GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10510/1
Permit Holder:	Shire of Merredin
Duration of Permit:	From 19 September 2024 to 19 September 2034

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 road construction.

2. Land on which clearing is to be done

Lot 10366 on Deposited Plan 126287, Merredin.

Crooks Road reserve (PIN 1319484), Merredin.

3. Clearing authorised

The permit holder must not clear more than 0.072 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 19 September 2029.

PART II – MANAGEMENT CONDITIONS

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

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

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be *cleared*; and

(c) reduce the impact of *clearing* on any environmental value.

6. Weed and dieback management

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

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be *cleared*;

(b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be *cleared*; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be *cleared*.

7. Revegetation and rehabilitation

(a) The permit holder shall establish and maintain a minimum of 0.24 hectares of *native vegetation* within the areas cross-hatched red in Figure 2 of Schedule 1 in accordance with the following *conditions*:

  (i) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate*;

  (ii) ensure *planting* is undertaken at the *optimal time*, using species consistent with the mapped Muntagin_1023 Vegetation Association;

  (iii) the *revegetation* shall be established and maintained to an average *planting* density of four stems per square metre;

  (iv) undertake *weed* control activities on an 'as needs' basis to ensure success of *revegetation*; and

  (v) the revegetation is to commence within 24 months of undertaking *clearing* authorised.

(b) Within 24 months of undertaking *revegetation* in accordance with *condition* 7(a) of this permit, the permit holder must:

  (i) determine the species composition, structure and density of the *revegetation*; and

  (ii) where, in the opinion of an *environmental specialist*, the composition, structure and density determined under *condition* 7(b)(i) of this permit will not result in a similar composition, structure and density to that set out in *condition* 7(a) of this permit, the permit holder must undertake additional *planting* or *direct seeding* of *native vegetation* to achieve this outcome.

(c) Where additional *planting* or *direct seeding* of *native vegetation* is undertaken in accordance with condition 7(b)(ii) of this permit, the permit holder shall repeat condition 7(b)(i) and 7(b)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of *native vegetation*.

(d) Where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 7(b)(i) and (ii) of this permit, that determination shall be submitted for the *CEO*'s consideration. If the *CEO* does not agree with the determination made under condition 7(b)(ii), the *CEO* may require the permit holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 7(b)(ii).

PART III - RECORD KEEPING AND REPORTING

8. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the *cleared* area; (b) the location where the *clearing* occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was *cleared*; (d) the 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* 5; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with *condition* 6.
2.	In relation to the required *revegetation* activities generally	(a) the species composition, structure, and density of the *cleared* area; (b) the location where the *clearing* occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GD20), expressing the geographical coordinates in Eastings and Northings; (c) the date the *revegetation* works began (d) a copy of the *environmental specialist's* report; (e) a description of the *revegetation* activities undertaken; and (f) any remedial actions required to be undertaken.

9. Reporting

The permit holder must provide to the *CEO* the records required under condition 8 of this permit when requested by the *CEO*.

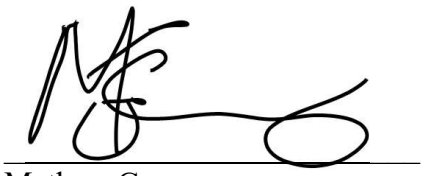
DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
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.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of *Phytophthora* species on native vegetation.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the *CEO* as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate / revegetated / revegetation	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

