



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10249/1
Permit Holder:	Shire of Carnamah
Duration of Permit:	From 8 March 2024 to 8 March 2029

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of improving sightlines.

2. Land on which clearing is to be done

Eneabba-Coolimba Road Reserve (PIN 11675278), Eneabba.

3. Clearing authorised

The permit holder must not clear more than 0.21 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

PART II – MANAGEMENT CONDITIONS

4. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

5. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

6. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in one direction to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

PART III - RECORD KEEPING AND REPORTING

7. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ol style="list-style-type: none"> (a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4; (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 5; and (g) actions taken to undertake directional clearing in accordance with condition 6.

8. Reporting

The permit holder must provide to the *CEO* the records required under condition 7 of this permit when requested by the *CEO*.


DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – <ul style="list-style-type: none"> (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

 Digitally signed by
Juraj Galba
Date: 2024.02.14
11:46:26 +08'00'

Juraj Galba
A/MANAGER
NATIVE VEGETATION REGULATION

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

14 February 2024

Schedule 1 Plan 10249/1

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

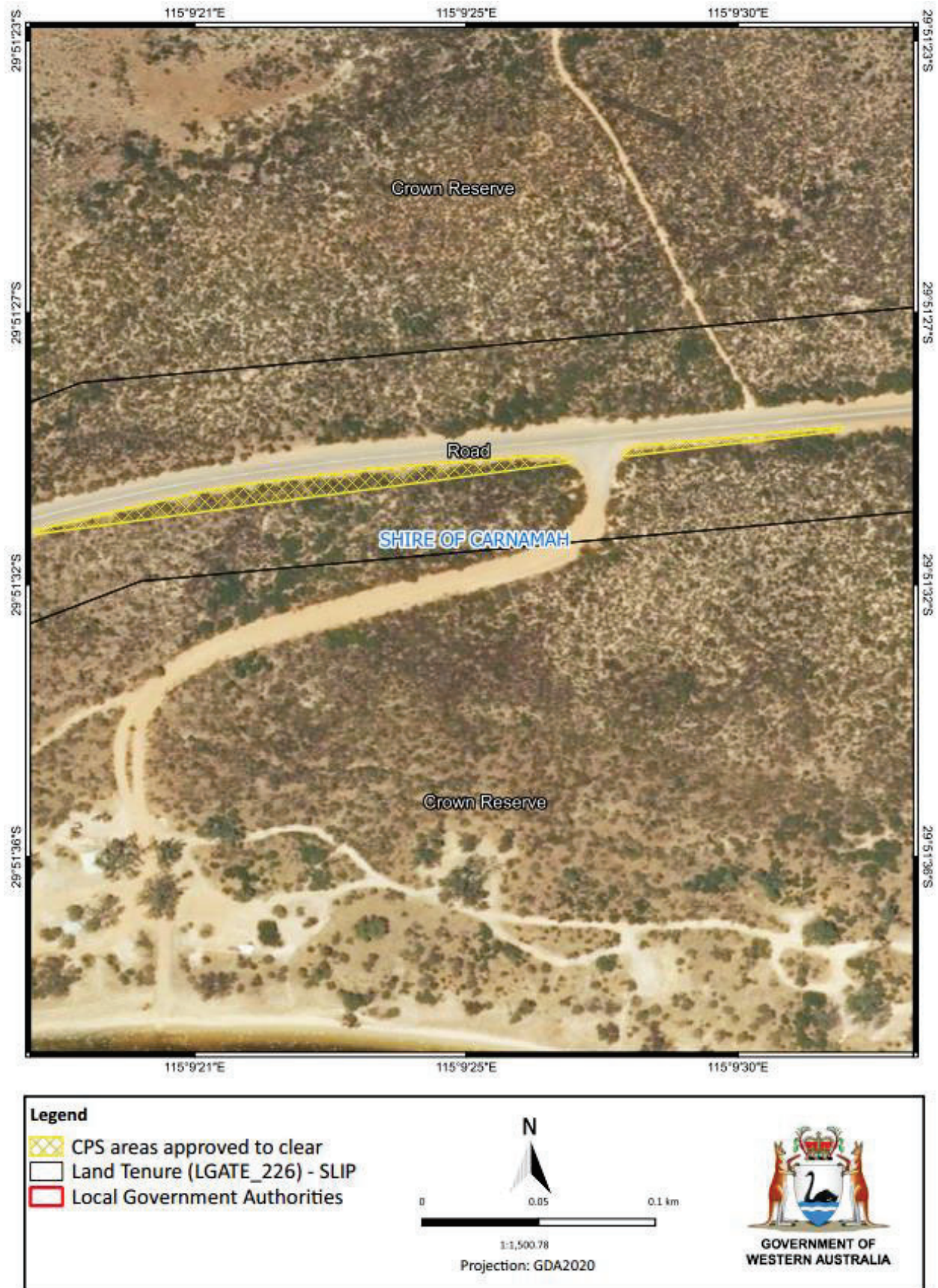


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10249/1
Permit type:	Purpose permit
Applicant name:	Shire of Carnamah
Application received:	23 June 2023
Application area:	0.21 hectares of native vegetation
Purpose of clearing:	Improving sightlines
Method of clearing:	Mechanical (Mulcher)
Property:	Eneabba-Coolimba Road Reserve (PIN 11675278)
Location (LGA area/s):	Shire of Carnamah
Localities (suburb/s):	Eneabba

1.2. Description of clearing activities

