Van Dyck, Gynther & Banker, 2013). The species roosts in hollow bearing trees, similar to those suitable for black cockatoo species. As mentioned above, one of the 27 habitat trees in the clearing area indicated a hollow (Tree ID 110). As 175 habitat trees have been retained by the applicant, the clearing is unlikely to impact on habitat significant for this species.

Isoodon fusciventer or quenda prefer dense scrub (up to one metre high), with swampy vegetation but are found in a variety of other habitats (Menkhorst & Knight, 2011). The species is widely distributed near the south west coast from north of Geraldton to east of Esperance. Quenda have a patchy distribution throughout the Jarrah and Karri forest, the Swan Coastal Plain, and inland as far as Hyden (DEC, 2012a). They will often feed in adjacent forest and woodland that is burnt on a regular basis, and in areas of open grassland, pasture and crop land lying close to dense cover (DEC, 2012a). Given the application area lacks abundant heath or scrub vegetation types and the wetland vegetation is mapped as degraded to completely degraded (Keighery, 1994), the clearing is not likely to impact on habitat significant for this species.

Ecological Linkages

A review of the available databases indicates the clearing area does not contain any mapped ecological linkages, however, the SWREL line is directly adjacent to the south boundary of the applied clearing area and runs east to west following the route of the Harvey River Main Drain (Conservation Category Wetland). DBCA advice suggested the 50 metre buffer as conditioned under the Solar Farms Development Approval from the Shire of Waroona would be sufficient as a buffer between the impact of the clearing (and future solar array) and the fauna that use the river, or may move along the vegetation in the ecological linkage (DBCA, 2020). A further roadside conservation linkage also exists down the eastern boundary of the application area, however, given the disconnected vegetation cover, the linkage retains limited functionality.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable** in relation to this environmental value.

Conditions: No fauna management conditions required.

3.2.2. Environmental value: biological values (flora) – Clearing Principles (a) to (d)

Assessment: The application area covers a footprint of 263.14 hectares with the applied clearing covering 8.8 hectares. The applied area is located in the Swan Coastal Plain IBRA Bioregion and the Swan Coastal Plain – Perth (SWA02) subregion, forming part of South West Botanical Province which has a very high degree of species diversity (Beard, *et al.* 2000). Within the subregion there are areas of relatively high ecosystem or species diversity, notably on the eastern side of the coastal plain (Mitchell, Williams & Desmond, 2002).

A review of the available databases identified a total of 40 threatened and priority flora recorded in the local area as listed under the under the commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, state *Biodiversity Conservation Act 2016* or as Priority species in the state context. Eight of those were listed as Threatened, two Priority 1, three Priority 2, nineteen Priority 3 and eight Priority 4. Of those forty species, twenty eight were considered as possible or likely to occur in the application area. No threatened for priority flora species listed

under state or commonwealth legislation were recorded during the reconnaissance flora and vegetation assessment (AECOM, 2019a) and the application area was considered to present no suitable habitat for the species identified as likely, or possible to be present pre-survey.

According to the available databases, twelve state or commonwealth listed Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) are mapped to occur in the local area. Of those, five were found likely to occur based on their description and flora constitution. The *Biodiversity Conservation Act 2016* listed Priority 3 and *Environment Protection and Biodiversity Conservation Act 1999* listed Endangered TEC '*Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region*' was mapped with several occurrences within the application area. The Ecology Assessment did not identify any TEC's or PEC's in the survey area. None of the patches of remnant native vegetation met the key diagnostic criteria that defines '*Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region*' as outlined in the approved conservation advice. The Ecology Assessment also identified the TEC *'Clay Pans of the Swan Coastal Plain*' as likely to occur in the application area. This TEC is listed as Critically Endangered under the EPBC Act and occurs where clay soils form an impermeable layer close to the surface with wetlands forming as a result of rainfall to fill them in winter, drying out to impervious pans in summer (DSEWPaC, 2012). Floristic composition is generally a shrubland over geophytes, herbs and sedges with no specific dominant species common across all occurrences (AECOM, 2019a). The degraded condition of the wetlands within the survey Area has reduced vegetation to common pasture weeds and some native herbs and sedges. The continued eroding processes would consider the area unsuitable for representing the Clay Pans TEC (AECOM, 2019a).

The vegetation proposed to be cleared is surrounded by completely degraded or cleared farmland and paddocks with many of the previously mentioned hollow containing habitat trees recorded as dead and devoid of ground cover vegetation (AECOM, 2019a). The entire survey area is classified as Completely Degraded or Degraded (Keighery, 1994) condition with the majority classed as Paddock. The local area (10km radius) retains 18.5 % of its pre-European native vegetation extent indicating the application area is within an extensively cleared landscape. As discussed under Principle (e), the vegetation associations mapped in the application area also range from approximately 9 to 18 % of their pre-European vegetation extents, however, given the overall poor condition of the vegetation applied to clear, they are not considered as representative of their mapped vegetation types and not significant remnants.

As discussed under section 3.2.1, the application area sits directly adjacent to the mapped South West Regional Ecological Linkage (SWREL), with the linkage corresponding with a strip of vegetation following the Harvey River Main Drain (Conservation Category Wetland). DBCA advice suggested the 50 metre buffer as conditioned under the Solar Farms Development Approval from the Shire of Waroona would be sufficient as a buffer between the impact of the clearing (and future solar array) and the fauna that use the river, or may move along the vegetation in the ecological linkage (DBCA, 2020).

As discussed under section 3.2.1, marginal, poor quality and highly modified habitat is present for conservation significant fauna Peregrine Falcon (*Falco peregrinus*), Western Brush Wallaby (*Notamacropus Irma*), South-western Brush-tailed Phascogale (*Phascogale tapoatafa subsp. wambenger*), Western Ringtail Possum (*Pseudocheirus occidentalis*) wetland bird species including the Glossy Ibis (*Plegadis falcinellus*), Curlew Sandpiper (*Calidris ferruginea*), Common Greenshank (*Tringa nebularia*), and three conservation significant black cockatoo species occurring in Western Australia. Also, Southern Brown Bandicoot/Quenda (*Isoodon fusciventer*) and Western False Pipistrelle (*Falsistrellus mackenziei*) are known from the local area and have the potential to occur in the application area. Given the degraded condition and lack of understory vegetation, the proposed clearing will not remove significant habitat for any of the conservation significant fauna identified in the local area, or with the potential to occur in the application area.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable** in relation to this environmental value.

