



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10182/1
Permit type:	Area permit
Applicant name:	Karragullen Fruit Company Pty Ltd
Application received:	8 May 2023
Application area:	1.77 hectares of native vegetation
Purpose of clearing:	Horticulture orchard
Method of clearing:	Mechanical
Property:	Lot 801 on Deposited Plan 51423
Location (LGA area/s):	City of Armadale
Localities (suburb/s):	Karragullen

1.2. Description of clearing activities

The area proposed to be cleared (1.77-hectares) is part of a 4.99-hectare isolated patch of native vegetation in the intensive land use zone of Western Australia (see Figure 1, Section 1.5). It is adjacent to horticultural land in the north-west and south-west, and to the north-east and south-east is surrounded by native vegetation, however separated by Canning Road.

1.3. Decision on application

Decision:	Refused
Decision date:	13 November 2024
Decision area:	1.77 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 one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard to:

- site characteristics and environmental values within the local area (a 10-kilometre radius from the application area) (see Appendix C);
- GIS datasets available at the time of the assessment (see Appendix G.1);
- the findings of a vegetation survey (Mattiske 2021);
- a black cockatoo habitat assessment (Mattiske 2023b)
- expert scientific advice from the Commissioner of Soil and Land Conservation (CSLC), taking into consideration the findings of Department of Primary Industries and Regional Development's (DPIRD) site inspection, on the potential land degradation issues as a result of the proposed activities (CSLC, 2023)
- the 10 Clearing Principles set out in Schedule 5 of the EP Act (see Appendix D); and

- public concerns raised during the submission period (Appendix B).

In addition to the above information, and in accordance with section 51O of the EP Act, the Delegated Officer also had regard to relevant planning instruments and any other matters considered relevant to the assessment (see Section 3) including the necessity of the proposed clearing.

During the assessment, the department identified that the proposed clearing would have a significant impact on suitable foraging habitat for the *Zanda latirostris* (Carnaby's black cockatoo), *Zanda baudinii* (Baudin's black cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) species (collectively referred to as black cockatoos). The assessment identified that the proposed clearing will result in:

- removal of 1.77 hectares of marri and jarrah woodland which provides critical foraging habitat for black cockatoo species;
- the loss of 30 trees with a diameter at breast height (DBH) larger than 500 millimetres which could develop hollows suitable for black cockatoo breeding; and
- potential introduction and spread of weeds and dieback into adjacent vegetation which could impact on the quality of vegetation and its habitat values.

Based on the impacts above, the department wrote to the applicant on 26 February 2024, advising that the proposed clearing would have a significant residual impact on black cockatoo habitat and requested further information on how the applicant will avoid, minimise or offset the impacts of the proposed clearing.

Between February 2024 and August 2024, ongoing negotiations between the department and the applicant, regarding a suitable offset to counterbalance the residual impact of the proposed clearing on black cockatoo habitat, were undertaken. The department notes that numerous offset options have been proposed by the department, including a monetary offset. An agreement of a suitable offset was not reached.

On 16 August 2024, the department notified the applicant of the department's intention to refuse the clearing permit application unless a suitable offset to counterbalance the proposed impacts of the clearing is provided.

The applicant advised on 29 October 2024 that a suitable offset cannot be provided as it would be uneconomical and therefore non-viable for the company. It was also advised that the following has not been taken into account in the department's assessment of the clearing application:

- Planting of fruit trees mitigates land degradation and provides a food source for black cockatoos.
- Hundreds of hectares of native vegetation have been protected under conservation estate within the surrounding local area.
- Assessment under the *Environment Protection and Biodiversity Conservation Act 1999* determined that the clearing was not a controlled action.
- Independent expert analysis indicated that the area to be cleared is not significant for black cockatoo foraging or roosting.
- Karragullen Fruit Company Pty Ltd are willing to provide a monetary offset.

The department has reviewed Karragullen Fruit Company Pty Ltd's response and notes the following:

- Fruit trees are not suitable as an offset to counterbalance the residual impacts to black cockatoo foraging habitat as it does not provide secure, long-term protection of native vegetation which comprises environmental values comparable to those impacted by the proposed clearing (i.e. habitat for threatened fauna). While black cockatoos may forage on fruit trees it does not counterbalance the loss of primary native foraging habitat.
- According to the black cockatoo species recovery plans, Jarrah and Marri Forest, woodlands and remnants in the south-west are considered to represent critical habitat for black cockatoo species and are important for the species long-term survival. The removal of critical habitat, necessary to maintain threatened species, requires an offset.
- Information on a suitable monetary offset was provided to Karragullen Fruit Company Pty Ltd on 14 June 2024. No response to this correspondence has been received to date.
- Confirmation of the proposed monetary offset and justification on why revegetation or land acquisition offsets are not possible, has not been provided to the department to date.