The vegetation proposed to be cleared is within a narrow, linear strip of the Eneabba-Coolimba Road Reserve to improve sightlines that, according to the applicant, are currently unsafe for motorists using the road (see Figure 1, Section 1.5). The Eneabba-Coolimba Road Reserve is the only entry to Lake Indoon and the line of sight is a significant safety issue due to the amount of tourism with caravans entering and exiting into the path of road trains (Shire of Carnamah, 2023).

The initial application proposed to prune 0.21 hectares of vegetation to 0 – 30 centimetres from ground level (Shire of Carnamah, 2023). However, during the assessment of the clearing permit application and following avoidance and minimisation measures, the Shire of Carnamah revised the method of clearing within 0.5 – 1 metre above the ground, reducing the impacts to understory vegetation (Main Roads WA, 2023).

1.3. Decision on application

Decision:	Granted
Decision date:	14 February 2024
Decision area:	0.21 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 received one submission. Consideration of matters raised in the public submission is summarised in Appendix B.

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

- the site characteristics (see Appendix C)
- relevant datasets (see Appendix G.1)
- the findings of a targeted flora survey (see Appendix F)

- specialist advice from the Department of Biodiversity, Conservation and Attractions (DBCA) on impacts of the proposed clearing on biological values (DBCA 2023a and 2023b)
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix D); and
- relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The Delegated Officer also took into consideration the method of clearing (pruning vegetation to 0.5 – 1 metre above the ground) and that the clearing is required to improve sightlines that are currently unsafe for motorists using the road.

The assessment identified that the proposed clearing will result in:

- the impacts on up to six plants of the Priority 4 flora species *Banksia elegans*,
- the impacts on suitable habitat for the Threatened flora species *Paracaleana dixonii*,
- the impacts on foraging habitat for Carnaby's cockatoo; and
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the impacts of the proposed clearing, can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