Conditions: No flora and/or vegetation management conditions required.

3.2.3. Environmental value: significant remnant vegetation – Clearing Principles (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 application area is contained within the Swan Coastal Plain IBRA bioregion and is mapped as the following vegetation associations:

- **Serpentine River Complex (35)** – closed scrub and fringing woodland;
- **Cannington Complex (40)** – mosaic of vegetation from adjacent complexes; and
- **Southern River Complex (42)** – open woodland (Heddle et al, 1980)

In assessing the risk of further loss and subsequent effects, consideration has been given to the extent of native vegetation remaining and what is currently managed as conservation estate:

- the local area in the application was defined as a 10 km radius from the application area, which retains 18.5% of its pre-European vegetation extent, which will be reduced by 0.00002 % by the proposed clearing;
- the Shire of Waroona retains approximately 25 % of its pre-European vegetation extent;
- vegetation associations 35, 40 and 42 retain approximately 10, 12 and 18 % of their pre-European vegetation extent respectively;

The majority (>75%) of the application area is mapped as the Southern River Complex (42). This complex is described as 'Open Woodland of *Corymbia calophylla* (marri) - *Eucalyptus marginata* (jarrah) - banksia species with fringing woodland of *Eucalyptus rudis* (flooded gum) - *Melaleuca rhaphiophylla* (swamp paperbark) along creek beds'. Given that > 90 % of the application area was mapped during the Ecology Assessment (2019a) as open paddock comprising common pasture weeds, at a broad scale it is unlikely the on-ground vegetation is an accurate representation of the historical and mapped vegetation types.

The recorded vegetation units Cc, CcApAc, and CcJp, taken from the Ecology Assessment, display similar characteristics to the Southern River Complex, with *Corymbia calophylla* (marri) in an open woodland of Banksia species and *Melaleuca rhaphiophylla*. These vegetation types cover a total of 3.49 hectares and indicate a range of conditions from Degraded to Completely Degraded (Keighery, 1994) to cleared. The recorded vegetation unit EmKgAc displays similar structure and characteristics as the Southern River Complex, with *Eucalyptus marginata* (jarrah) and *Banksia ilicifolia* (holly-leafed banksia) in a low to mid open woodland. This vegetation type covers 0.15 hectares and is in a degraded to completely degraded (Keighery, 1994) condition. The remaining vegetation units Mr and MrJp display broadly similar vegetation to Serpentine River Complex with *Melaleuca rhaphiophylla* individuals, however the on-ground vegetation departs from the historical mapped vegetation in its structure and species composition. This recorded vegetation covers 5.23 hectares and ranges from degraded to completely degraded (Keighery, 1994) condition.

Given the vegetation applied to clear is in a degraded to completely degraded condition, and noting the applicant's commitment to retain 175 of the 201 mapped habitat trees, remove all of the foraging resources for black cockatoos, install a 50 metre buffer from the CCW to the south and remove the Resource Enhancement Wetland from the application area, it is unlikely the vegetation proposed to be cleared represents significant remnant patches of vegetation in a highly cleared landscape.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable** in relation to this environmental value.

Conditions: No management conditions required.

3.2.4. Environmental value: land and water resources – Clearing Principles (f), (g), (i)

Assessment: According to the available databases, the application area does not contain any known Ramsar sites, with the closest 8km to the west of the application area, mapped as the Peel-Yalgorup (36) system.

Large sections of the application area are mapped as multiple use Palusplain wetlands (UFI 15231), damplands or sumplands. This historical wetland has been highly modified at the landscape level by previous clearing for agriculture and other human needs, as noted by the aerial imagery. This area appears to retain significantly limited wetland values. Multiple use category wetlands are wetlands with few important ecological attributes and functions remaining. Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through Landcare (Water and Rivers Commission, 2001).

The Ecology Assessment identified an area (0.3 hectares) recorded as a small Resource Enhancement wetland – UFI 4347 (AECOM, 2019a). This is a sumpland characterised by a patch of Melaleuca over common pasture weeds and grasses, which is in a completely degraded condition. Several of the recorded vegetation types indicated *Melaleuca rhaphiophylla, Juncus preissianus* and other wetland related species (AECOM, 2019a). Resource enhancement category wetlands are considered priority wetlands which may have been partially modified but still retain substantial ecological attributes and functions. The ultimate objective is for management, restoration and protection towards improving their conservation value (Water and Rivers Commission, 2001). In accordance with condition 3 of the Development Application (DAP/19/01667), DBCA advice suggested the application area should be amended to exclude the Resource Enhancement Wetland (UFI – 4347). The applicant has committed to removing the Resource Enhancement Wetland (UFI – 4347) from the area to be cleared.

As discussed under section 3.2.1, the southern boundary of the application area intersects with an Environmentally Sensitive Area (ESA), also mapped to the corresponding Conservation Category Wetland – Harvey River Main Drain (UFI – 14584). Conservation category wetlands support a high level of ecological attributes and functions. The objective for these wetlands is preservation of wetland attributes and functions through various mechanisms (Water and Rivers Commission, 2001). The applicant has committed to implementing a 50 metre buffer from the Harvey Main Drain.

The proximity of the proposed clearing and construction activities to the Harvey River Main Drain may result in siltation which would act to increase the turbidity of the water. The applicant has confirmed that the Preliminary Environmental Management Plan (PEMP) includes management actions including the use of silt curtains and wind breaks (AECOM, 2019d). This will act to limit any siltation and sedimentation in the Harvey River Main Drain.

Due to a history of eutrophication in the Peel-Harvey inlet, potential for clearing to increase nutrient loading in the Harvey River was considered by the applicant throughout their project design. The applicant has confirmed that no fertiliser will be added to the property.

