



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	10441/1
Permit type:	Purpose Permit
Applicant name:	Geoffrey Ross Ladyman
Application received:	5 December 2024
Application area:	5.038 hectares
Purpose of clearing:	Sand mining and related activities
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 08/546
Location (LGA area/s):	Shire of Ashburton
Colloquial name:	Cane River sand project

1.2. Description of clearing activities

Geoffrey Ross Ladyman proposes to clear up to 5.038 hectares of native vegetation within a boundary of 5.038 hectares, for the purpose of sand mining and related activities. The project is located approximately 52 kilometres southeast of Onslow, within the Shire of Ashburton.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	16 April 2024
Decision area:	5.038 hectares of native vegetation

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 Energy, Mines, Industry Regulation and Safety (DEMIRS) advertised the application for a public comment for a period of 21 days, and two submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix C), relevant datasets (Appendix G), information from a flora and vegetation and faun survey (Appendix F), the clearing principles set out in Schedule 5 of the EP Act (Appendix D), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- impacts to conservation significant fauna and their habitat;
- impacts to riparian vegetation and watercourses; and
- potential land degradation in the form of erosion.

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

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;
- commence extraction no later than three months after undertaking clearing to reduce the risk of erosion;
- avoid clearing *Eucalyptus camaldulensis* and *Melaleuca argentea* trees;
- avoid clearing within three metres of a trunk of *Eucalyptus camaldulensis* and *Melaleuca argentea* trees with a diameter at breast height of 30 centimetres or greater;

- avoid clearing within the drip line of *Eucalyptus camaldulensis* and *Melaleuca argentea* trees with a diameter at breast height of 30 centimetres or greater; and
- ensure that the existing surface flow is maintained or reinstated downstream into existing natural drainage lines.

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)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant originally submitted an application to clear up to six hectares of native vegetation within a boundary of approximately 15 hectares. After communicating with the assessing officer, the applicant agreed to excise the areas of the application that contained northern quoll critical habitat.

The areas proposed for clearing are of the vegetation community VTb – *Eucalyptus camaldulensis* and *Melaleuca argentea* low open woodland; *Melaleuca glomerata*, *Acacia trachycarpa*, *Vachellia farnesiana* tall sparse shrubland; *Cyperus vaginatus*, *Dichanthium sericeum* subsp. *sericeum*, *Eragrostis tenellula* low isolated tussock grasses/sedges. Other vegetation communities will be avoided (Geoffrey Ross Ladyman, 2023).

Clearing will be confined to the open river-bed areas of the VTb vegetation community, avoiding *Eucalyptus camaldulensis* and *Melaleuca argentea* trees. To mitigate impacts of clearing, no excavation will be made within three metres of a trunk or within the dripline of *Eucalyptus camaldulensis* and *Melaleuca argentea* with a diameter at chest height of 30 centimetres or more (Geoffrey Ross Ladyman, 2023).

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 identified that the impacts of the proposed clearing present a risk to biological values (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 (fauna) - Clearing Principle (b)

Assessment

Northern quoll (EN)

Although there is critical northern quoll habitat adjacent to the application area (APM, 2022), this habitat has been avoided by the applicant's avoidance and mitigation strategy of excising the zones containing critical habitat for the northern quoll from the application area. The proposed clearing is not likely to significantly impact critical habitat for the northern quoll.

Pilbara leaf-nosed bat (VU)

The application area contains Priority 4 (major watercourses) habitat for the Pilbara leaf-nosed bat. Fauna habitat FH2 represents the Priority 4 habitat which is described as riparian vegetation on flat land plus the main gravelly or sandy channel of the river bed,

sometimes containing pools that persist for weeks or months, and generally supporting higher productivity of biomass than the surrounding habitats (APM, 2022; TSSC, 2016).

There are no diurnal roosts within the application area, the Priority 4 habitat previously described is suitable foraging habitat for the Pilbara-leaf nosed bat (APM, 2022).

Migratory birds

For 10 migratory bird species (see section C.3), the availability of suitable habitat is temporally limited to times when surface water is present. The suitable habitat occurs in the Fluvial zone (FH2) and is no longer suitable after pools have dried (APM, 2022).