26 August 2024

Schedule 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

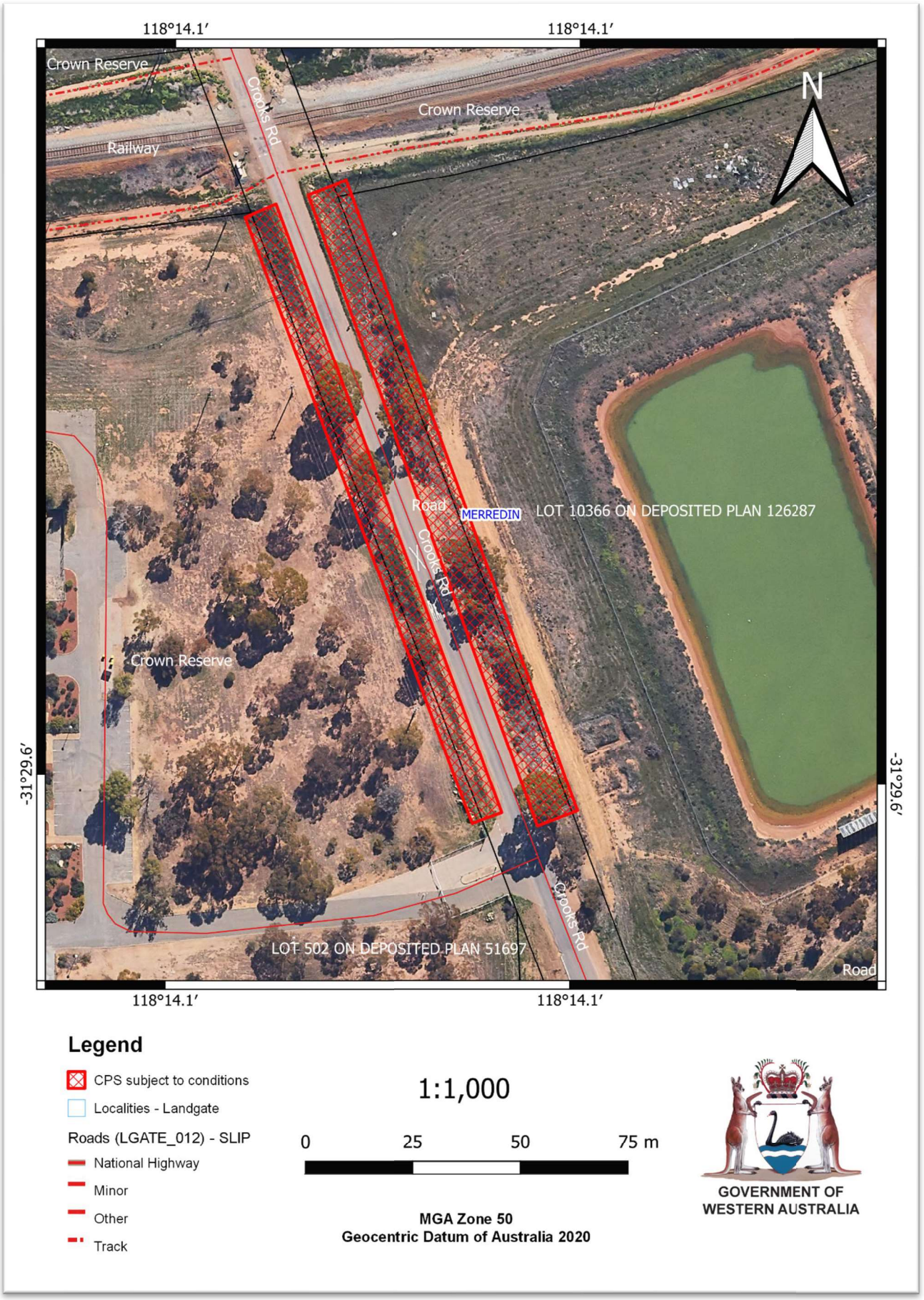


Figure 2: Map of the boundary of the area within which revegetation must occur

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10510/1
Permit type:	Purpose permit
Applicant name:	Shire of Merredin
Application received:	6 February 2024
Application area:	0.072 hectares of native vegetation (revised)
Purpose of clearing:	Road construction
Method of clearing:	Mechanical – cutting and slashing
Property:	Lot 10366 on Deposited Plan 126287 Crooks Road reserve (PIN 1319484)
Location (LGA area/s):	Shire of Merredin
Localities (suburb/s):	Merredin

1.2. Description of clearing activities

The application is to clear trees and the associated understorey alongside an existing road, for the purpose of road construction to improve safety and efficiency along this key transport route (see Figure 1, Section 1.5). The area proposed to be cleared is an approximately 158 metre length on the eastern side of the road reserve, consisting of 0.072 hectares of native vegetation (Shire of Merredin, 2024a).