The applicant supplied their development approval from the Shire of Waroona (DAP/19/01667) assessed under the *Planning and Development Act 2005* and the Shire of Waroona District Planning Scheme No. 7 by the Mid-West/Wheatbelt Joint Development Assessment Panel. Condition 6 of the Development Approval required the applicant to submit and have approved by the LGA, and thereafter implement an Environmental Management Plan (EMP) addressing a range of matters including stormwater and drainage. Table 5 of the applicants EMP indicates several management strategies related to minimising surface and groundwater regime disturbance including:

- maintain natural contours and drainage patterns where practicable;
- implement best industry practice for sediment and erosion management; and
- revegetate disturbed areas as soon as reasonably practicable (AECOM, 2019c).

The applicant has confirmed that the Preliminary Environmental Management Plan (PEMP) includes management actions including the use of silt curtains and wind breaks (AECOM, 2019d). This will act to limit any siltation and sedimentation in the Harvey River Main Drain.

The application area covers eight (DPIRD, 2017) mapped soil sub-systems. The descriptions are outlined in appendix C and their associated land degradation risks in Appendix G. At the request of DWER, DPIRD officers investigated the site in relation to land degradation risks (DPIRD, 2020). The supplied report indicated if the vegetation is cleared, there is an increased risk of wind erosion on the deep bleached sand on the low, very low and undulating sand rises of the Bassendean Subsystem. The risk of eutrophication has been assessed as high with some map units having a very high to extreme phosphorus export risk on some soil types.

The report states the risk of eutrophication causing land degradation is extreme to high on map unit 212Bs_B3 and 212BsW_Swamp. These two map units cover a small portion of the clearing area (approximately 5 %). Therefore, clearing within these areas will be limited in its extent and act to limit the impacts of eutrophication as a result of clearing (DPIRD, 2020). Given the above, the assessment report from the DPIRD officer indicated the clearing as it was originally proposed was at variance to principle (g). The applicant has reduced the amount of vegetation to be cleared from 19 ha to 8.8 ha, thereby reducing the impacts of land degradation. Given the majority (> 90 %) of the application area is cleared with all of the vegetation to be cleared in degraded to completely degraded (Keighery, 1994) condition, it is unlikely the risks of land degradation with have a significant impact on the clearing area.

In relation to land degradation as a result of wind erosion, the applicant has indicated the project will require clearing of 8.8 hectares within a total area of approximately 263 hectares, comprising approximately 3.3 % of the land area. The clearing will take place immediately before construction to prevent exposing the land surface to wind erosion for extended periods of time (AECOM, 2019c). Based on this commitment, if granted DWER will condition the permit to allow staged clearing, where construction must commence within three (3) months of the clearing taking place. If this clearing occurs during summer, the applicant will apply a layer of Hydromulch to stabilise the surface and avoid wind erosion. If the clearing occurs in winter, local rains will act to prevent wind erosion and dust.

The above land degradation risks will be managed through the use of an Environmental Management Plan (EMP). The applicant has indicated the Preliminary Environmental Management Plan (PEMP) includes management strategies such as:

- Avoid or minimise ground disturbance, soil movement and other dust-producing activities;
- Utilise water or wetting agent on any exposed areas, including unpaved roads and laydown areas;
- Utilise wind breaks and silt fencing;
- Undertake flexible management of speed limits in accordance with road and wind conditions;
- Implement best industry practice for sediment and erosion management, including minimising ground disturbance, implementing erosion and sediment controls, strategic stockpile location selection, stabilisation of stockpiles etc; and
- Ensure revegetation or stabilisation of disturbed areas as soon as reasonably practicable (AECOM 2019d).

The details of these strategies will be included in the Construction Environmental Management Plan (CEMP) to be approved by the Shire of Waroona, in accordance to condition 6 of the Development Application Approval (DAP/19/01667).

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered **acceptable subject to relevant conditions (see below)** in relation to this environmental value.

Conditions: To address the above impacts, the following conditions will be added to the permit:

- Staged Clearing: wind erosion management – the applicant must commence the activities related to the purpose of the clearing within three (3) months of the clearing.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Development approval under the *Planning and Development Act 2005* (issued by the Shire of Waroona)

The Shire of Waroona advised DWER that local government approvals are required, and that the clearing is consistent with the Shire's Local Planning Scheme. The Shire did not have any objections to the clearing.

The site is currently zoned as Rural 1 – General Farming Zone. Development of the site for use as a solar farm is a 'Use not Listed' under the current zoning and as such Planning Consent needs to be obtained under the Shire of Waroona District Planning Scheme No. 7 (the Scheme). To obtain Planning Consent, a planning application was submitted to the Shire of Waroona in August 2019 and approved in November 2019. The planning approval (DAP/19/01667) was approved in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the Planning and Development (Local Planning Schemes) Regulations 2015, and the provisions of the clause 3.13.1 of the Shire of Waroona Local Planning Scheme No. 7, subject to the following conditions:

1. The Development / Land Use shall be in accordance with the attached approved plan(s) and subject to any modification required as a consequence of any condition(s) of this approval. The endorsed plans shall not be modified or altered without the prior written approval of the local government.

2. No signs or hoardings shall be erected on the lot without the prior written approval of the local government.

3. Prior to commencement of works the applicant shall provide an amended site plan showing the following:

    a. a minimum buffer distance of 50m from the high water mark of the 'Conservation Category Wetland (CCW) (Harvey River Main Drain).
    b. minimum setbacks from the 'Resource Enhancement' wetland required by the Department of Biosecurity, Conservation and Attractions.

4. Prior to commencement of works the applicant shall enter into an agreement with the local government, prepared at the applicants cost, by which the operator agrees to financially contribute to the following:

    a. repair and maintenance of the local road (Landwehr Road) during the construction phase to the satisfaction of the local government.

5. Prior to commencement of works the applicant shall submit and have approved by the local government, and thereafter implement to the satisfaction of the local government, a 'Construction Management Plan' addressing the following matters:

   a. construction traffic,
   b. signage,
   c. dust management; and
   d. construction operating hours.