Predatory birds

There are four predatory bird species of conservation significance that may utilise the application area without seasonal limitations (APM, 2022). These species are listed below:

- Red goshawk (*Erythrotriorchis radiatus*) (VU);
- Grey falcon (*Falco hypoleucos*) (VU);
- Peregrine falcon (*Falco peregrinus*) (OS); and
- Osprey (*Pandion cristatus*) (Mi).

Suitable foraging habitat is available across the entire application area (APM, 2022).

Conclusion

Based on the above assessment, the proposed clearing will result in impacts to foraging habitat for conservation significant fauna of the region.

For the reasons set out above, it is considered that the impacts of the proposed clearing on habitats for conservation significant fauna can be managed by restricting the clearing of significant habitat features within the application area and maintaining water flows that have the potential to create pools that persist for weeks or months after rainfall.

The applicant may have notification responsibilities under the EPBC Act for impacts to grey falcon, peregrine falcon, Pilbara leaf-nosed bat, red goshawk, and migratory birds and their habitats, as set out in the EPBC Act. The applicant has been advised to contact the federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) to discuss EPBC Act referral requirements.

Conditions

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

- Clearing of *Eucalyptus camaldulensis* and *Melaleuca argentea* trees will not be authorised; and
- Clearing within three metres of the trunk of *Eucalyptus camaldulensis* and *Melaleuca argentea* trees with a diameter at chest height of 30 centimetres or greater will not be authorised;
- Clearing within the dripline of *Eucalyptus camaldulensis* and *Melaleuca argentea* trees with a diameter at chest height of 30 centimetres or greater will not be authorised; and
- Maintaining waterflows or reinstate them downstream into existing natural drainage lines.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 11 January 2024 by the Department of Energy, Mines, Industry Regulation and Safety inviting submissions from the public. Two submissions were received in relation to this application which are summarised in Appendix A.

There are no native title claims over the area under application (DPLH, 2024). The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2024). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is noted that the proposed clearing may impact on Pilbara leaf-nosed bat, ghost bat, grey falcon, red goshawk, peregrine falcon, curlew sandpiper, and migratory birds which are protected matters under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Climate Change, Environment and Water for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Climate Change, Energy, the Environment and Water and the Environment for further information regarding notification and referral responsibilities under the EPBC Act.

Other relevant authorisations required for the proposed land use include:

- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The assessing officer communicated concerns over impacts to critical habitat for the northern quoll present in the application area.	The applicant decided to excise a portion of the original application area to avoid impacts to critical northern quoll habitat.

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
Environmental concerns	Environmental impacts are addressed in Appendix D
Compliance with the <i>Aboriginal Heritage Act 1972</i>	Matters related to the <i>Aboriginal Heritage Act 1972</i> are discussed in section 3.3.
The need for a Road Use Agreement between the proponent and the Shire and advice for the proponent to liaise with Main Roads WA.	These issues are outside of the scope of this assessment and the proponent was informed of these concerns and encouraged to liaise directly with the submitter.

Appendix C. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of a 625 hectare river system (Cane River) which contains native vegetation and is located in the extensive land use zone of Western Australia. It is surrounded by drainage lines and the landscape of the Pilbara bioregion (GIS Database).
Ecological linkage	The application area is not located within any formal ecological linkages, however, it is located in the Cane River, which can function as a riparian corridor for fauna of the region (GIS Database).
Conservation areas	The application area is not located within any known or mapped conservation areas. The closest mapped conservation area is the Cane River Conservation Park located approximately 3.3 kilometres southeast of the application area (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation association: 605: Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp. (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Animal Plant Mineral Pty Ltd (APM) during June, 2022. The following vegetation types were recorded within the application area (APM, 2022):</p> <p>VTb: <i>Eucalyptus camaldulensis</i> low open woodland. <i>Eucalyptus camaldulensis</i> and <i>Melaleuca argentea</i> low open woodland; <i>Melaleuca glomerata</i>, <i>Acacia trachycarpa</i>, <i>Vachellia farnesiana</i> tall sparse shrubland; <i>Cyperus vaginatus</i>, <i>Dichanthium sericeum</i> subsp. <i>sericeum</i>, <i>Eragrostis tenellula</i> low isolated tussock grasses/sedges.</p>
Vegetation condition	<p>The vegetation survey (APM, 2022) and aerial imagery indicate the vegetation within the proposed clearing area is in Very Good to Good (Trudgen, 1991) condition.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix E.</p>
Climate and landform	The application area falls within an arid zone with an annual average rainfall (Onslow Airport) of 303.4 millimetres (BoM, 2024).
Soil description	The soil within the application area is mapped as soil unit My53 (GIS Database). This soil unit is described as extensive plains dominated by neutral red earths with areas of acid and alkaline red earths. There is frequently a cover of surface gravels. There are minor areas of soils adjacent to Robe River iron deposits and some hard red soils along creek lines (Northcote et al., 1960-68).
Land systems and erosion risk	The application area falls within the Cane land system which is described as alluvial plains and flood plains supporting snakewood shrublands, soft and hard spinifex grasslands and tussock grasslands (DPIRD, 2024). Flood plains with duplex soils and gilgai plains with few surface mantles are highly susceptible to erosion if vegetation cover is depleted (Van Vreeswyk et al., 2004).
Waterbodies	The application area is fully located inside the Cane River, a major, non-perennial watercourse (GIS Database).