Having had regard to the above information, the Delegated Officer determined that the resulting environmental impacts from the proposed clearing, in the absence of an appropriate offset, is unacceptable, and it would not be appropriate to grant a clearing permit. Accordingly, the Delegated Officer refused the application.

1.5. Site map

CPS 10182/1 - Map



Figure 1 - Map of the application area

The area crosshatched blue indicates the areas applied to be cleared under the clearing permit application.

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)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Soil and Land Conservation Act 1945* (WA)

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, 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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant provided details on the site selection process and advised that the extent of the proposed clearing was determined due to the size of the proposed plantation and the soil suitability, as the alternative site on the western side of the property had a higher gravel content and was less suited to fruit trees (Mattiske, 2023b).

The applicant advised that land management activities post clearing will include, drip irrigation, orchard maintenance, weed management and fire break maintenance (Karragullen Fruit Company, 2023).

The applicant proposed to conserve 0.67 hectares of native vegetation under a conservation covenant, located in the western end of Lot 801, to offset the residual impacts of the proposed clearing on black cockatoo habitat. This area consists of marri and jarrah woodland in very good condition. In addition, revegetation of 1.29 hectares of degraded condition land in a property owned by the applicant to the south-east of the application area was also proposed. The 1.29-hectare area is dominated by weeds and the applicant proposed to introduce clean soil and plant native species that resemble granite outcrop areas. While some species would provide suitable foraging for black cockatoos the primary purpose was to increase the amount of native vegetation in the local area and was not considered suitable to offset significant residual impacts of the proposed clearing to primary foraging habitat for black cockatoo species.

After consideration of avoidance and mitigation measures, it was determined that a further offset was required to counterbalance 100 percent of the significant residual impacts to black cockatoos. The proposed offset listed above only accounts for 5.6% of the offset requirement according to the Western Australia Environmental Offset calculator.

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see Appendix D) identified that the impacts of the proposed clearing may present a risk to the biological values (fauna and flora) resources and land 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) - Clearing Principles (a) and (c)

Assessment:

The desktop assessment identified seven conservation significant flora that have been recorded within the local area and occur on similar habitat to the application area, these were:

- *Acacia anomala* (Threatened), flowers in August to September and is a rush like shrub occurring on lateritic soils.
- *Acacia aphylla* (Threatened), flowers in August to October, and is a shrub occurring on sandy loam also near granite outcrops.
- *Andersonia* sp. *Blepharifolia* (F. & J. Hort 1919) (Priority 2), flowers in July to August and occurs on sandy soils near granite outcrops.
- *Pimelea rara* (Priority 4), flowers in December to January and is a perennial shrub and occurs Jarrah and Marri woodland.
- *Thysanotus anceps* (Priority 3), flowers October to December and occurs on lateritic loaming soils.

A spring survey of the vegetation within the application area was undertaken in October 2021 (Mattiske, 2021). No threatened or priority flora species were identified during the flora survey. The survey was conducted in October 2021 and is considered optimal survey timing for the south-west area of Western Australia (EPA, 2016). Given the above it is unlikely that these species will be impacted by the proposed clearing.

Conclusion:

Based on the above assessment, the proposed clearing is not likely to result in the loss of conservation significant flora.

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

Assessment:

The desktop assessment identified six conservation fauna species in a similar habitat type to the application area, these were:

- *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo)(FRTBC)
- *Zanda baudinii* (Baudin's cockatoo)
- *Zanda latirostris* (Carnaby's cockatoo)
- *Dasyurus geoffroyi* (Chuditch)
- *Isoodon fusciventer* (Quenda)
- *Phascogale tapoatafa wambenger* (South-western brush-tailed phascogale)

Black cockatoos

The application area is mapped within the known distribution zones of the endangered Baudin's cockatoo, Carnaby's cockatoo and the vulnerable Forest red-tailed black cockatoo (FRTBC), together referred to as 'black cockatoos'. Black cockatoo habitat can be considered in terms of breeding, roosting and foraging habitat. Suitable breeding habitat for black cockatoos include trees which either have a suitable nest hollow or are of a suitable Diameter Breast Height (DBH) to develop a nest hollow. For most tree species a suitable DBH is 500 millimetres (Commonwealth of Australia, 2012). A fauna habitat assessment of the application area identified 30 Marri and Jarrah trees within the application area that were over 500mm DBH, however none had hollows suitable for black cockatoos (Mattiske, 2024; Mattiske, 2023b). These 30 trees are considered to provide potential future breeding habitat for black cockatoos.