6. Prior to commencement of works the applicant shall submit and have approved by the local government, and thereafter implement to the satisfaction of the local government, an 'Environmental Management Plan' addressing the following matters:

   a. remnant vegetation,
   b. foreshore management demonstrating the mitigation of risks to the CCW,
   c. contamination,
   d. stormwater and drainage,
   e. fire management,
   f. stock management, and
   g. rehabilitation plan.

7. Prior to commencement of works the applicant shall submit and have approved by the local government, and thereafter implemented to the satisfaction of the local government, an 'Ecological Assessment / Management Plan'.

8. The applicant is required to give at least 3 months' notice to the local government if the proposed development is to cease operations and all solar panels and infrastructure must be decommissioned and removed within the 1 year of giving this notice, unless the local government agrees otherwise.

9. Prior to commencement of works a landscaping plan to be submitted to the local government for approval, which includes implementation and maintenance.

10. This decision constitutes planning approval and is valid for a period of four (4) years from the date of approval. If the subject development is not substantially commenced within the four (4) year period, the approval shall lapse and be of no further effect.

Advice Notes

1. The proponent is advised that all other government agencies approvals (where required) are to be complied with i.e. clearing permits.

2. The proponent is advised that they should consult with the Department Primary Industries and Regional Development on the appropriate stocking levels for the grazing of sheep within the development area.

3. The proponent is encouraged to enter into a financial contribution program towards the development of community projects within the local government area.

Where an approval has so lapsed, no development shall be carried out without further approval having first been sought and obtained, unless the applicant has applied and obtained Development Assessment Panel approval to extend the approval term under regulation 17(1)(a) of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

The applicant referred the proposal to the Commonwealth Department of Agriculture, Water and the Environment (EPBC ref: 2020/8751) due to the potential for significant impacts on Matters of National Environmental Significance. On 23 September 2020, a determination was published by a delegate for the Minister for Environment that the proposed action is not a controlled action and that no further assessment or approval under the EPBC Act was required (Department of Agriculture, Water and the Environment, 2020).

A search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry System (AHIS) indicated that there are no Registered Aboriginal Heritage Sites or Other Heritage Places within the site. The nearest Register Aboriginal Heritage Site is Buller Road Camp (ID 3547), located approximately 3.5 km northeast of the site. This site is registered for its historical value as a camp site.

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.

Appendix A – Additional information provided by applicant

Summary of comments	Consideration of comment
Applicant provided DWER with amended Waroona Solar Farm Clearing Permit Application documents including additional information on the screen planting and changes to the application area and shapefiles.	Additional information on screen planting, retention of habitat trees and foraging habitat for black cockatoos, removal of wetland areas and amended clearing area was considered during the assessment of the application, outlined in Section 3.

Appendix B – Details of public submissions

Summary of comments	Consideration of comment
The clearing permit application was advertised on the DWER website on 19 March 2020 with a 21 day submission period. One submission was been received in relation to this application. The submission raised concerns regarding: • black cockatoo flock movements past the proposed development area during breeding migrations, including the importance of maintaining foraging habitat; • the importance of retaining breeding habitat, including isolated paddock trees (or providing replacement options); • potential increased value of all remaining foraging and breeding habitat, if habitat has been reduced by the 2016 Yarloop Fire; • the importance of considering cumulative impacts; and • the importance of considering the need for referral.	The above points have been addressed under section 3.2.1.

Appendix C – 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 D.

1. Site characteristics

Site characteristic	Details
Local context	The application area combines two properties which are majority made up of cleared farmland and pasture comprising common pasture weeds and some remnant vegetation. It is adjacent to the Harvey Main Drain to the south which is mapped as a Conservation Category Wetland. The application area comprises of remnant isolated patches of vegetation in a completely degraded to degraded condition. *Spatial data* indicates the local area (10 km radius of the proposed clearing area) retains approximately 18% of the original native vegetation cover.
Vegetation description	The vegetation survey (AECOM, 2019) indicates the vegetation within the proposed clearing area to consist of majority cleared pasture, mixed Eucalypt (*Corymbia calophylla* & *Eucalypt marginata*), Banksia and Melaleuca woodland. The full survey descriptions and mapping are available in Appendix F.

<table>
<tr><th>Site characteristic</th><th>Details</th></tr>
<tr><td></td><td>This is broadly consistent with the Swan Coastal Plain mapped vegetation types (Heddle, 1980):
Serpentine River Complex (35) - Closed scrub of Melaleuca species and fringing woodland of Eucalyptus rudis (Flooded Gum) – Melaleuca rhaphiophylla (Swamp Paperbark) along streams;
Cannington Complex (40) - Mosaic of vegetation from adjacent vegetation complexes of Bassendean, Karrakatta, Southern River and Vasse;
Southern River Complex (42) - Open woodland of Corymbia calophylla (Marri) - Eucalyptus marginata (Jarrah) - Banksia species with fringing woodland of Eucalyptus rudis (Flooded Gum) - Melaleuca rhaphiophylla (Swamp Paperbark) along creek beds.</td></tr>
<tr><td>Vegetation condition</td><td>The vegetation survey (AECOM, 2019a) indicates the vegetation within the proposed clearing area to be in a completely degraded to degraded (Keighery, 1994) condition, described as:
Degraded - Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely Degraded - The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.
<table><tr><th>Condition</th><th>Sum of area (ha)</th><th>% of Total</th></tr><tr><td>Cleared</td><td>254.3</td><td>96.6</td></tr><tr><td>Completely Degraded</td><td>7.0</td><td>2.7</td></tr><tr><td>Degraded</td><td>1.8</td><td>0.7</td></tr><tr><td>Total</td><td>263.1</td><td>100.0</td></tr></table>The full Keighery condition rating scale is provided in Appendix E, below. The full survey descriptions and mapping are available in Appendix F.</td></tr>
<tr><td>Soil description</td><td>The application area is mapped as the following soil types:

Bassendean B1 Phase (212Bs_B1): 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.