Characteristic	Details
Hydrogeography	The application area falls within the Pilbara groundwater area which is legislated by the RIWI Act 1914 and contains a mapped groundwater salinity of 500-1,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	There have been no Threatened or Priority flora species recorded within the application area (APM, 2022; GIS Database).
Ecological communities	The application area is not located within any known or mapped Threatened or Priority Ecological Communities (APM, 2022; GIS Database). The closest record is of the Priority 1 Tanpool Land System Ecological Community which is located 12.5 kilometres northeast of the application area (GIS Database).
Fauna	There have been no Threatened or Priority fauna species recorded within the application area (APM, 2022; GIS Database).
Fauna habitat	The following habitat type was recorded within the application area (APM, 2022): FH2 Fluvial zone: The Fluvial zone of the main channel consists of loose gravelly/stony and coarse alluvial sand substrate. This is the active river channel and substrate is moved and disturbed during flood periods. There is very little vegetation in this zone. <i>Melaleuca argentea</i> , <i>M. glomerata</i> and <i>Acacia trachycarpa</i> seedlings are present, however they do not establish as successive flooding disturbs the habitat and prohibits establishment of deep-rooted woody vegetation. Short-lived ephemeral grasses and herbs occur scattered through this zone which complete their life cycle within the interflow period. During periods of inundation, shallow wading habitat, shallow pools and perches overhanging flowing and still water are present. These dry out to sandy bare river beds during the dry season. Representative photos are available in Appendix F.

C.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following conservation significant flora required further consideration. Only flora located within 50 kilometres of the application area were considered.

Species name	Conservation status	Suitable habitat features? [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>Abutilon</i> sp. Onslow (F. Smith s.n. 10/9/61)	P3	N	17.6 km	14	Y
<i>Eleocharis papillosa</i>	P3	N	44.7 km	14	Y
<i>Eremophila forrestii</i> subsp. <i>viridis</i>	P3	N	37.3 km	6	Y
<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>	P2	Y	11 km	16	Y
<i>Helichrysum oligochaetum</i>	P1	Y	36.8 km	13	Y
<i>Indigofera roseola</i>	P1	N	41 km	5	Y
<i>Ptilotus mollis</i>	P4	N	34.1 km	45	Y
<i>Triumfetta echinata</i>	P3	N	21 km	7	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority (APM, 2022; Western Australian Herbarium, 1998-; GIS Database)

C.3. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following conservation significant flora required further consideration. Only fauna located within 50 kilometres of the application area were considered. For waterbirds, habitat within the application area is temporally limited to times when surface water is present (APM, 2022). Marine species have been omitted.