1.3. Decision on application

Decision:	Granted
Decision date:	26 August 2024
Decision area:	0.072 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1.), the findings of a flora assessment (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that this project has the main objective of improving safety and efficiency along Crooks Road. Crooks Road is a route predominately used for access by industry to the Industrial Area West of the Merredin Townsite and represents the only access to one of the largest CBH grain facilities in Wheatbelt region (Shire of Merredin, 2024b) (see Section 3.1 for more detail).

The assessment identified that the proposed clearing will result in:

- loss of native trees that are foraging habitat for *Zanda latirostris* (Carnaby's black cockatoo);
- loss of native vegetation within an extensively cleared landscape; and
- the introduction and spread of weeds and dieback 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 avoidance and mitigation measures (Section 3.1), the Delegated Officer determined that the proposed clearing will not result in an unacceptable risk to identified environmental values, subject to required conditions. The applicant has suitably demonstrated avoidance and minimisation measures, and has committed to undertake revegetation, which sufficiently counterbalances the loss of the native vegetation proposed for clearing.

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

- avoid and minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback. Weeds and dieback management measures as specified in the clearing permit; and
- plant a minimum of 0.24 hectares of native vegetation within the Crooks Road reserve (PIN 1319484), to mitigate the loss of 0.072 hectares of native vegetation containing foraging habitat for black cockatoos in the 'Completely Degraded' road reserve within an extensively cleared landscape.

1.5. Site map

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 polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)

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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that measures of avoidance and mitigation have been taken.

Necessity

- This project has the main objective of improving safety and efficiency along Crooks Road, a key transport route, which services an average of 516 vehicles per day (65% heavy vehicles). Crooks Road is a route predominately used for access by industry to the Industrial Area West of the Merredin Townsite and represents the only access to one of the largest CBH grain facilities in Wheatbelt region (Shire of Merredin, 2024b).
- Two issues have been raised through a Road Safety Audit conducted by Main Roads Western Australia, including: Insufficient pavement and shoulder width and roadside hazards within the clear zone. It was recommended that the sealed surface should be widened to accommodate the high proportion of heavy vehicles and that trees located within the clear zone should be removed or suitably protected in accordance with Austroads Guidelines (Shire of Merredin, 2024a).

Avoidance

- As per Main Roads 'Guide to Road Design', the cross-section for rural roads accommodating 500 – 1000 Passenger car Units (PCUs) proposes widening the road from the current six to seven metres seal to an eight metre seal to enable heavy vehicles to pass other vehicles in a safe manner. The minimum pavement width for an eight metre seal is ten metres (see Figure 2 in Appendix E) (Main Roads WA, 2023). To improve the road quality, the shoulders of a road should be at least 1.5 metres. Thus, the final design will be two 3.5 metre traffic lanes with 1.5 metre shoulders (0.5 metre sealed and 1.0 metre unsealed). This land is Shire owned and houses an evaporation basin which is gated off around the basins' perimeter (Shire of Merredin, 2024a).
- The project's initial design aimed to widen the road on both sides, which would require clearing on the eastern and western embankments. The Shire have since reworked this design to extend the road on the eastern side only, resulting in avoiding the necessity of clearing on the western side of the road. The trees and shrubs on the eastern side of the road will be affected due to the amount of clean fill required to stabilise the road for the construction works, however, the native vegetation on the western side of the road reserve will not be affected by the proposed clearing (Shire of Merredin, 2024a).

Revegetation action

- The Shire propose to undertake revegetation within the road reserve – for an area of 0.24 hectares as per the DWER's recommendations. The road reserve area will be revegetated with native vegetation representative of the Avon Wheatbelt – Muntadgin_1023 vegetation association and suitable for black cockatoo foraging. The revegetation is proposed to occur in close proximity to the impact site along the same stretch of road (Shire of Merredin, 2024b).