Bassendean B2 Phase (212Bs_B2): Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.

Bassendean B3 Phase (212Bs_B3): Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

Bassendean B4 Phase (212Bs_B4): Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan.

Bassendean B6 Phase (212Bs_B6): Sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands.

Pinjarra 10a Phase (213PjSWP10a): Flat terraces adjacent to major rivers with deep black cracking clays with alkaline subsoils; soils similar to P5.</td></tr>
</table>

Site characteristic	Details
	Pinjarra P2 Phase (213Pj_P2): 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. **Swamp 212BsW_SWAMP:** Swamp.
Land degradation risk	The land degradation risks are outlined in the table found in Appendix G. Given the broad range of soils across the site, the land degradation risks vary depending on soil type, topographic contours and proximity to permanent and non-perennial water bodies. Portions of the site indicate a high risk of waterlogging due to clay soils that inundate with seasonally high rainfall. The Bassendean system which covers approximately 90 % of the application area indicates a moderate to high risk of wind erosion due to the sandy nature of the soils. The soil types 212Bs_B3 and 212BsW_Swamp indicates an increased risk of eutrophication with a mapped moderate to high risk of phosphorus export. At the request of the Delegated Officer, DPIRD officers assessed the site for the risks of land degradation. The results are discussed in section 3.2.3.
Waterbodies	Large sections of the application area are mapped as multiple use Palusplain wetlands (UFI 15231), damplands or sumplands. There is also a Resource Enhancement Wetland mapped within the project area and a Conservation Category wetland immediately adjacent.
Conservation areas	The application area is located approximately 1 km east of Buller Nature Reserve, approximately 3.6 kilometres west of Myalup State Forest, approximately 9 kilometres east of Hamel State Forest and the larger Dwellingup State forest is located approximately 12 km to the east.
Climate and landform	The application is mapped within the Pinjarra Plain and combination of the Bassendean Dunes and Pinjarra Plain landform units. The majority of the applied clearing area is mapped as the Bassendean Dunes, described as *Swan Coastal Plain from Busselton to Jurien. Sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths.* The Pinjarra Plain is described as *Swan Coastal Plain from Perth to Capel. Poorly drained coastal plain with variable alluvial and aeolian soils. Variable vegetation includes Jarrah, marri, wandoo, paperbark sheoaks and rudis* (DPIRD, 2017). The clearing area indicates annual mean maximum and minimum temperatures of 23.1°C and 11.5°C (1951-2020) respectively and annual mean rainfall (mm) of 957.4 (1951-2020) (BOM, 2020).

2. Flora, fauna and ecosystem analysis

With consideration for the site characteristics set out above, relevant datasets (see Appendix I), and biological survey information, the following conservation significant flora and fauna species, and ecological communities may be impacted by the clearing.

Species / Ecological Community	Conservation Code	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Flora						
Acacia flagelliformis	P4	7.20	Y	Y	N/A	Y

Species / Ecological Community	Conservation Code	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Acacia semitrullata	P4	5.43	Y	Y	N/A	Y
Boronia capitata subsp. gracilis	P3	1.37	Y	Y	N/A	Y
Caladenia speciosa	P4	3.75	Y	Y	N/A	Y
Dillwynia dillwynioides	P3	10.15	Y	Y	N/A	Y
Diuris micrantha	T	8.22	Y	Y	N/A	Y
Drakaea elastica	T	9.79	Y	Y	N/A	Y
Drakaea micrantha	T	9.64	Y	Y	N/A	Y
Haloragis scoparia	P1	7.77	Y	Y	N/A	Y
Hemigenia microphylla	P3	3.70	Y	Y	N/A	Y
Platysace ramosissima	P3	8.85	Y	Y	N/A	Y
Schoenus natans	P4	3.70	Y	Y	N/A	Y
Schoenus sp. Waroona (G.J. Keighery 12235)	P3	3.54	Y	Y	N/A	Y
Stylidium aceratum	P3	9.54	Y	Y	N/A	Y
Stylidium longitubum	P4	7.93	Y	Y	N/A	Y
Stylidium trudgenii	P3	7.91	Y	Y	N/A	Y
Synaphea odocoileops	P1	8.72	Y	Y	N/A	Y
Synaphea sp. Serpentine (G.R. Brand 103)	T	9.36	Y	Y	N/A	Y
Synaphea stenoloba	T	8.45	Y	Y	N/A	Y
Tripterococcus sp. Brachylobus (A.S. George 14234)	P4	7.91	Y	Y	N/A	Y
Fauna						
Calyptorhynchus banksii naso (Forest red-tailed Black Cockatoo)	VU	1.64	N/A	N/A	Y	Y
Calyptorhynchus baudinii (Baudins Cockatoo)	EN	4.32	N/A	N/A	Y	Y
Calyptorhynchus latirostris (Carnaby's Cockatoo)	EN	0.68	N/A	N/A	Y	Y

Species / Ecological Community	Conservation Code	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Falco peregrinus (Peregrine Falcon)	VU	9.31	N/A	N/A	Y	Y
Falsistrellus mackenziei (Western False Pipistrelle)	OS	3.80	N/A	N/A	Y	Y
Hydromys chrysogaster (Water Rat/Rakali)	P4	3.18	N/A	N/A	Y	Y
Isoodon fusciventer (Southern Brown Bandicoot)	P4	1.06	N/A	N/A	Y	Y
Notamacropus irma (Western Brush Wallaby)	P4	1.64	N/A	N/A	Y	Y
Phascogale tapoatafa wambenger (South-west Brush Tailed Phascogale)	P4	1.52	N/A	N/A	Y	Y

3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA bioregion					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	38.45	14.85
IBRA sub region					
SWA02 (Perth)	1,117,757.03	466,142.73	41.70	39.29	16.39
LGA					
Shire of Waroona	40,376.91	10,099.40	25.01	-	-
Heddle vegetation association					
35 – Southern River	19,855.41	1,940.18	9.77	517.49	2.61
40 – Cannington	16,661.33	1,965.94	11.80	981.34	5.89
42 – Serpentine River	58,781.48	10,832.18	18.43	940.36	1.60
Local area					
10 km radius	39389.80	7306.52	18.5	-	-