Night-roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and a water source (DAWE, 2022). While Jarrah and Marri trees could provide black cockatoo roosting areas, no evidence of roosting trees were located within the application area during the black cockatoo tree survey (Mattiske, 2023b).

Food resources within the range of breeding sites and roost sites are important to sustain black cockatoo populations. Foraging resources are therefore, viewed in the context of known breeding and night roosting sites. It is considered that foraging habitat within 6 to 12 kilometres of a known roosting and a breeding site are significant food sources (DAWE, 2022). Available databases indicate that the nearest FRTBC breeding area is approximately 2.5km to the north at the Pickering Brook National Park and the nearest known Carnaby's Cockatoo breeding area is approximately 6km to the SW of the application area near the Canning National Park. A total of 20 confirmed roosting sites for black cockatoos have also been recorded within the local area, with the closest occurring 1.8 kms to the north.

According to the black cockatoo survey, both primary and secondary food sources are available comprising of Jarrah, Marri, Bull Banksia, Sheoak, *Persoonia longifolia* and *Xanthorrhoea preissii* (Mattiske, 2023b). Evidence of black cockatoos feeding on both Jarrah and Marri was also recorded in the application area. Given the presence of primary foraging habitat for black cockatoos and the close proximity of the application area to known breeding and roosting sites, it is considered for the application area to provide significant foraging habitat that supports breeding and roosting individuals.

It is noted that 23,880.47 ha have been mapped as black cockatoo habitat within the local area and the proposed loss of 1.77 hectares represented by the application area would reduce the foraging habitat in the local area by 0.0074%. However, the black cockatoo recovery plans state that habitat critical to the survival of the species include eucalyptus woodland that provides feeding and roosting habitat for nearby breeding individuals to ensure successful breeding. The long-term survival of a robust population of Carnaby's cockatoos depends on the availability of suitable woodland breeding habitat and tree hollows, and foraging habitat capable of providing enough food to sustain the population. The greatest risk to the survival of black cockatoos is the loss or degradation of foraging habitat adjacent to (within 12 kms) of breeding sites (DPAW, 2013). Therefore it is considered for the proposed clearing to impact on critical foraging and potential future breeding habitat for black cockatoo species and an offset to counterbalance this impact is required.

Chuditch

Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The densest populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges, and even at their most abundant, chuditch are generally present in low numbers (Department of Environment and Conservation, 2012a). As the application area is a small patch of native vegetation boarded by roads and farmland, the Chuditch is unlikely to be significantly impacted by the proposed clearing.

Quenda

Quenda is known to inhabit scrubby, swampy vegetation with low, dense understorey, located nearby water courses, pasture, or forest/woodland that is regularly burnt and is in areas of pasture and cropland lying close to dense cover. Populations which inhabit jarrah and wandoo forests are usually associated with watercourses (Department of Conservation, 2012b). As Quenda survive in open areas subject to predator control, it is unlikely for the Quenda to be significantly impacted by the proposed clearing.

South-western brush-tailed phascogale

In Western Australia the south western brush-tailed phascogale is now known to occur in the south west between Perth and Albany. It occurs at low densities in the northern Jarrah forest. Highest densities occur in the Perup/Kingston area, Collie River valley, and near Margaret River and Busselton. The preferred habitat for south-western brush-tailed phascogale is within dry sclerophyll forests and open woodlands that contain hollow bearing trees but a sparse groundcover (Department of Environment and Conservation, 2012c). As the south-western brush-tailed phascogale is strongly arboreal and the application area is surrounded by farmland and roads it is unlikely for this species to be significantly impacted by the proposed clearing.

Conclusion:

Based on the above assessment, the proposed clearing is likely to result in significant residual impacts to Baudin's cockatoo, Carnaby's cockatoo and the Forest red-tailed black cockatoo habitat.

3.2.3. Land values (land degradation) - Clearing principle (g)

The application area lies within Map Unit 255Dp_YG1 of the YarragiH Phase Soil Landscape System and slopes from approximately 297m AHD in the north to around 288m AHD in the south. This soil type has a moderate risk of wind erosion and subsurface acidification when cleared of vegetation.

Advice was requested from the Commissioner of Soil and Land Conservation (CSLC) who conducted a site visit of the application area in July 2023. It was advised that careful management during the clearing is required until suitable groundcover is established to reduce the likelihood of wind erosion. However, due to the small scale of the proposed clearing and the retention of vegetation to the north and west of the application area, the likelihood of appreciable land degradation through wind erosion or subsurface acidification is low (CSLC, 2023).