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

1.5. Site maps

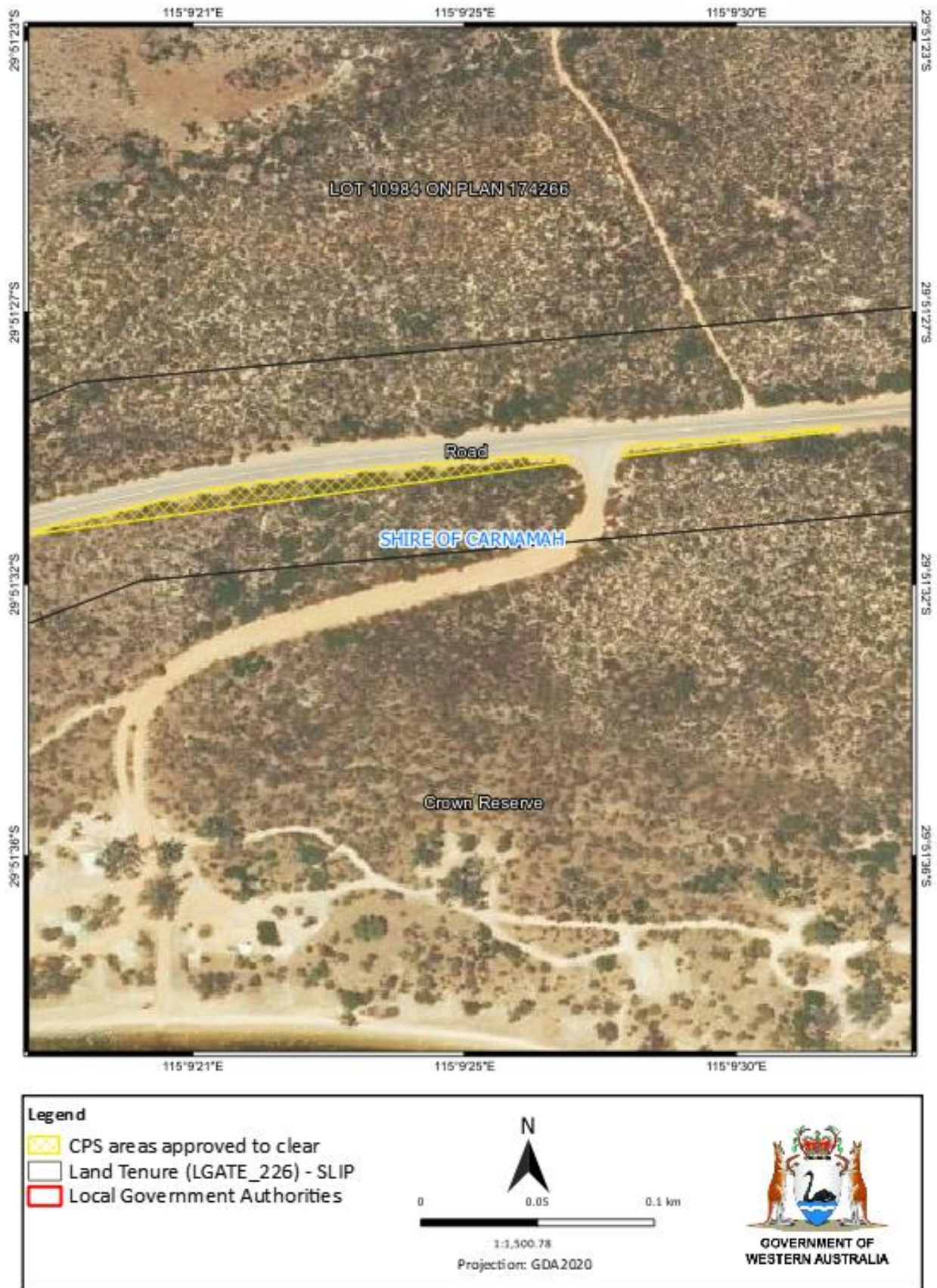


Figure 1 Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

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 1.4), 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 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)
- *Aboriginal Heritage Act 1972*.

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)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016).

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

The following avoidance and minimisation measures were considered by the applicant (Shire of Carnamah, 2023; Main Roads, 2023):

- Not upgrading the intersection – given the expected increase in vehicles using this road due to the Indian Ocean Drive upgrades, not improving this intersection will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries.
- Alternative alignment – given the road is pre-existing, works to realign the existing roads would significantly increase the clearing area required to achieve safe sightlines. Diversion of traffic on an alternative route would only shift the risk of safety incidents to another location. Clearing for sightlines as per the clearing footprint in this proposal, significantly reduces the amount of clearing required and limits clearing to roadside vegetation.
- Reduced speed limits along Coolimba-Eneabba Road were evaluated. It was determined that although it may reduce the severity of a crash, it would not make it safer to pull out onto the road without a clear line of sight.
- Reduced clearing area - the proposed clearing area has been determined based on the line of site requirements and therefore cannot be reduced.

During the assessment phase, the extent of mulching above ground was revised. The Shire originally proposed to prune the vegetation to 0 – 30 centimetres from ground level. This was revised to 0.5 – 1 metre above the ground, reducing the impacts to understory vegetation.