Appendix D – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The proposed clearing area does not contain conservation significant flora, habitats or assemblages of plants and does not represent an existing ecological linkage (AECOM, 2019a). The clearing footprint does not contain habitat for any of the Threatened or Priority Flora recorded in the local area. The applicant has retained all of the black cockatoo foraging habitat and all of the hollow bearing trees located on at Lot 24 and 25. Of the 8.8 ha of vegetation to be removed, 7 ha is completely degraded and 1.8 ha is degraded (Keighery, 1994).	Not likely to be at variance.	Yes Refer to Section 3.2.2 above.
Principle (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."* Assessment: The proposed clearing area contains 26 surveyed habitat trees for the three black cockatoo species and habitat for southern brush-tailed phascogale, southern brown bandicoot, western brush wallaby, and western false pipistrelle. Of the 26 habitat trees to be cleared, none contained suitable hollows for use by black cockatoo species and all of the foraging habitat (4.39 ha) has been removed from the clearing area.	Not likely to be at variance	Yes Refer to Section 3.2.1 above.
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The proposed clearing area is unlikely to contain habitat for flora species listed as Threatened under the state BC Act or commonwealth EPBC Act.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community."* Assessment: The proposed clearing area does not contain vegetation likely to represent any threatened ecological community as listed under the state BC Act.	Not likely to be at variance	No
Environmental values: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001, Government of Western Australia, 2019). Vegetation in the proposed clearing area is considered to be part of a significant ecological linkage in the local area.	Not likely to be at variance	Yes Refer to Section 3.2.2 above.

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have a direct impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental values: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given parts of the clearing footprint are mapped as Multiple Use Wetlands, the clearing may have an impact on on-site hydrology and vegetation growing in association with a wetland.	Is at variance	Yes Refer to Section 3.2.3 above.
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped and surveyed soils are moderately susceptible to wind erosion. Noting the extent of the proposed clearing and the condition of the vegetation, the exposure of sandy soils may have an appreciable impact on land degradation.	May be at variance	Yes Refer to Section 3.2.3 above.
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: The two properties are mapped to contain several Multiple Use Wetlands, a Resource Enhancement Wetland and is located directly adjacent to a Conservation Category Wetland. These areas are known to inundate with seasonal rainfall and therefore the removal of associated vegetation may impact on the surface water within.	Not likely to be at variance	Yes Refer to Section 3.2.3 above.
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped and surveyed soils in the surrounding area indicate the proposed clearing is not likely to contribute to increased incidence or intensity of flooding. The Resource Enhancement Wetland in the centre of the project area has been excluded from the clearing and a 50 m buffer will assist to limit impacts of the clearing.	Not likely to be at variance	No

Appendix E – 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.

Measuring Vegetation Condition for the South West and Interzone Botanical Province (Keighery, 1994)

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

Appendix F – Biological survey information excerpts / photographs of the vegetation

Habitat Type	Description	Area (ha)	Conservation Significant Species Potentially Utilising Habitat
Paddock with Scattered Trees and Drainage Areas	Cleared paddocks with scattered individual or clumps of large mature eucalypts (and other vegetation). Contains a mosaic of drainage lines and lower lying drainage areas of varying sizes. Some of the large eucalypts contain hollows and may represent significant fauna habitat such as black cockatoo breeding and potential breeding trees.	235.04	• Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Baudin's Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) may utilise the mature eucalypts for foraging, roosting and / or breeding habitat • Mammals including the South-western Brush-tailed Phascogale (*Phascogale tapoatafa subsp. wambenger*) and Western Ringtail Possum (*Pseudocheirus occidentalis*) may utilise the mature eucalypts and *Agonis flexuosa* • Western Brush Wallaby (*Notamacropus Irma)* may utilise the habitat • Waterbird species may also utilise aspects of this habitat when damp or flooded.
River and Riparian Vegetation Dams and Drainage	Riverine habitatcomprising mature Flooded Gums and Paperbarks, generally with an understorey degraded by weeds and introduced fauna such as feral pigs. Contains drainage lines and lower lying drainage areas of varying sizes. A floodplain with cracking clays exists in the southeast area of the Project Area, directly north of Harvey River.	31.32	• Mammals including the Western Brush Wallaby (*Notamacropus Irma)* may utilise the riverine habitat • Waterbird species may also utilise aspects of this habitat.
Mixed Trees	Stands of mature Jarrah (*Eucalyptus marginata)* and Marri (*Corymbia calophylla*) over a degraded and mostly cleared understorey. Proteaceous species and *Agonis flexuosa* were observed in several	10.81	• Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Baudin's Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) may utilise the mature eucalypts and proteaceous species within this habitat for foraging, roosting and / or breeding habitat • Mammals including the South-western Brush-tailed Phascogale (*Phascogale tapoatafa subsp. wambenger*), Western Ringtail Possum (*Pseudocheirus occidentalis*), and Western Brush Wallaby

	stands. These areas generally contain light grey sandy soils.		(*Notamacropus Irma)* may utilise this habitat depending on understorey and species present.
Stags	Mostly mature dead trees (stags) with no understorey.	5.31	• Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Baudin's Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) may utilise these stags as breeding habitat.

Image 1 – Fauna habitat: Paddock with Scattered Trees and Drainage Areas. This habitat is predominantly cleared paddocks with scattered individual or clumps of large mature eucalypts (and other vegetation). It also contains multiple drainage lines and lower lying drainage areas of varying size.

Image 2 – Fauna habitat: Paddock with Scattered Trees and Drainage Areas. This habitat is predominantly cleared paddocks with scattered individual or clumps of large mature eucalypts (and other vegetation). It also contains multiple drainage lines and lower lying drainage areas of varying size.

Image 3 – Fauna habitat: Paddock with Scattered Trees and Drainage Area. This habitat is predominantly cleared paddocks with scattered individual or clumps of large mature eucalypts (and other vegetation). It also contains multiple drainage lines and lower lying drainage areas of varying size.