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Ghost bat	VU	N	43.7 km	2,004	Y
Linnaeus' pseudoscorpion (Mesa A)	P1	N	46.5 km	1	N
Mesa A paradraculoides	VU	N	45.8 km	92	N
Northern quoll	EN	N	6.5 km	8,776	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Northern short-tailed mouse	P4	N	47.1 km	761	Y
Pilbara leaf-nosed bat	VU	Y	1.76 km	3,229	Y
Western pebble-mound mouse	P4	N	10.7 km	1,913	Y

Common Name	Conservation Code		Likelihood of Occurrence
	BC Act	EPBC Act	
--Temporally available habitat--			
Common Sandpiper	Mi	Mi	Suitable habitat occurs within the fluvial zone when surface water is present. The habitat is unsuitable after surface water dries. During periods of suitability the habitat is suitable for foraging and roosting. Excepting the Eastern Osprey, breeding occurs in the northern hemisphere.
Curlew Sandpiper	CR	CR, Mi	
Pectoral Sandpiper	Mi	Mi	
Gull-Billed Tern	Mi	Mi	
Bar-tailed Godwit	Mi	Mi	
Grey Wagtail	Mi	Mi	
Eastern Osprey	Mi	Mi	
Wood Sandpiper	Mi	Mi	

Common Name	Conservation Code		Likelihood of Occurrence	
	BC Act	EPBC Act		
Common Greenshank	Mi	Mi	Suitable foraging habitat occurs in the airspace above the Survey Area. Breeding occurs in the northern hemisphere.	
Marsh Sandpiper	Mi	Mi		
--Not seasonally limited--				
Fork-tailed Swift	Mi	Mi		
Red Goshawk	VU	VU		
Grey Falcon	VU	VU	The fluvial and parafuvial habitats within the Survey Area are suitable breeding habitat and all habitats are suitable for foraging.	
Peregrine Falcon	OS	-		

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, Mi: Migratory, OS: Specially Protected (APM, 2022; GIS Database).

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>There were no Priority flora species recorded within the application area. There are records of eight Priority flora species in the local area (50 kilometre radius) (see section C.2). Only two (<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i> and <i>Helichrysum oligochaetum</i>) out of the eight species have suitable habitat within the application area. However, these species were not recorded during the flora and vegetation survey conducted which was conducted under suitable conditions for the region by APM (2022). No conservation significant fauna species were recorded in the application area (APM, 2022; GIS Database). The application area does not form part of any known or mapped Priority Ecological Communities (APM, 2022; GIS Database).</p>	Not likely to be at variance	No
<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 prioritised foraging habitat for conservation significant species of the region (APM, 2022).</p>	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>There were no records of Threatened flora species within the application area (APM, 2022; GIS Database).</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>The application area does not form part of any known or mapped Threatened Ecological Communities (APM, 2022; GIS Database).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The application area falls within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). Over 99 percent of the pre-European vegetation still exists in the Pilbara Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation association 605 (GIS Database). This vegetation association has not been extensively cleared as 100 per cent of the pre-European extent of these vegetation association remains uncleared at both the State and bioregional level (Government of Western Australia, 2019).</p>	Not 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 (GIS Database), the proposed clearing is not likely to have a direct impact on the environmental values of nearby conservation areas.</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>Principle (f): <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given the application area is located in a watercourse, the proposed clearing is likely to impact vegetation growing in association with an environment associated with a watercourse.</p>	At variance	No
<p>Principle (g): <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 land system is highly susceptible to erosion on floodplains and gilgai plains (Van Vreeswyk et al., 2004). Noting the location of the application area, the proposed clearing is likely to cause appreciable land degradation.</p>	At variance	No
<p>Principle (i): <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 the application area is located within a major, non-perennial watercourse, the proposed clearing is unlikely to impact surface quality if sedimentation occurs.</p>	Not likely to be at variance	No
<p>Principle (j): <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 the application area sits within a major, non-perennial watercourse, the proposed clearing may impact the amount of water the Cane River can carry (GIS Database). Therefore, the proposed clearing may cause, or exacerbate, the incidence or intensity of flooding.</p>	May 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 Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or ‘parkland cleared’ with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix F. Photographs of fauna habitats and vegetation and habitat mapping



Figure 1. FH2 Fluvial zone habitat (APM, 2022).