In addition, the following mitigation measures have been proposed (Main Roads, 2023):

- Only vegetation required to be cleared to achieve clear sightlines is proposed to be cleared as determined through visual inspection, specifically, individuals of *Banksia elegans* (P4) will be avoided where possible
- Clearing boundaries will be clearly demarcated prior to clearing, which will ensure machinery stays within the approved clearing area
- Mulched material will be distributed across the adjacent vegetation to reduce the build-up on the soil. It is considered that the distribution of woody mulch and seeds into the nearby heath will be beneficial to the environment.
- Pre -Starts to detail the approved clearing areas to improve onsite personnel awareness
- Hygiene inspections conducted for all vehicles and machinery prior to entry into and exit from site; and
- Hygiene inspection checklist will be used to record the results of hygiene inspections Clearing will be undertaken in a manner whereby mobile fauna is able to move into adjacent vegetation.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

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, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix D) identified that the impacts of the proposed clearing present a risk to biological values (flora and fauna). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora and fauna) - Clearing Principles (a), (b) and (c)

Conservation significant flora

A review of available databases indicates that a total of 63 conservation significant flora species have been recorded within the local area, including six Threatened flora species and 57 Priority flora species (see Appendix C).

A likelihood of occurrence assessment for Threatened and Priority flora located within the local area was undertaken for the application area. Noting the preferred habitat types, including the mapped soil and vegetation types, the likelihood analysis concluded that the application area may comprise suitable habitat for 31 Threatened and Priority flora species. In particular, *Paracaleana dixonii* (T), *Grevillea althoferorum* subsp. *althoferorum* (T), and *Eremophila subangustifolia* (T) were considered to have a high likelihood of occurrence within the application area.

A Flora and vegetation survey was undertaken across the application area by Stream Environment and Water (Stream) in April 2023. Additional targeted flora surveys were undertaken in October and November of 2023 by Focused Vision Consulting (Focused Vision) to capture the flowering times of the conservation significant flora considered likely to occur within the application area. The results of the combined survey efforts indicate one Priority flora species, *Banksia elegans* (P4), is present within the application area. No other Priority or Threatened species were recorded during the surveys.

Banksia elegans (P4)

Banksia elegans is described as a shrub with often suckering, fire tolerant rootstock, growing between one to four meters in height. The species produces yellow to green-yellow flowers from October to November. The species is known from 44 records across the Avon Wheatbelt and Geraldton Sandplains IBRA regions (WA Herbarium, 1998-). A total of nine records of *B. elegans* occur within the local area. The closest record is 0.02 kilometres from the application area.

The April survey (Stream, 2023) recorded a total of 48 individuals of *Banksia elegans* (P4). Of these, 12 individuals were recorded within the application area. The follow-up targeted surveys only recorded six individuals of *Banksia elegans* within the application area and an additional 92 individuals outside of the application area (Focused Vision, 2023). Given the initial survey (Stream, 2023) was undertaken in April, outside of the known flowering period for *Banksia elegans*, it is considered likely that several individuals were misidentified. The follow-up surveys were conducted during the flowering period for *B. elegans*, enabling more accurate identification of individuals.

The records of *Banksia elegans* and associated habitat extended outside the survey area and it is considered likely the population extends beyond the individuals recorded (Stream, 2023). DBCA advised that the impact to 6.35 per cent of the recorded population is unlikely to be locally or regional significant (DBCA, 2023b). To further mitigate any local impacts to this species, Main Roads has committed to avoiding individuals of *B. elegans* where possible (Main Roads, 2023).

Paracaleana dixonii (T)

Paracaleana dixonii is described as a tuberous perennial orchid that grows between 9-20 centimetres in height. The species produces yellow to brown flowers from October to December or January (WA Herbarium, 1998-). *P. dixonii* is known from 20 FloraBase records with a distribution of approximately 145 kilometres from east of Dongara in the north, to north of Cataby in the south.