Image 4 – Fauna habitat: Paddock with Scattered Trees and Drainage Areas. This habitat is predominantly cleared paddocks with scattered individual or clumps of large mature eucalypts (and other vegetation). It also contains multiple drainage lines and lower lying drainage areas of varying size.

Image 5 – Fauna habitat: Riparian Vegetation, Dams and Drainage. This fauna habitat contains riparian vegetation, the dams and drainage lines. The riverine habitat contains mature Flooded Gums and Paperbarks, with a generally degraded understorey (weeds and feral animals [e.g. Feral Pigs]).

Image 6 – Fauna habitat: Mixed Trees. This habitat predominantly comprises stands of mature eucalypts (*Eucalyptus marginata* and *Corymbia calophylla*) over a degraded and mostly cleared understorey. Proteaceous species and *Agonis flexuosa* was observed in several stands. These areas generally contain light grey sandy soils.

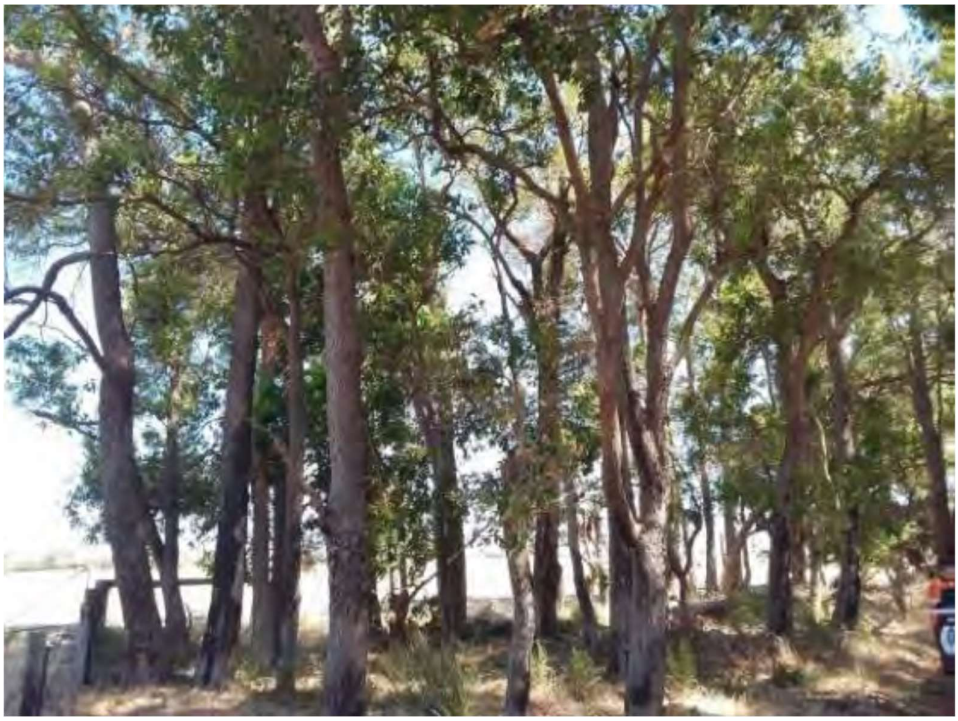


Image 7 – Fauna habitat: Mixed Trees. This habitat predominantly comprises stands of mature eucalypts (*Eucalyptus marginata* and *Corymbia calophylla*) over a degraded and mostly cleared understorey. Proteaceous species and *Agonis flexuosa* was observed in several stands. These areas generally contain light grey sandy soils.

Appendix G – Land degradation risks table

Risk categories	Bassendean B1 Phase (212Bs_B1)	Bassendean B2 Phase (212Bs_B2)	Bassendean B3 Phase (212Bs_B3)	Bassendean B4 Phase (212Bs_B4)	Bassendean B6 Phase (212Bs_B6)	Pinjarra 10a Phase (213PjSWP10a)	Pinjarra P2 Phase (213Pj_P2)	Swamp 212BsW_SWAMP
Wind erosion	50-70% of map unit has a high to extreme wind erosion risk	30-50% of map unit has a high to extreme wind erosion risk	3-10% of map unit has a high to extreme wind erosion risk	10-30% of map unit has a high to extreme wind erosion risk	>70% of map unit has a high to extreme wind erosion risk	<3% of map unit has a high to extreme wind erosion risk	3-10% of map unit has a high to extreme wind erosion risk	<3% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	30-50% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline	10-30% of map unit has a moderate to high salinity risk or is presently saline	30-50% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline