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 B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna) and significant remnant vegetation. 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 (fauna) - Clearing Principle (b)

Assessment
In determining the likelihood of conservation significant fauna occurring within the application area, considerations were given to the number of records in the local area, preferred habitat types and typical home ranges, proximity of records to the application area, the type and condition of the vegetation within the application area and historical nature of the records. A summary of fauna recorded within the local area and their potential of occurrence within the application area is presented in Appendix B.3.

The application area is located within *Zanda latirostris* (Carnaby's black cockatoo) known distribution area, breeding area and the buffered area for feeding. The trees proposed to be cleared have been identified as *Eucalyptus salmonophloia* (salmon gum) (Shire of Merredin, 2024b), which are a species known to be used by Carnaby's cockatoo as critical habitat for feeding, breeding and night roosting (DAWE, 2022). The only black cockatoo roost recorded in the local area (10 kilometre radius from the application area) is located approximately 1.23 kilometres from the application area. The Shire have not proposed to clear any hollow-bearing trees.

Breeding habitat
Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (DAWE, 2022). The application area is located within an area with mapped breeding distribution for Carnaby's cockatoo. This species generally occurs in woodland or forest, but also breeds in partially cleared woodland or forest, including isolated trees. They nest in hollows in live or dead trees, particularly *Eucalyptus salmonophloia* (salmon gum), *Eucalyptus wandoo* (wandoo), and *Eucalyptus loxophleba* subsp. *loxophleba* (York gum) in this locality. Habitat trees considered potentially suitable for black cockatoo breeding have a diameter at breast height (DBH) greater than 500 millimetres (for salmon gum and wandoo, suitable DBH is 300 millimetres) (DAWE, 2022).

Given the trees proposed to be cleared do not appear to have DBHs much greater than 300 millimetres, and do not contain any hollows, they are not considered significant breeding habitat for black cockatoos. The Shire have not proposed to clear any hollow-bearing trees (Shire of Merredin, 2024a: 2024b)

Foraging habitat
Critical foraging habitat for black cockatoo species includes foraging material that is within an approximate six to 12 kilometre radius of a nesting site and within six kilometres of a night roosting site. Carnaby's cockatoos forage on the seeds, nuts, and flowers of a variety of plants, including Proteaceous species (*Banksia spp., Hakea spp*., and *Grevillea spp*.), as well as *Allocasuarina* and *Eucalyptus spp*., marri, and a range of introduced species (Valentine and Stock, 2008: DAWE, 2022).

As the area proposed to be cleared consists of known foraging species for Carnaby's black cockatoos and the location is mapped within the known distribution for the species, it is likely that Carnaby's black cockatoos will utilise these trees for foraging (DAWE, 2022). While breeding or roosting, black cockatoos generally forage within a six kilometre to 12-kilometre radius of their nesting or roosting site (DAWE, 2022). According to available datasets, the

application area is mapped within 10 kilometres of a known roosting site (closest mapped approximately 1.23 kilometres from the application area).

Roosting habitat
Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food and surface water supply (DAWE, 2022). Known night roosting trees include salmon gum, wandoo and introduced eucalyptus (DAWE, 2022) in this locality.

Photographs of the trees proposed to be cleared, in addition to information provided by the Shire, indicate that the trees proposed to be cleared are not likely to be of a size or show evidence of use as a roosting tree (Shire of Merredin, 2024a). Therefore, the trees are not likely to provide suitable black cockatoo roosting habitat (Appendix E).

The vegetation within the application area contains exotic herbs and grasses, therefore, the clearing activities have the potential to cause and/or exacerbate the introduction and spread of weeds and dieback into nearby vegetation, which could impact on the quality of fauna habitat. As a result, appropriate conditioning will be required to be included on the permit to avoid the spread of weeds and dieback to nearby vegetation.