The applicant advised that they have managed the land for decades and as the proposed clearing activities will be undertaken in the summer months and early autumn it is expected that wind erosion and subsurface acidification will be minimal. The slope of the land is minimal on the eastern section of the orchard and any clearing activities in terms of wind erosion would be avoided through careful removal of trees initially and then understorey. As the company wants to protect the adjacent orchards to the south and west of the proposed clearing activities any clearing activities would be undertaken to minimize any increase in wind erosion (Mattiske, 2023b).

Conclusion:

Based on the above assessment, the proposed clearing is not likely to result in appreciable land degradation through wind erosion or subsurface acidification.

3.3. Relevant planning instruments and other matters

The property has been operated by the Karragullen Fruit Company for many years as an orchard. This block occurs on the fringes of the small settlement of Karragullen in a valley dominated by fruit orchards. The proposal is to expand the current orchard by clearing the 1.77ha of remnant vegetation.

The City of Armadale (the City) advised that local government approvals are not required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme. The City suggested that a referral may be required to the Department of Climate Change, Energy and the Environment as the proposed clearing may impact on matters of national environmental significance (City of Armadale, 2023).

The application area is zoned as general rural under the City of Armadale's Town Planning Scheme and is zoned rural under the Metropolitan Regional Scheme.

The Minister for Environment determined in 2022 that the referral under *the Environment Protection and Biodiversity Conservation Act 1999* was not a controlled action (Karragullen Fruit Company, 2023).

Several Aboriginal sites of significance have been mapped within the local area, however none occur within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972 (WA)* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Applicant provided partial offset, land degradation management measures and habitat tree survey information (Mattiske, 2023b)	Section 3.1, 3.2.1 and 3.2.2
Applicant provided previous supporting information in response to a request for further information (Mattiske, 2023a)	Section 3.1, 3.2.1 and 3.2.2

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
The vegetation proposed to be cleared is used by Black cockatoos for foraging and while it may not currently have breeding hollows, it may form some in the future. The Jarrah-Marri forest has been substantially cleared and there should be no further clearing.	See Section 3.2.2.

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.

C.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of a 4.99-hectare isolated patch of native vegetation in the intensive land use zone of Western Australia. It is adjacent in the north-west and south-west to horticultural land, and to the north-east and south-east is surrounded by native vegetation, however separated by Canning Road. The areas surrounding the application area are primarily fruit orchards.</p> <p>Aerial imagery and spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 82.59 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area is 530 metres from the nearest ecological linkage, a roadside conservation area and is 1.6 kilometres east of a Perth regional ecological linkage.
Conservation areas	The application area is 180 metres south of Korung National Park and State Forest areas.
Vegetation description	<p>Photographs supplied by the applicant and a flora and vegetation survey (Mattiske, 2021) indicate the vegetation within the proposed clearing area consists of two vegetation types:</p> <ul style="list-style-type: none"> • ST - Open Forest of <i>Eucalyptus marginata</i> - <i>Corymbia calophylla</i> with scattered understorey, including <i>Leucopogon capitellatus</i>, <i>Leucopogon verticillatus</i>, <i>Lasiopetalum floribundum</i> and <i>Styphelia tenuiflora</i> on sandy-gravelly soils; and • T- Open Forest of <i>Eucalyptus marginata</i> - <i>Corymbia calophylla</i> with scattered understorey, including <i>Leucopogon verticillatus</i>, <i>Pteridium esculentum</i>, <i>Clematis pubescens</i> and <i>Bossiaea aquifolium</i> subsp. <i>aquifolium</i> on sandy-loam gravelly soils. <p>This is consistent mapped vegetation type:</p> <ul style="list-style-type: none"> • Yarragil 1 (Yg1) which is described as an open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i>-<i>Corymbia calophylla</i> on slopes with mixtures of <i>Eucalyptus</i>