The likelihood assessment determined *Paracaleana dixonii* (T) was highly likely to occur within the application area due to the presence of suitable habitat and nearby records. The presence of *P. dixonii* could not be confirmed during the April survey as the field survey was conducted outside of its known flowering period (October to December) (Stream, 2023). The September survey focused on three Threatened species; *Paracaleana dixonii*, *Grevillea althoferorum* subsp. *althoferorum* and *Eremophila subangustifolia*. No Threatened flora were recorded during this

survey. A second survey was conducted to targeted *Paracaleana dixonii* due to the species' late spring (November) flowering time. Despite the intensive searches across two visits, *P. dixonii* was not recorded within the application area nor the surrounding area (Focused Vision, 2023).

DBCA advised that the surveys were conducted following a period of low seasonal rainfall, resulting in poor emergence. Therefore, while the species was not located during the targeted surveys, the occurrence of the species cannot be ruled out. Given the clearing is likely to result in minimal ground-level disturbance and the extent of the clearing is limited (0.21ha), if present, DBCA advised that impacts are considered unlikely to be significant at the species level (DBCA, 2023a).

Conservation significant fauna

According to available databases, 12 conservation significant fauna species have been recorded within the local area (10 kilometre radius of the application area). All 12 records are bird species and a number of the records are migratory species and/or species associated with the nearby lake (Lake Indoon). Taking into consideration the preferred habitat types for each species occurring within the local area and their proximity to the application area, only one fauna species, Carnaby's cockatoo, was considered likely to utilise the application area. According to available databases, 16 records of Carnaby's cockatoo occur within the local area.

Black cockatoo habitat can be considered in terms of foraging, breeding and roosting habitat (DAWE, 2022). The application area is located within the Geraldton Sandplains IBRA region of Western Australia. This region provides a range of foraging resources for black cockatoos, in particular Carnaby's cockatoos. Carnaby's forage on the seeds, nuts and flowers of a variety of plants, including Proteaceous species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, marri and a range of introduced species (DAWE, 2022). The black cockatoo assessment conducted across the application area described the vegetation as a *Banksia* woodland, with Proteaceous understorey species, providing suitable foraging habitat for Carnaby's cockatoo (Focused Vision, 2023).

The quality of black cockatoo foraging habitat within the application area was assessed using the scoring tool developed by Bamford Consulting Ecologists. The Scoring tool takes into consideration, vegetation composition, site context and black-cockatoo species density. The quality of foraging habitat within the application area as 'Moderate' foraging habitat due to the presence of *Acacia saligna*, *Banksia* spp. and *Mesomelaena pseudostygia*. No observations of the Carnaby's cockatoo or evidence of foraging were recorded during the field assessment (Focused Vision, 2023).

Foraging resources in proximity to known breeding sites are significant as black cockatoos rely on these foraging resources to successfully raise chicks. During the breeding season, black cockatoos are known to forage in areas up to 12 kilometres from their breeding nests. According to available databases, the closest known breeding site is over 20 kilometres from the clearing area. The black cockatoo habitat determined no suitable breeding or roosting habitat trees occurred within the application. However, the survey did identify potential breeding habitat approximately 200 metres south of the application area along the edge of Lake Indoon (Focused Vision, 2023).

Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (DAWE, 2022). The vegetation fringing Lake Indoon was considered during the black cockatoo assessment to provide suitable roosting habitat. The Lake Indoon lake is a brackish to freshwater lake, potentially providing a drinking water source for Black Cockatoos. According to available databases, no roosting sites occur within the local area (10 km of the application area) with only one roosting site (11.6 km) recorded within 20 kilometres of the application area. However, roosting sites are recorded to the north and the south of the survey area, suggesting that the survey area falls within their active range.

Advice received from DBCA on the significance of the proposed clearing on Carnaby's cockatoo habitat concluded that due to the proximity of the application area to extensive areas of similar foraging vegetation, the impacts of the application are not considered likely to significantly impact Carnaby's cockatoo (DBCA, 2023a).

Given the above, specifically, the lack of known breeding records and limited roosting records within 20 kilometres of the application area, and the availability of surrounding suitable foraging habitat, the potential impacts to 0.21 hectares of suitable foraging habitat is considered unlikely to be significant to the conservation of the species.