Revegetation action
Noting that the vegetation proposed to be cleared may provide foraging habitat for black cockatoos (within close proximity to additional foraging habitat, a roost site and a water source), within a highly cleared landscape subject to cumulative clearing pressures, the proposed clearing represents a significant residual impact (SRI). The applicant has identified areas within the same road reserve as the application area which will be revegetated to directly reduce the SRI of the proposed clearing (Shire of Merredin, 2024b). Based on the Western Australian Environmental Offset Metric, revegetating 0.24 hectares of native vegetation, that includes black cockatoo foraging habitat, adequately counterbalances the significant residual impact of the clearing. DWER considers the revegetation action aligns with the WA Environmental Offsets Policy (2011) and WA Environmental Offsets Guideline (2014).

Conclusion
Based on the above assessment, the proposed clearing will result in the loss of 0.072 hectares of native vegetation which holds significant foraging habitat value within an extensively cleared landscape. Given the applicants avoidance, minimisation and mitigation measures, the Delegated Officer has determined that the potential impacts of the proposed clearing can be addressed by the revegetation of 0.24 hectares of native vegetation, as well as weed and dieback management conditions on the permit.

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

- revegetation of 0.24 hectares of native vegetation within Crooks Road reserve (PIN 1319484), that includes black cockatoo foraging habitat: and
- weed and dieback management measures will be required as a condition on the clearing permit to mitigate impacts to adjacent vegetation.

3.2.2. Environmental value (significant remnant vegetation) - Clearing Principle (e)

Assessment

The National Objectives Target for Biodiversity Conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e. pre-European settlement) (Commonwealth of Australia, 2001). This is the threshold level below which species loss appears to accelerate exponentially at an ecosystem level. According to available databases, the area proposed to be cleared consists of the vegetation complex (Mattiske and Havel, 1998) Muntadgin_1023 Association – Wheatbelt - *Eucalyptus loxophleba, E. salmonophloia* (Government of Western Australia, 2019). From photographs received from the Shire, the application area is a 'Completely Degraded' representation of the Muntadgin_1023 Association (Appendix E).

The Muntadgin_1023 Association retains only 10.79 per cent vegetation coverage of its pre-European native vegetation extent. Within a 10 kilometre radius of the application area, approximately 10.58 per cent of the pre-European native vegetation extent remains (Government of Western Australia, 2019). The local area and mapped vegetation association is inconsistent with the national target of biodiversity conservation of Australia.

Whilst the proposed clearing is located within an extensively cleared landscape, the application area does not contain any conservation significant flora, does not contain high levels of biodiversity nor impact on the road to function as an ecological linkage. Given the above, it is considered that the impact of clearing can be managed through appropriate onsite revegetation.

Revegetation action
Noting that the vegetation proposed to be cleared is a remnant within a highly cleared landscape subject to cumulative clearing pressures, this impact needs to be appropriately mitigated and/or offset through revegetation. Using the *WA Environmental Offsets Metric Calculator* it was determined that the Shire will be required to plant 0.24 hectares of native vegetation representing the Muntadgin_1023 Association to reduce the SRI of clearing 0.072 hectares of native vegetation within an extensively cleared landscape. This will ensure the clearing will not contribute to the further decline of vegetation within the local area. DWER considers that the revegetation action aligns with the *WA Environmental Offset Policy* (2011) and *WA Environmental Offsets Guideline* (2014).

Conclusion
The proposed clearing will contribute to the further loss of native vegetation cover in the Avon Wheatbelt region and native vegetation representative of the Muntadgin_1023 Association. The Shire committed to revegetating 0.24 hectares of native vegetation within the road reserve, to reduce the SRI of the clearing. The onsite revegetation ensures that a significant residual impact does not remain.

Conditions
To ensure there is no net loss of native vegetation within the local area, the following management measure will be required as a condition on the clearing permit:

- Revegetation of 0.24 hectares of native vegetation within the road reserve.