Characteristic	Details																
	<p><i>patens</i> and <i>Eucalyptus megacarpa</i> on the valley floors in humid and subhumid zones.</p> <p>Representative photographs and the survey excerpts (descriptions and maps) are available in Appendix F.</p>																
Vegetation condition	<p>Photographs supplied by the applicant and a flora and vegetation survey (Mattiske, 2021) indicate the vegetation within the proposed clearing area is in a good (on fringes) to excellent (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix E.</p> <p>Representative photographs and the survey excerpts (descriptions and maps) are available in Appendix F.</p>																
Climate and landform	<p>Average annual Rainfall: 750-1000 millimetres Temperature: mean annual minimum: 25 Degrees centigrade Temperature: mean annual maximum: 27.5 Degrees centigrade Evapotranspiration: 900 millimetres Geology: Granite and Gneiss Position in landscape: The northern part of the proposed clearing sits at approximately 297 m AHD, declining 9m to 288 m AHD at the southern end (DPIRD, 2023). Landform: The Chittering land resources survey (Bessell-Browne, 1999) indicates that the subject land is part of the broader Yarragil 1 phase with very gentle to moderate inclined concave side slopes.</p>																
Soil description	<p>The soil is mapped as the Yarragil 1 phase (255DpYG1), which is described as a Lateritic plateau. Duplex sandy gravels, loamy gravels and wet soils. Jarrah-marri-wandoo forest and woodland (100 per cent of application area).</p> <p>The soils in the area proposed for clearing are primarily ironstone gravels and brown loamy duplex. The soils appear to be well structured, with good water and nutrient holding capacity (DPIRD, 2023).</p>																
Land degradation risk	<p>The Department of Primary Industries and Regional Development assessed the land degradation risk for this application and concluded the land degradation risks are low provided good land management occurs to reduce the initial wind erosion until groundcover is established (DPIRD, 2023).</p> <table border="1"> <thead> <tr> <th>Risk categories</th> <th>Darling Plateau System</th> </tr> </thead> <tbody> <tr> <td>Wind erosion</td> <td>M1: 10-30% of the map unit has a high to extreme hazard</td> </tr> <tr> <td>Water erosion</td> <td>L1: <3% of the map unit has a moderate to high hazard</td> </tr> <tr> <td>Salinity</td> <td>L1: <3% of the map unit has a moderate to high hazard</td> </tr> <tr> <td>Subsurface Acidification</td> <td>H2: >70% of map unit has a high (to extreme) risk</td> </tr> <tr> <td>Flood risk</td> <td>L1: <3% of the map unit has a moderate to high hazard</td> </tr> <tr> <td>Water logging</td> <td>L1: <3% of the map unit has a moderate to high hazard</td> </tr> <tr> <td>Phosphorus export risk</td> <td>L2: 3-10% of the map unit has a high to extreme hazard</td> </tr> </tbody> </table>	Risk categories	Darling Plateau System	Wind erosion	M1: 10-30% of the map unit has a high to extreme hazard	Water erosion	L1: <3% of the map unit has a moderate to high hazard	Salinity	L1: <3% of the map unit has a moderate to high hazard	Subsurface Acidification	H2: >70% of map unit has a high (to extreme) risk	Flood risk	L1: <3% of the map unit has a moderate to high hazard	Water logging	L1: <3% of the map unit has a moderate to high hazard	Phosphorus export risk	L2: 3-10% of the map unit has a high to extreme hazard
Risk categories	Darling Plateau System																
Wind erosion	M1: 10-30% of the map unit has a high to extreme hazard																
Water erosion	L1: <3% of the map unit has a moderate to high hazard																
Salinity	L1: <3% of the map unit has a moderate to high hazard																
Subsurface Acidification	H2: >70% of map unit has a high (to extreme) risk																
Flood risk	L1: <3% of the map unit has a moderate to high hazard																
Water logging	L1: <3% of the map unit has a moderate to high hazard																
Phosphorus export risk	L2: 3-10% of the map unit has a high to extreme hazard																
Waterbodies	<p>The desktop assessment and aerial imagery indicated that there is one minor, non-perennial watercourse (Stinton Creek), located approximately 155 metres south-west of the area proposed to be cleared. Nearest wetland is a Multiple Use wetland (palusplain) (ID 12355) approximately 790 metres south of application area.</p>																
Hydrogeography	<p>Application area is not within any RIWI Act or CAWS Act areas. Groundwater Salinity (Total Dissolved Solids): 500-1000 mg/L</p>																
Flora	<p>273 flora records from 42 flora species in local area, 34 of which are found on the same soil type as the application area and three in the same vegetation type. The nearest record to the application area is <i>Amanita fibrillopes</i> (Priority 3) is 0.37 kilometres away.</p>																