Several other bird species were recorded within close proximity to the application area such as the blue-billed duck (P4), common greenshank (MI), curlew sandpiper (CR) and the red-necked stint (MI). These species are associated

with coastal wetlands and mudflats (see Appendix C.2). Given this, the application area is considered unlikely to provide suitable habitat for these species, however, slow, directional clearing will allow fauna species to disperse into other areas of remnant vegetation.

Ecological Linkage

The proposed clearing is not within any mapped ecological linkages and the extent of clearing is relatively small, narrow and linear. Given this and the extent of native vegetation remaining in the local area, the vegetation proposed to be cleared is not considered to be necessary as an ecological linkage for fauna.

Conclusion

Based on the above assessment, the proposed clearing may result in the loss of up to six individuals of the Priority 4 species *Banksia elegans*. Impacts to the local population of *Banksia elegans* as a result of the clearing activities are considered unlikely to be significant given the number of individuals found in adjacent areas.

The proposed clearing will impact 0.21 hectares of moderate Carnaby's cockatoo foraging habitat. Given the extent of the proposed clearing and presence of considerable similar vegetation within the local area, the proposed clearing is unlikely to significantly impact the availability of foraging habitat for Carnaby's cockatoo species.

The clearing also has the potential to increase the risk of the introduction and spread of weeds and dieback into adjacent vegetation impacting the quality of habitat values.

For the reasons set out above, it is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction and spread of weeds, slow directional clearing to allow fauna to move into adjacent vegetation.

Conditions

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

- avoid, minimise, and reduce impacts and extent of clearing to minimise the impacts on *Banksia elegans* and other environmental values
- dieback and weed control, which ensures protocols are put in place to limit the introduction and transportation of dieback- and weed-affected materials; and
- slow, progressive one directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing.

3.3. Relevant planning instruments and other matters

No Aboriginal sites of significance have been mapped 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.

The application area is located within the Arrowsmith Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914 (RIWI Act)*. No groundwater will be intersected during the proposed clearing activities and therefore no licences are required under the RIWI Act.

End

Appendix A. Additional information provided by applicant

Request for information	Further information provided
Avoidance and mitigation measures	Details of avoidance and mitigation measures were provided. The Shire revised the method of clearing to pruning vegetation 0-30 centimetres above ground to within 0.5 – 1 metre above the ground, reducing the impacts to understory vegetation. This information is presented in Section 3.1 of the Decision Report.
Targeted flora surveys	The Shire conducted additional targeted surveys for a number of Threatened and Priority flora considered likely to occur within the application area. This information is presented in Section 3.2.1 of the Decision Report.

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
The need for the permit.	The purpose of the clearing is considered under Section 1.4 of this Decision Report.
Concerns that conservation significant flora occur within the proposed clearing area, including concerns that the flora survey was undertaken at an unsuitable time to detect orchid species.	Additional targeted flora surveys were undertaken for the application area in September and November, in accordance with the timing of peak flowering season as referenced in the <i>Technical Guidance – Flora and Vegetation Surveys for Environmental Impact</i> (EPA, 2016). This information is presented in Section 3.2.1 of the Decision Report.

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 the Department 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.

Characteristic	Details
Local context	The area proposed to be cleared is comprised of roadside vegetation in the extensive land use zone of Western Australia. It is surrounded by native vegetation, cleared agricultural land and a campground on Lake Indoon. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 67 per cent of the original native vegetation cover.
Ecological linkage	The application area is not mapped as a formal linkage. The vegetation on the other side of the road reserve is mapped as Roadside Conservation by DBCA. This vegetation will be retained. Given the extent of vegetation remaining in the local area and directly adjacent to the application area, the proposed clearing is not considered to provide significant linkage function for fauna across the landscape.
Conservation areas	The application area does not intersect Conservation Estates or Reserves. The closest conservation area is the Lake Logue Nature Reserve located 350 metres north of the application area.
Vegetation description	A targeted flora survey (Stream, 2023) indicates the vegetation within the proposed clearing area consists of a tall shrubland of <i>Banksia prionotes</i> and <i>Banksia menziesii</i> with shrubland of ? <i>Scholtzia involucreta</i> and <i>Jacksonia</i> sp. over mixed shrubland. The condition was generally good to very good with minor incursion of weeds as is typical of roadside vegetation.