3.3. Relevant planning instruments and other matters

The Shire of Merredin advised that the proposed clearing is consistent with the Shire's Local Planning Scheme.

No Aboriginal Heritage Places have been mapped within 10 kilometres of the application area, however, the entire area does lie within the Registered Ballardong People Indigenous Land Use Agreement (WI2017/012) 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
The Shire of Merredin provided a response to DWER's request for further information (Shire of Merredin, 2024b).	The Delegated Officer considered the Shire of Merredin has adequately considered the avoidance of native vegetation and mitigation measures to balance the significant residual impacts of the clearing. Further information is contained in Avoidance and Mitigation measures in Section 3.1 and Assessment of impacts on environmental values in Section 3.2 of this report.

Appendix B. Site characteristics

B.1. Site characteristics

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

Characteristic	Details
Local context	The native vegetation proposed to be cleared, comprises of 0.072 hectares of native, located along a road reserve and within the neighbouring Lot, amongst the intensive land use zone of the Shire of Merredin, Western Australia. This roadside vegetation is adjacent to an Agricultural Research Station managed by Water Corporation to the west, a highway to the south, a railway line to the north and a combination of Crown Reserves and Freehold Lots to the east. The proposed clearing area is a small, isolated remnant in a highly cleared landscape. Spatial data indicates the local area (10 kilometre radius from the centre of the area proposed to be cleared) retains approximately 10.58 per cent of the original native vegetation cover.
Ecological linkage	There is a Roadside Conservation – Road centreline (DBCA-030) area linkage mapped along Crooks Road, which was surveyed on August 2010 and identified the presence of Wild Oats weed on both sides of the road. The proposed clearing will not sever this linkage, noting clearing is only occurring on one side of the road.
Conservation areas	There are no conservation areas mapped within the area proposed to be cleared. There are several reserves mapped within the local area, however, none in close proximity for the proposed clearing to cause an impact.
Vegetation description	There is one vegetation association mapped within the proposed areas to be cleared. This consists of (Mattiske and Havel, 1998): • MUNTADGIN_1023 – Wheatbelt - *Eucalyptus loxophleba, E. salmonophloia*. (Government of Western Australia, 2019). The area proposed to be cleared is a completely degraded remnant representative of the mapped vegetation association. The mapped vegetation association retains approximately 10.79 percent of the original extent statewide and approximately 10.84 percent of the original extent within the Avon Wheatbelt IBRA Bioregion (Government of Western Australia, 2019).
Vegetation condition	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in 'Completely Degraded' (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.

Characteristic	Details
Climate and landform	The Shire of Merredin experience hot, dry summers and mild winters with an average maximum temperature of 24.7°C and an average minimum temperature of 10.6°C. The temperature remains in the low 30's or above between December and February. The average annual rainfall is 314 millimetres, with wettest months usually being May until August.
Soil description	The application area is located within the 258Kb - Kellerberrin Soil System and sits within its 258KbME- Kellerberrin, Merredin Subsystem, which is described as broad, flat valleys of the eastern wheatbelt containing heavy, red and grey soils.
Land degradation risk	Please see Land Degradation Table in Section B.4.
Waterbodies	The desktop assessment and aerial imagery indicated that there is an earthdam located within the property adjacent to the application area, approximately 35 metres to the east. There are no watercourses that transect the area proposed to be cleared. The nearest natural watercourse is Cohn Creek which is located approximates 370 metres to the east of the application area at the closest distance.
Hydrogeography	The application area is located within the Avon River System Surface Water Area (UFI 24) and the Northern Zone of Ancient Drainage System - An ancient plain of low relief and lateritic uplands on weathered granite. Ranges and stony plains in the north-east. No connected drainage, remnant salt lake chains occur in ancient drainage systems which now only function in very wet years. The area proposed to be cleared also sits within the South West catchment division (6), the Avon River Basin (615) and the SwanAvon_Yilgarn catchment - UFI 167.
Flora	A plant assessment undertaken over the application area found that there were no threatened or priority species or *Eucalyptus brockwayi* . The understory is dominated by grassy weeds except for two locally common small shrubs (see Figure 8 in Appendix E for list of species identified). The eucalypts assessed were all healthy; if planted, all occur naturally in the region (Shire of Merredin, 2024b) Supporting photographs provided show that the clearing is dominated by trees and shrubs over weeds (Appendix E) (Shire of Merredin, 2024a).
Ecological communities	The only Threatened Ecological Community (TEC) found within the local area of proposed clearing, is the Wheatbelt Woodlands - Eucalypt woodlands of the Western Australian Wheatbelt which is listed as Critically Endangered under the EPBC Act. The closest occurrence of this community is mapped approximately 4.55 kilometres from the application area. The application area does not meet the minimum condition thresholds to be classified as this TEC.
Fauna	Nine different fauna species of conservation significance have been recorded in the local area, seven of which are on the threatened list and two are priority listed. The nearest record to the application area is the *Falco peregrinus* (Peregrine falcon), found approximately 1.38 kilometres away, and listed as 'other specially protected species' (OS) under the BC Act. The application area and local area are also mapped as Carnaby's black cockatoo distribution. There is one black cockatoo roost recorded within the local area, which is approximately 1.23 kilometres west of the application area.