Characteristic	Details
	No threatened or priority flora species were found in the Flora and Vegetation survey (Mattiske, 2021).
Ecological communities	<p>Four Priority Ecological Community / Threatened Ecological Community (PEC/TEC) records in local area (being the Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered, Priority 3), Central Northern Darling Scarp Granite Shrubland Community (Priority 4), <i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20b as originally described in Gibson et al. 1994) (Endangered, Critically Endangered), <i>Corymbia calophylla</i> — <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b as originally described in Gibson et al. 1994) (Endangered). Nearest record, Central Northern Darling Scarp Granite Shrubland Community is 6.34 kilometres away.</p> <p>While the survey did not undertake a Priority and Threatened ecological community assessment, none of the four significant ecological communities are likely to be present in the application area.</p>
Fauna	<p>8758 fauna records from 23 fauna species in local area, with the nearest records to the application area is chuditch, Dell's skink and southern death adder 0.38 kilometres away. The application area occurs within the mapped distribution of all three Black cockatoo species, with all three species being recorded within the local area, with the closest record being of the Carnaby's cockatoo, located approximately 0.53 kilometres away. Six conservation significant fauna were recorded in similar habitat to the application area.</p> <p>There is 20 known black cockatoo roost sites and two known hollows (breeding sites) within the local area.</p>

C.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information (Mattiske, 2021), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Did surveys find? (Y, N, N/A)
<i>Acacia anomala</i>	T	Y	Y	5.78	12	N
<i>Amanita fibrillopes</i>	3	N	Y	0.37	1	N
<i>Andersonia</i> sp. <i>Blepharifolia</i> (F. & J. Hort 1919)	2	N	Y	2.17	8	N
<i>Pimelea rara</i>	4	Y	Y	0.73	61	N
<i>Stylidium striatum</i>	4	Y	Y	4.03	10	N
<i>Thysanotus anceps</i>	3	N	Y	7.63	4	N

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

C.3. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), the habitat preferences and conservation status of the aforementioned species, the distribution and extent of existing records, and biological survey information (Mattiske, 2021), the application area may provide suitable habitat for six conservation significant fauna species and impacts to these species required further consideration (see Appendix C.4).

Species name	Common name	Conservation status	Distance of closest record to application area (km)	Number of known records (total)	Did surveys find? (Y, N, N/A)
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	2.39	719	Observed foraging, although no nesting hollows or roosting sites within survey area.
<i>Zanda baudinii</i>	Baudin's cockatoo	CR	0.86	1318	Potential foraging, although no nesting hollows or roosting sites in survey area.
<i>Zanda latirostris</i>	Carnaby's cockatoo	EN	0.53	4578	Observed foraging, although no nesting hollows or roosting sites within survey area.
<i>Dasyurus geoffroi</i>	Chuditch, western quoll	VU	0.38	34	N
<i>Isodon fusciventer</i>	Quenda, southwestern brown bandicoot	P4	0.38	1213	N
<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale, wambenger	CD	1.36	24	N

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

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u> The area proposed to be cleared contains significant habitat for threatened black cockatoo species. No Threatened or Priority flora (Mattiske, 2021) or TEC/PEC are likely to occur within the application area.</p>	May be at variance	Yes <i>(Refer to Section 3.2.1 and 3.2.2, above.)</i>
<p><u>Principle (b):</u> "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> <p><u>Assessment:</u> The area proposed to be cleared contains significant habitat for threatened black cockatoo species.</p>	At variance	Yes <i>(Refer to Section 3.2.2, above.)</i>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u> The area proposed to be cleared is unlikely to contain habitat for Threatened flora species.</p>	Not likely to be at variance	Yes <i>(Refer to Section 3.2.1, above.)</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contains species that can indicate a threatened ecological community.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>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
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are moderately susceptible to wind. Noting the extent of the application area, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	Yes <i>(Refer to Section 3.2.3, above.)</i>
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Given no water courses are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>		

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.

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

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

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

Appendix F. Biological survey excerpt

4.3 Site-Vegetation Type Mapping

The site-vegetation type mapping, based on the early studies by Havel (1975a, 1975b) enable a more detailed classification of the vegetation in relation to the relationships between the flora, vegetation and site-conditions. The site-vegetation types is dominated by the ST site-vegetation type with several areas tending towards to site-vegetation type T depending on the species present and the local soil types which are dominated by sandy-gravels to sandy-loam gravels.

The different site-vegetation types recorded are summarized below:

ST - Open Forest of *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Leucopogon capitellatus*, *Leucopogon verticillatus*, *Lasiopetalum floribundum* and *Styphelia tenuiflora* on sandy-gravelly soils.

T- Open Forest of *Eucalyptus marginata* - *Corymbia calophylla* with scattered understorey, including *Leucopogon verticillatus*, *Pteridium esculentum*, *Clematis pubescens* and *Bossiaea aquifolium* subsp. *aquifolium* on sandy-loam gravelly soils.