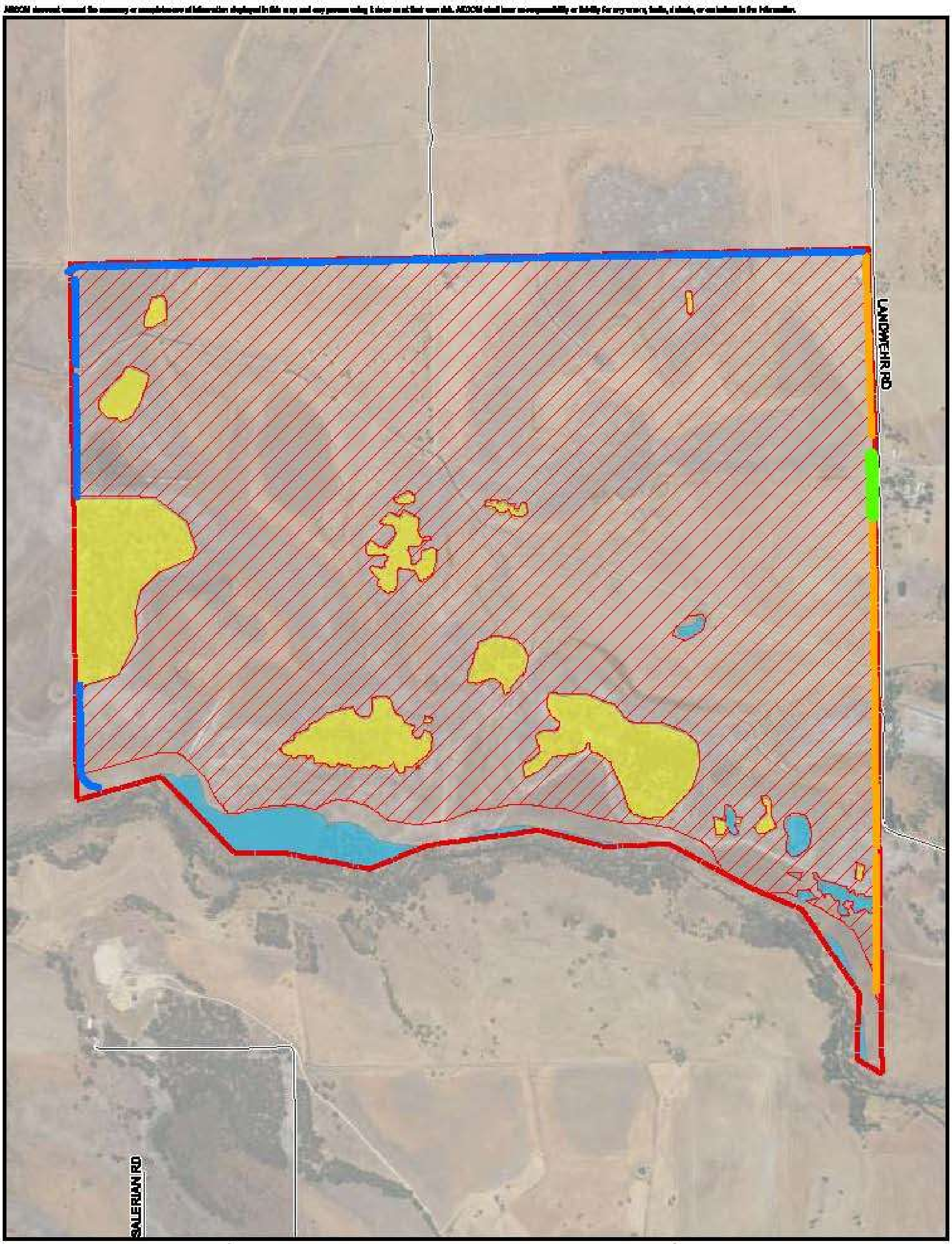
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk	30-50% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk	>70% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	3-10% of map unit has a moderate to very high waterlogging risk	3-10% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk	30-50% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	<3% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk

Appendix H – Additional information on screen planting

Botanical Name	Common Name	WA Native (Yes/No)	Black Cockatoo Foraging Species	Height (m)	Spread (m)	Installation size	Installation Location and Rate	Approx. Quantity in Screening Planting Areas 1, 2 and 3*	Approx. Density in Screening Planting Areas 1, 2 and 3* (plants/Ha)
Trees									
Allocasuarina fraseriana	Western Sheoak	Y	Y	10	6	30lt	Planting Area 1 & 3, and wetland retention areas	214	81
Banksia ilicifolia	Holly Banksia	Y	Y	3 to 8	-	-	Planting Area 1 & 2, and dryland retention areas	214	130
Banksia littoralis	Swamp Banksia	Y	Y	1.5 to 12	-	-	Planting Area 1 & 3, and wetland retention areas	214	81
Banksia sessilis	Parrot Bush	Y	Y	0.5 to 5	-	-	Planting Area 1 & 2, and dryland retention areas	214	130
Casuarina obesa	Swamp Sheoak	Y	N	15	8	30lt	Planting Area 1 & 3, and wetland retention areas	214	81
Corymbia calophylla	Marri	Y	Y (and breeding habitat)	40	-	-	Dryland retention areas	-	-

Eucalyptus marginata	Jarrah	Y	Y (and breeding habitat)	40	-	-	Dryland retention areas	-	-
Eucalyptus rudis	Flooded Gum	Y	Y (and breeding habitat)	5 to 20	-	-	Wetland retention areas	-	-
Melaleuca rhaphiophylla	Swamp Paperbark	Y	N	6	3	30lt	ALL	214	53
Melaleuca osullivanii		Y	N	3.5	2	30lt	ALL	214	53
Shrubs									
Acacia saligna	Western Australian golden wattle	Y	N	8	2	130mm	Planting Area 1 & 2, and dryland retention areas	325	198
Astartea scoparia	Common astartea	Y	N	2	0.5	130mm	Planting Area 1 & 2, and dryland retention areas	487	296
Kunzea glabrescens	Spearwood	Y	N	1.5 to 4	2 to 3	130mm	Planting Area 1 & 2, and dryland retention areas	812	494
Grasses									
Ficinia nodosa	Knobby Club Rush	Y	N	1	1	130mm	ALL	14,532	3,633
Leptocarpus canus Nees	Hoary Twine-rush	Y	N	0.5 to 1	0.5	130mm	ALL	7266	1,816
Lepidosperma longitudinale	Pithy Sword Sedge	Y	N	2	0.5	130mm	ALL	14,532	3,633

Notes: * This does not include the dryland and wetland retention areas which require further investigation



PROJECT ID [illegible]
CREATED BY [illegible]
APPROVED BY [illegible]
LAST MODIFIED [illegible]

AECOM
www.aecom.com

N

DATUM GDA 1994, PROJECTION MGA ZONE 50

metres

when printed at A4

LEGEND

- Project Property Boundary
- Development Area
- Dryland Retention Areas
- Wetland Retention Areas
- 1 - [illegible] long property front boundary screen planting, refer typical planting detail
- 2 - 5m wide eastern boundary screen planting, refer typical planting detail
- 3 - 5m wide northern & western boundary screen planting, refer typical planting

Screen Planting and Vegetation Retention Areas

SE WARADONA DEVELOPMENT PTY LTD

WAROONA SOLAR FARM
NATIVE VEGETATION CLEARING PERMIT APPLICATION

Figure

1

A4 size

Appendix I – References and databases

1. GIS datasets

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

- Aboriginal Heritage Places (DPLH-001)
- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

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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