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Avon Wheatbelt	9,517,109.95	1,761,187.42	18.51	174,980.68	1.84
Beard vegetation association*					
Muntadgin_1023 association	1,601,605.76	172,875.16	10.79	18,926.07	1.18
Beard vegetation association in IBRA bioregion*					
Avon Wheatbelt – *Muntadgin_1023*	1,522,680.40	165,123.60	10.84	17,277.64	1.13
Local area*					
10km radius	31748.25	3,359.55	10.58	-	-

*Government of Western Australia (2019)

B.3. Fauna analysis table

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]
Zanda latirostris (Carnaby's cockatoo)	EN	Y	Y	1.23	5	Y
*Myrmecobius fasciatus (*Numbat, Walpurti)	T	N	Y	3.13	1	N
Idiosoma castellum (tree-stem trapdoor spider)	P4	N	Y	3.36	150	N
Idiosoma nigrum (shield-backed trapdoor spider)	EN	N	Y	3.54	3	N
Leipoa ocellata (malleefowl)	VU	N	N	4.65	6	N
Falco peregrinus (peregrine falcon)	OS	N	N	5.37	1	N
Macrotis lagotis (bilby, dalgyte, ninu)	VU	N	N	7.44	1	N

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

B.4. Land degradation risk table

Risk categories	Kellerberrin System - 258Kb
Wind erosion	L1: <3% of map unit has a high to extreme wind erosion risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk
Water Repellence	L1: <3% of map unit has a high water repellence risk
Sub-surface Acidification	L2: 3-10% of map unit has a high subsurface acidification risk or is presently acid
Phosphorous export	H2: >70% of map unit has a high to extreme phosphorus export risk
Salinity	M2: 30-50% of map unit has a moderate to high salinity risk or is presently saline
Flooding	L1: <3% of the map unit has a moderate to high flood risk
Groundwater salinity	>35,000 TDS mg/L

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared is not likely to contain local or regionally significant flora, fauna, habitats or assemblages of plants. Given the extent of clearing and the 'Completely Degraded' condition of the vegetation, the proposed clearing is not considered to comprise a high level of biodiversity.	Not likely to be at variance	No
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared contains foraging habitat for Carnaby's black cockatoos.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: Due to the 'Completely Degraded' condition of the vegetation, the area proposed to be cleared is unlikely to contain habitat for threatened flora.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The local area contains occurrences of the Wheatbelt Woodlands - Eucalypt woodlands of the Western Australian Wheatbelt TEC. The application area does not meet the minimum condition thresholds to be classified as this TEC. The vegetation within the application area is in 'Completely Degraded' condition and no TECs listed under the BC Act or EPBC Act were recorded within the proposed clearing area.	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type and the native vegetation in the local area is not consistent with the national objectives and targets for biodiversity conservation in Australia.	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area and the lack of topographical connectivity from the application area to conservation areas, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given no water courses have been recorded within the application area and the vegetation proposed to be cleared is not within an environment associated with a watercourse, the clearing is not likely to have an impact on nearby watercourse.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: One soil type is mapped within the application area. Noting the low degradation risks of the soil type mapped and the extent and location of the application area, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: Although the application area is located within the Avon River System Surface Water Area (UFI 24), due to the extent and location of the application area, the proposed clearing is not likely to impact surface or ground water quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped 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.	Not likely to be at variance	No

Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

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

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

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

Appendix E. Biological survey information excerpts / photographs of the vegetation

2.9 Finding – Narrow seal width at level crossing

The seal width on the approach to, and across the railway level crossing, located on Crooks Road south of Insignia Way is narrow resulting in large vehicles having to negotiate the crossing in the centre of the existing seal utilising both north and southbound lanes.

Justification of the finding:

The crossing is situated on a crest with restricted sightlines. Large vehicles are required to negotiate the level crossing in the middle of the roadway which could result in head on or rear end crashes.

The seal width at the crossing was measured to be 6.2 m.

Austroads Guide to Road Design Part 3: Geometric Design indicates that on two lane sealed roads, the total width of seal should desirably be not less than 7.2 m to allow adequate width for passing.

Austroads Guide to Road Design Part 3: Geometric Design also indicates that a minimum 7.0 m seal should be provided on designated heavy vehicle routes (or where the AADT contains more than 15% heavy vehicles). The Shire of Merredin advised that the traffic volume on Crooks Road is 516 vehicles per day comprising 65 % heavy vehicles therefore meeting this requirement.

Recommendation

Adequate seal width should be provided on the approach to and at the railway level crossing in accordance with Austroads Guidelines.

[IMPORTANT | MODERATE]

Figure 2: Extract from recommendations for Main Road Safety Inspection of Crooks Road (Main Roads WA, 2023)

Figure 2: Aerial photo indicating trees proposed to be cleared and trees avoided in clearing application CPS 10510/1 (Shire of Merredin, 2024a).

Figure 3: Photos indicating trees proposed to be cleared and trees avoided in clearing application CPS 10510/1 (Shire of Merredin, 2024a).

Figure 4: Photos indicating trees proposed to be cleared and trees avoided in clearing application CPS 10510/1 (Shire of Merredin, 2024a).

Figure 5: Photos indicating trees proposed to be cleared in clearing application CPS 10510/1 (Shire of Merredin, 2024a).

Figure 6: Photos indicating trees proposed to be cleared in clearing application CPS 10510/1 (Shire of Merredin, 2024a).

Figure 7: Photos indicating trees proposed to be cleared in clearing application CPS 10510/1 (Shire of Merredin, 2024a).

Plant Assessment for Merredin Shire. 23rd June 2024

Area assessed on east side of Crooks Road between Great Eastern Hwy and Transcontinental Rail Line

Assessed from North to south

10 x Santalum plants. Small shrubs to 2 m.

1 x Eucalyptus salubris Gimlet

1 x E. yilgarnensis. Yorrell

1 x E. salubris

1 x E. salmonophloia Salmon Gum

1 x E. yilgarnensis

1 x E. yilgarnensis

1 x E. salubris.

1 x E. salubris.

1 x E. yilgarnensis.

1 x E. salubris.

1 x E. yilgarnensis.

2 x Santalum shrubs.

1 x E. yilgarnensis.

1 x E. salmonophloia

2 x E. yilgarnensis.

Notes: There were no priority species or E. brockwayi. The understory grasses were almost 100% weeds except for 2 locally common small shrubs. The eucalypts assessed were all healthy; if planted, all occur naturally in the region.

Figure 8: Results from the plant assessment undertaken within the application area (Shire of Merredin, 2024b).

Appendix F. Sources of information

F.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)
- 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)

F.2. References

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