Figure 1 – Site-vegetation type mapping (Mattiske, 2021)



Photo 1: Looking through Jarrah-Marri forest with low mixed understorey (ST site-vegetation type)



Photo 2: Looking through Jarrah-Marri forest with low mixed understorey (T site-vegetation type)

Figure 2 – Representative photographs of application area (Mattiske, 2021)

4.4 Vegetation Condition

The vegetation on the 1.77ha of forests within the survey area the vegetation is largely very good to excellent, although the southwestern fringes and northern fringes have been disturbed to some degree in the past.



Legend

- CPS areas applied to clear

Vegetation Condition

- Completely Degraded
- Poor
- Very Good - Ex

0 25 50 75 100 m
1:1,000
Projection: GDA2020

GOVERNMENT OF WESTERN AUSTRALIA

Figure 3 – Vegetation condition in the application area (Mattiske, 2021)

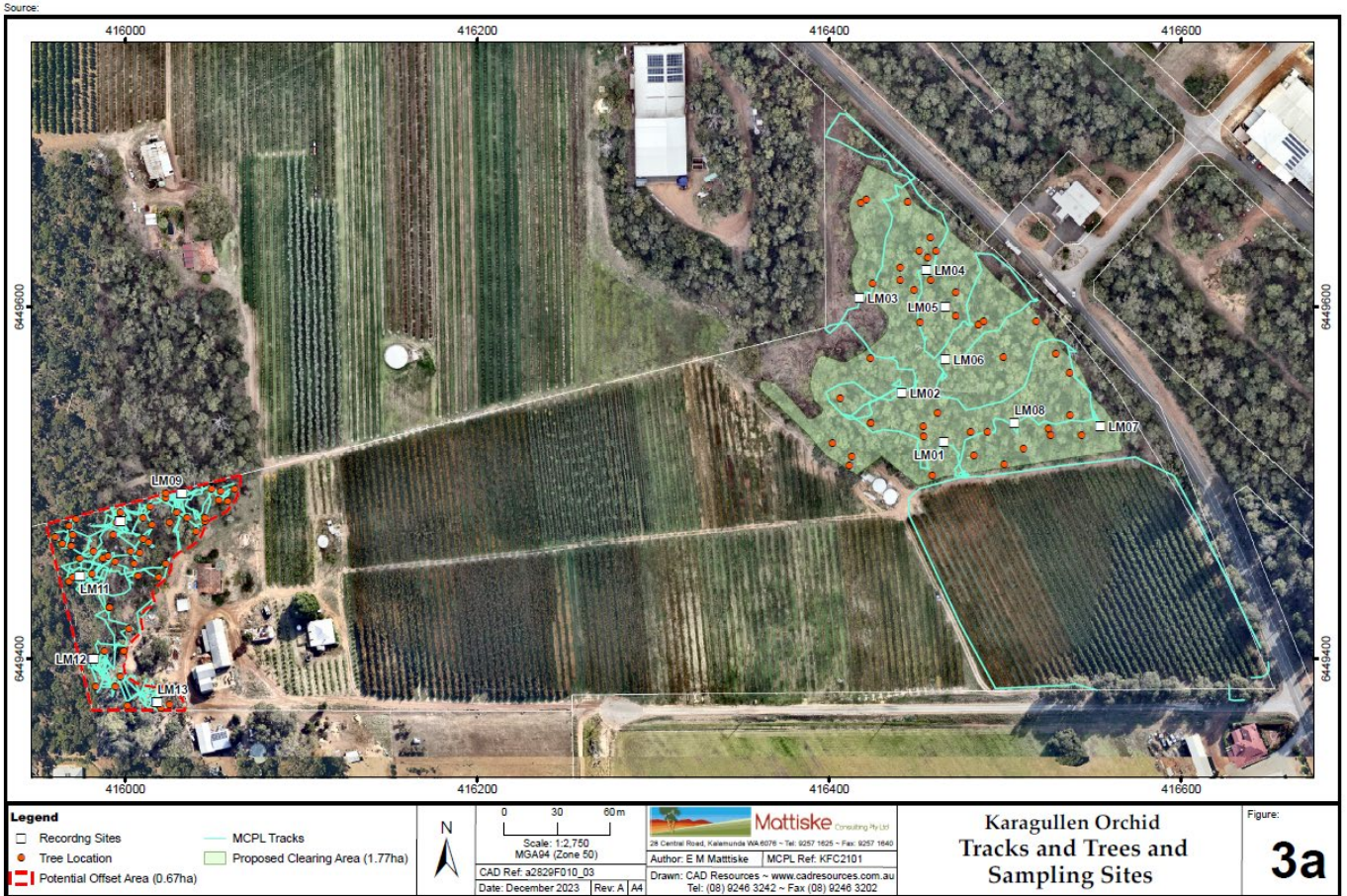


Figure 3: Habitat tree locations within the application area (Mattiske, 2023b)