Characteristic	Details
	<p>This is consistent with the mapped vegetation type Eridoon_378, which is described as Mixed heath with scattered tall shrubs <i>Acacia</i> spp., PROTEACEAE and MYRTACEAE.</p> <p>The mapped vegetation type retains approximately 64 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	A targeted flora survey (Stream, 2023) indicates the vegetation within the proposed clearing area was generally in good to very good condition (Keighery, 1994) with minor incursion of weeds as is typical of road side vegetation. The full Keighery (1994) condition rating scale is provided in Appendix E.
Climate and landform	The south west of Western Australia has a Mediterranean climate with mild wet winters and hot dry summers.
Soil description	<p>The soil is mapped as</p> <ul style="list-style-type: none"> Tamala South 3 Subsystem dunes phase (221Ta_3d): Low hills with relict dunes and some limestone outcrop; Deep and shallow yellow sand over limestone.
Land degradation risk	The soil mapped across the application area has a high risk of land degradation from wind erosion but has a low risk of land degradation from water erosion, waterlogging, subsurface acidification, phosphorus export or salinity risk.
Waterbodies	The desktop assessment and aerial imagery indicated that no wetlands or watercourses intersect the application area. An unnamed dampland is located 0.08 kilometres north of the application area, and Lake Indoon is located 0.26 kilometres south of the application area.
Hydrogeography	<p>The application area is located within the Arrowsmith hydrological zone of Western Australia. This zone is described as Gently undulating, dissected sandplain & dunes on sandstone & other sedimentary rocks.</p> <p>The application area falls within the Arrowsmith Groundwater Area proclaimed under the RIWI Act.</p>
Flora	<p>According to available databases, 63 conservation significant flora records occur within the local area, including six Threatened flora species and 57 Priority flora species. Of the 63 conservation significant flora records, 23 are found on the same soil type as the application area.</p> <p>Flora and vegetation surveys (Stream, 2023; Focused Vision, 2023) recorded one Priority 4 species, <i>Banksia elegans</i>.</p>
Ecological communities	No Priority or Threatened Ecological communities occur within the local area and none are considered likely to occur.
Fauna	<p>According to available databases, 12 conservation significant fauna records occur within the local area, all bird species. Of these, eight are Migratory species, two are Priority 4, one is Endangered and one is Critically Endangered.</p> <p>The application area is located within the known distribution of the Endangered Carnaby's cockatoo. No black cockatoo roost or breeding sites have been recorded within the local area.</p>

C.1. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and targeted flora survey information (Stream, 2023; Focused vision, 2023), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Banksia elegans</i>	4	Y	Y	Y	0.02	9	Y
<i>Fabronia hampeana</i>	2	Y	Y	Y	0.02	1	Y
<i>Calytrix chrysantha</i>	4	Y	Y	Y	0.77	5	Y
<i>Calytrix eneabensis</i>	4	Y	Y	N	0.93	7	Y
<i>Paracaleana dixonii</i>	T	Y	Y	N	1.21	5	Y
<i>Calytrix superba</i>	4	Y	Y	N	1.22	11	Y
<i>Grevillea althoferorum</i> subsp. <i>althoferorum</i>	T	Y	Y	N	1.22	3	Y
<i>Guichenotia alba</i>	3	Y	Y	N	1.22	4	Y
<i>Verticordia aurea</i>	4	Y	Y	N	2.66	7	Y
<i>Grevillea biformis</i> subsp. <i>cymbiformis</i>	3	Y	Y	Y	4.05	17	Y
<i>Scaevola eneabba</i>	2	Y	Y	N	4.09	11	Y
<i>Thryptomene</i> sp. Lancelin (M.E. Trudgen 14000)	3	Y	N	Y	4.37	2	Y
<i>Comesperma rhadinocarpum</i>	3	Y	Y	Y	4.48	3	Y
<i>Schoenus griffinianus</i>	4	Y	Y	N	5.23	4	Y
<i>Mesomelaena stygia</i> subsp. <i>deflexa</i>	3	Y	Y	N	6.43	5	Y
<i>Verticordia argentea</i>	2	Y	Y	N	6.43	10	Y
<i>Desmocladius elongatus</i>	4	Y	Y	N	6.48	2	Y
<i>Stawellia dimorphantha</i>	4	Y	Y	N	7.24	3	Y
<i>Grevillea erinacea</i>	3	Y	N	Y	7.48	4	Y
<i>Chordifex reseminans</i>	2	Y	Y	N	9.24	3	Y
<i>Styphelia obtecta</i>	T	Y	Y	N	9.29	2	Y