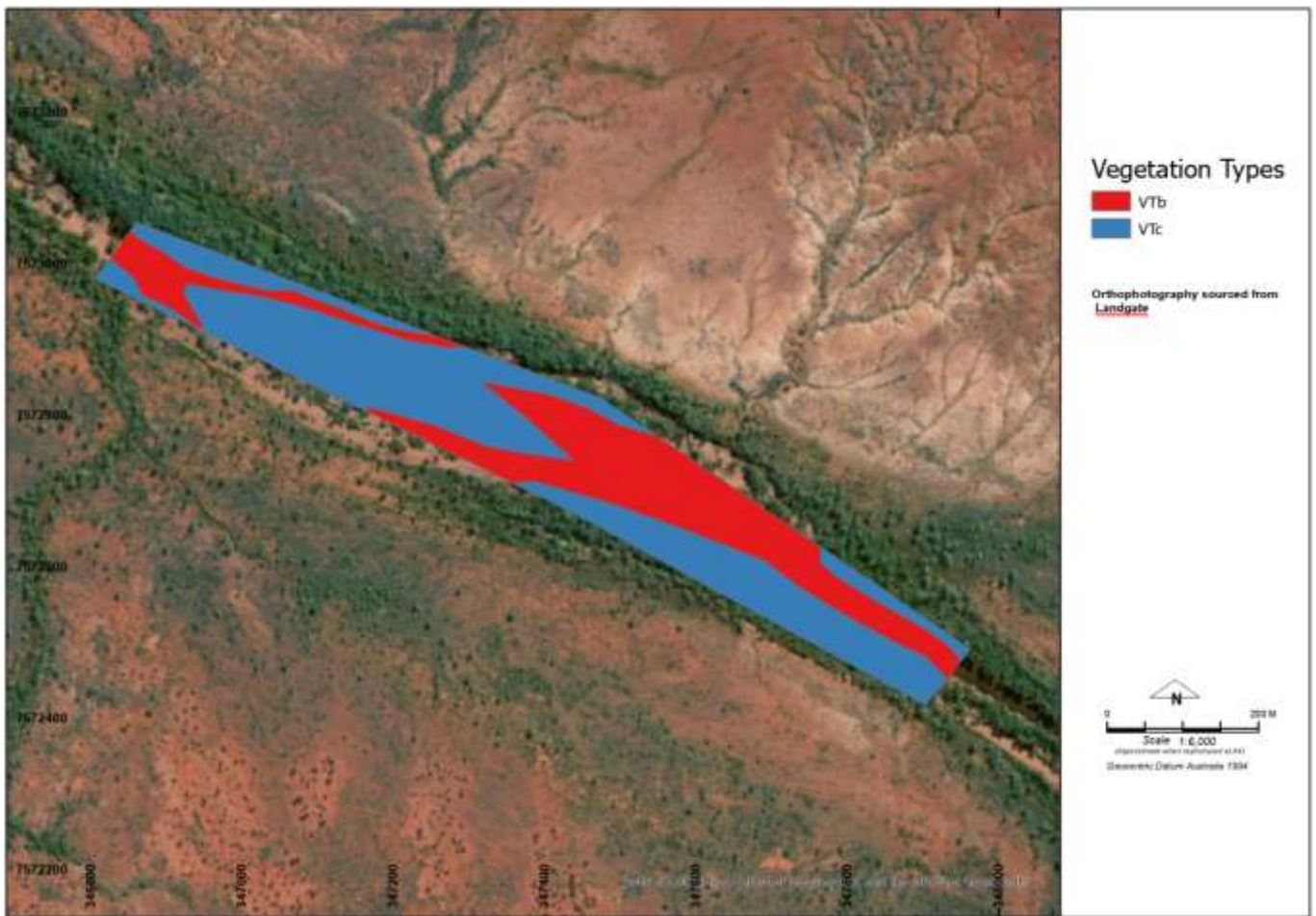


Figure 2. Map of vegetation types present in the tenement (APM, 2022). Only the eastern portion of the VTb vegetation type is in the application area.