Figure 4 – FRTBC feeding evidence on Marri and Jarrah within the application area (Mattiske, 2023b)

Appendix G. Sources of information

G.1. GIS databases

Publicly available GIS Databases used (sourced from 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
- Wheatbelt Wetlands Stage 1 (DBCA-021)

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)

G.2. References

Bamford Consulting Ecologists (Bamford) (2023). *Plants known to be used for foraging, roosting and nesting by black cockatoos in south-western Western Australia*. Davies 1966; Saunders 1974, 1979a, 1979b, 1980, 1986; Saunders et al. 1982; Johnstone and Storr 1998; Higgins 1999; Johnstone and Kirkby 1999, 2008; Groom 2011; Johnstone et al. 2011; DCCEE 2023a, 2023b, 2023c; and personal observations).

Bureau of Meteorology (BoM) (2023) Climate Data Online. Commonwealth of Australia, Canberra, ACT. Available from: <http://www.bom.gov.au/climate/data/> (Accessed July 2023).

Commissioner of Soil and Land Conservation (CSLC) (2023) *Land Degradation Advice and Assessment Report for clearing permit application CPS 10182/1*, received 20 July 2023, Department of Primary Industries and Regional Development, Western Australia (DWER Ref: DWERDT809951).

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

Commonwealth of Australia (2022) *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo*. Department of Agriculture, Water and the Environment, Canberra.

- Department of Environment and Conservation (DEC) (2008a) *Forest black cockatoo (Baudin's cockatoo, Calyptorhynchus baudinii, and forest red-tailed black cockatoo, Calyptorhynchus banksii naso) Recovery Plan*. Department of Environment and Conservation, Canberra, ACT.
- Department of Environment and Conservation (2012a) *Chuditch (Dasyurus geoffroii) National Recovery Plan*. Wildlife Management Program No. 54. Department of Environment and Conservation, Western Australia.
- Department of Environment and Conservation (DEC) (2012b) *Fauna profiles: Quenda, Isoodon obesulus fusciventer*. Department of Environment and Conservation, Western Australia.
- Department of Environment and Conservation. (2012c). Fauna profiles. Brush-tailed Phascogale. Phascogale tapoatafa (Meyer, 1793). Retrieved from <https://library.dbca.wa.gov.au/static/FullTextFiles/925273.pdf>
- Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf
- Department of Parks and Wildlife (DPAW) (2013) *Carnaby's cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Department of Parks and Wildlife, Perth, Western Australia.
- Department of Primary Industries and Regional Development (DPIRD) (2019). *NRInfo Digital Mapping. Department of Primary Industries and Regional Development*. Government of Western Australia. Available from: <https://maps.agric.wa.gov.au/nrm-info/> (accessed 30 June 2023).
- Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.
- Environmental Protection Authority (EPA) (2016). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf
- Environmental Protection Authority (EPA) (2016). *Technical Guidance – Terrestrial Fauna Surveys*. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.
- Government of Western Australia (2019) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth. Available from: <https://catalogue.data.wa.gov.au/dataset/dbca>
- Government of Western Australia. (2019) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions. Available from: <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) *Vegetation Complexes of the Darling System, Western Australia*. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Karragullen Fruit Company (2023) *Clearing permit application CPS 10182/1*, received 8 May 2023 (DWER Ref: DWERDT776606).
- Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- City of Armadale (2023) *Advice for clearing permit application CPS 10182/1*, received 20 July 2023 (DWER Ref: DWERDT809325).
- Mattiske Consulting Ptd Ltd (Mattiske) (2023b) Further supporting information and habitat tree survey results for CPS 10182/1 clearing permit application. Received October 2023 (DWER ref DWERDT876659)

- Mattiske Consulting Ptd Ltd (Mattiske) (2021) *Review of Values of flora, vegetation and vertebrate fauna present within the proposed clearing area on the Karragullen Fruit Company property*. Prepared for CPS 10182/1 clearing permit application supporting documentation. Received 8 May 2023 (DWER ref: DWERDT776606).
- Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Complexes of the South-west Forest Region of Western Australia*. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*, Western Australian Local Government Association and Department of Environment and Conservation, Perth.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs* Resource Management Technical Report No. 280. Department of Agriculture.
- Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Submission (2023) *Public submission in relation to clearing permit application CPS 10182/1*, received 27 June 2023 (DWER Ref: DWERDT797865).
- Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.
- Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed April 2024).