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

C.2. Fauna analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Carnaby's cockatoo (<i>Zanda latirostris</i>)	EN	Y	Y	0.22	16	Y
Blue-billed duck (<i>Oxyura australis</i>)	P4	N	N	0.25	17	N
Common greenshank (<i>Tringa nebularia</i>)	MI	N	N	0.30	16	N
Curlew sandpiper (<i>Calidris ferruginea</i>)	CR	N	N	0.30	3	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> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains foraging habitat for Carnaby’s cockatoo and a priority flora species <i>Banksia elegans</i> (P4).</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</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 significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains foraging habitat for conservation significant Carnaby’s cockatoo.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is considered to contain suitable habitat for <i>Paracaleana dixonii</i> (T). No individuals were recorded during the appropriately timed flora survey (FVC, 2023).</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<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>No threatened ecological communities are mapped within the local area. The area proposed to be cleared does not contain species that can indicate a threatened ecological community.</p>	Not 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 mapped vegetation type and 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 is 350 metres, the proposed clearing is considered unlikely to have an impact on the environmental values of nearby conservation areas.</p> <p>There is a small risk of the spread and/or introduction of weeds. A weed and disease hygiene condition on the permit will reduce this risk.</p>	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
<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>The nearest wetland is recorded 0.08 kilometres north of the application area. Given no watercourses 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 soil is highly susceptible to wind erosion and have a low susceptibility to water erosion, nutrient export and salinity. Noting the extent and shape of the application area, the proposed clearing is not likely to cause appreciable land degradation.</p> <p>Given the proposed clearing activities is restricted to pruning of vegetation above one metre, the risk of wind erosion is considered to be low.</p>	Not likely to be at variance	No
<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 watercourses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality. The application area is located within the Arrowsmith Groundwater Area proclaimed under the RIWI Act. No groundwater will be intersected during the proposed clearing activities.</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> <p>Given no watercourses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	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.

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.

Condition	Description
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



Figure 2 Representative photos of the vegetation unit: Banksia woodland (Focused Vision, 2023)



Figure 3 Black cockatoo habitat mapping (Focused Vision, 2023)

Biological surveys to support clearing permit application CPS 10249/1 are available at [Index of /permit/10249 \(dwer.wa.gov.au\)](https://dwer.wa.gov.au/index-of/permit/10249).

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)
- 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

Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT902355).

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

- Department of Agriculture, Water and the Environment (DAWE) (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 Biodiversity, Conservation and Attractions (DBCA) (2023a) *Species and Communities Branch flora and fauna advice for clearing permit application CPS 10249/1*, received 8 February 2024. Department of
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023b) *Species and Communities Branch flora and fauna advice for clearing permit application CPS 10249/1*, received 12 February 2024. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT903650).
- 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 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.
- Focused Vision Consulting (Focused Vision) (2023) *Supporting information for clearing permit application CPS 10249/1*, received 21 December 2023 (DWER Ref: DWERDT884400).
- Government of Western Australia (2019) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth, <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. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Main Roads Western Australia (MRWA) (2023) *Supporting information for clearing permit application CPS 10249/1*, received 20 December 2023 (DWERDT884145).
- 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.
- Shire of Carnamah (2023) *Clearing permit application CPS 10249/1*, received 23 June 2023 (DWER Ref: DWERDT796816).
- Stream Environment and Water (2023) *Supporting information for clearing permit application CPS 10249/1*, received 19 July 2023 (DWER Ref: DWERDT808841).
- Submission (2023) *Public submission in relation to clearing permit application CPS 10249/1*, received 4 August 2023 (DWER Ref: DWERDT817227).
- 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 July 2023).