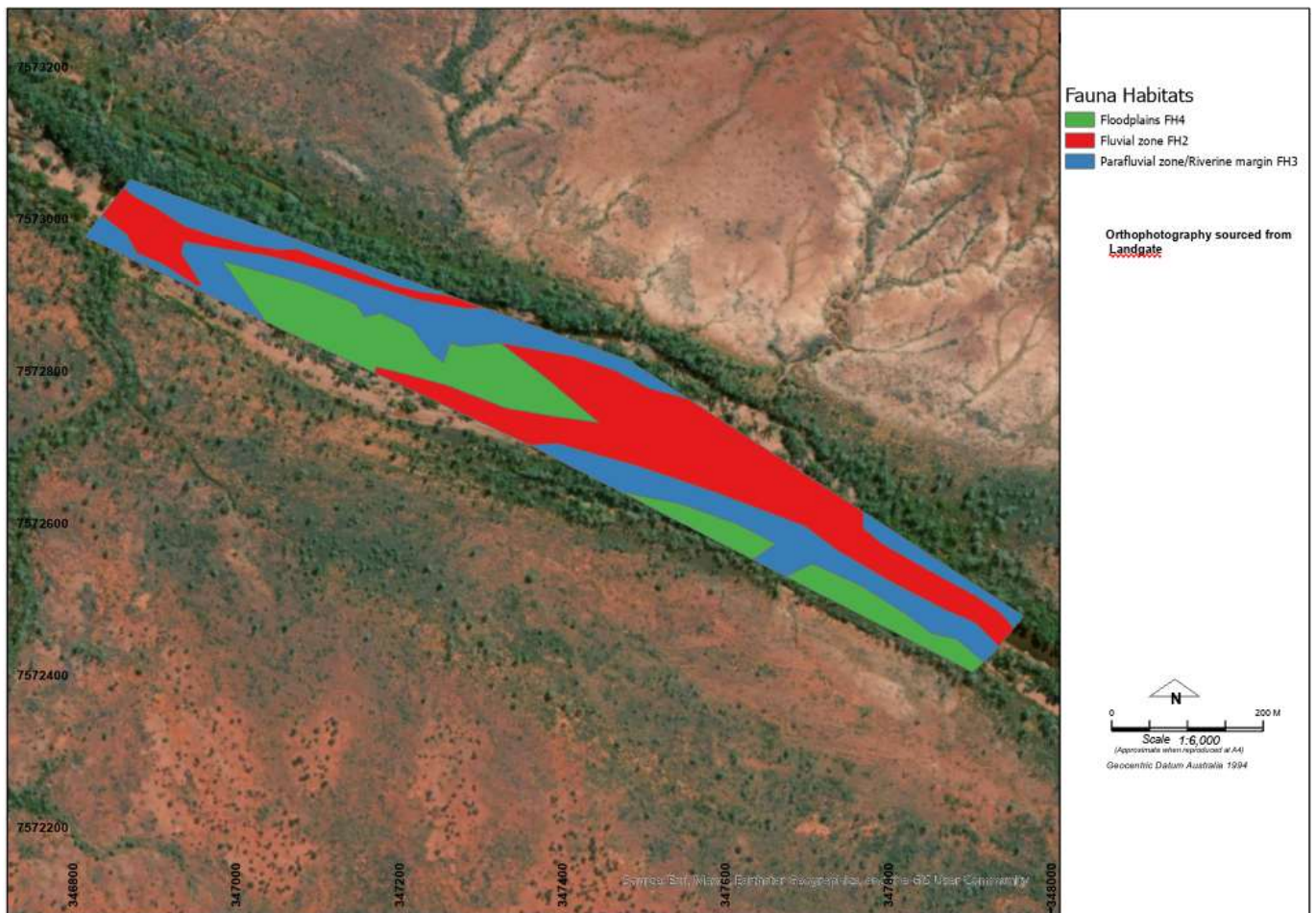


Figure 3. Map of fauna habitats in the tenement (AMP, 2022). Only the eastern portion of the fluvial zone (FH2) habitat is in the application area.

Appendix G. Sources of information

G.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- 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

- Animal Plant Mineral Pty Ltd (APM) (2022) Cane River Biological Survey. Prepared on behalf of G. R Ladyman by Animal Plant Mineral Pty Ltd, July 2022.
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4. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DCCEEW	Department of Climate Change, Energy, the Environment and Water, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia (now DEMIRS)
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DCCEEW)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia

IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T Threatened species:

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI

Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD

Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS

Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P

Priority species:

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1

Priority One - Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2

Priority Two - Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3

Priority Three - Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included

if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 Priority Four - Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (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.