



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9616/1
Permit type:	Purpose Permit
Applicant name:	Pantoro South Pty Ltd
Application received:	17 February 2022
Application area:	340.9 hectares
Purpose of clearing:	Mineral production and associated activities
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 63/36 Mining Lease 63/112 Mining Lease 63/325
Location (LGA area/s):	Shire of Dundas
Colloquial name:	Green Lantern project

1.2. Description of clearing activities

Pantoro South Pty Ltd proposes to clear up to 340.9 hectares of native vegetation within a boundary of approximately 918.6 hectares, for the purpose of mineral production and associated activities. The project is located approximately 26 kilometres south of Norseman, within the Shire of Dundas.

The application is to allow for the development of an open pit, construction and expansion of waste rock dumps, and the construction of supporting infrastructure (Pantoro, 2022).

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	5 May 2022
Decision area:	340.9 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 17 February 2022. DMIRS advertised the application for a public comment for a period of 21 days, and one submission was received in regards to Native Title rights. A written response was provided by the Department.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix D), supporting information provided by the applicant (**Error! Reference source not found.**including the results of a flora and vegetation survey, the clearing principles set out in Schedule 5 of the EP Act, 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;
- the loss of native vegetation that is suitable habitat for conservation significant fauna;
- Impacts to riparian vegetation; and
- potential land degradation in the form of wind 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 poses some risks to fauna however, these risks can be adequately managed with conditions to ensure the proposal is environmentally acceptable.

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;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity; and
- commence construction no later than three months after undertaking clearing to reduce the risk of erosion.

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 includes:

- *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)

Relevant agreements (treaties) considered during the assessment include:

- Japan-Australia Migratory Bird Agreement
- China-Australia Migratory Bird Agreement
- Republic of Korea-Australia Migratory Bird Agreement

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 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The layout of the mining infrastructure included the placement of some infrastructure within existing disturbance areas, as well as adjoining the proposed waste rock dump within an existing waste rock dump (Pantoro, 2022).

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, where practicable.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) 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, flora and 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

The following five fauna habitats were identified within the application area (Western Wildlife, 2021):

1. Eucalypt woodland on rocky hills;
2. Eucalypt woodland on plains;
3. Shrubland on rocky hills;
4. Shrubland on sandy lake edges; and
5. Salt lake.

These faunal habitats are common in the region and are unlikely to be of particular significance as ecological linkages, refugia or supporting important populations of conservation significant vertebrate fauna (Western Wildlife, 2021).

There are nine conservation significant species that may occur within the application area based on the mapped vegetation types:

- Curlew Sandpiper (*Calidris ferruginea*) – EPBC Act - Critically Endangered and Migratory, BC Act - Critically Endangered;
- Chuditch (*Dasyurus geoffroyi*) – EPBC Act - Vulnerable, BC Act – Vulnerable;
- Malleefowl (*Leipoa ocellata*) – EPBC Act - Vulnerable, BC Act – Vulnerable;
- Peregrine Falcon (*Falco peregrinus*) – BC Act - Other Specially Protected;
- Central Long-eared Bat (*Nyctophilus major tor*) – Priority 3;
- Lake Cronin Snake (*Paroplocephalus atriceps*) – Priority 3;
- Hooded Plover (*Thinornis cucullata*) – Priority 4;
- Western Brush Wallaby (*Notamacropus irma*) – Priority 4; and
- Inland Western Rosella (*Platycercus icterotis xanthagenys*) – Priority 4.

There were no conservation significant species recorded within the application area.

The Inland Western Rosella is only found in the wheatbelt and is likely to occur in eucalypt woodlands and shrublands, breeding in tree hollows, and is known to be a breeding resident in the local area (Western Wildlife 2021). Aerial imagery shows that this faunal habitat type within the application area is largely encompassed by cleared areas and existing disturbance (GIS Database). Given the highly mobile nature of this species and the large tracts of uncleared vegetation outside the application area which contains eucalypt woodlands and shrublands (GIS Database), the proposed clearing is not likely to represent significant habitat for this species.

The Curlew Sandpiper occurs around the coasts of Australia and is also quite widespread inland, though in smaller numbers. Inland, they inhabit around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand (DaWE, 2022). The Hooded Plover is known to occur in close proximity to the application area, on the salt lake 'Lake Dundas' (Western Wildlife, 2021). A small portion of the application area may be utilised by this species as a part of a larger range, as opposed to this species being reliant specifically on the habitat within the application area.

The Chuditch may occur in woodlands and shrublands in low densities, but there are very few records of this species in the region (Western Wildlife, 2021). The Peregrine Falcon is likely to occur as a foraging visitor within the application area, however the proposed clearing is not likely to represent significant habitat for this species.

Malleefowl is known to occur in the region and may utilise the application area for foraging, but it is not likely to represent significant habitat for this species. No evidence of the Malleefowl was recorded during the fauna survey, and dense shrubby habitats suitable for nesting were uncommon in the local area (Western Wildlife, 2021; GIS Database).

The Lake Cronin Snake has a low likelihood of occurrence despite suitable habitat being present within the application area, as there are few records in the region and the study area is north of its current known range (Western Wildlife, 2021).

The Central Long-eared Bat is known to occur in the region and is likely to occur in eucalypt Woodlands, and the Western Brush Wallaby may occur in woodland and shrubland habitats, however, the application area represents the extreme eastern edge of this species range (Western Wildlife, 2021). These species may utilise the application area for foraging, but it is not likely to represent significant habitat for this species.

Several migratory avian species may potentially occasionally occur within the salt lake habitat within the local area, however the application area is unlikely to support nationally or internationally significant numbers of any species (Western Wildlife, 2021).

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing of fauna habitat within the application area is not likely to have a significant impact to fauna species in the local area.

Conditions

To address the potential impacts to conservation significant fauna, the clearing permit contains a condition that requires the applicant to undertake slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 4 March 2022 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. One submission was received in regards to Native Title rights and a written response was provided by the Department.

There is one native title claim over the area under application (DPLH, 2022). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, 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, 2022). 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.

Other relevant authorisations required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.
- 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.

Pantoro referred the Norseman Gold Project (NGP) (document titled 'Recommendation of Operations at Norseman Gold Project') to the EPA on 19 April 2021. The decision to 'not assess' was officially decided by the EPA on 20 September 2021.

End

Appendix A. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is located approximately 27 kilometres south of Norseman, within the Shire of Dundas. The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. The proposed clearing is located in the immediate surrounds of the existing Scotia Project, part of the larger Norseman Gold Project, and will share common infrastructure and a waste rock dump with the Scotia Project.
Ecological linkage	According to available databases, the application area does not contain any known or mapped ecological linkages (GIS Database).
Conservation areas	The application area is located approximately 10 kilometres west of the Dundas Nature Reserve (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>125: Bare areas; salt lakes; and 3106: Medium woodland; salmon gum & Dundas blackbutt (GIS Database).</p> <p>Flora and vegetation surveys have been undertaken within the application area by Mattiske (2020a) from 29 March to 3 April 2020, Mattiske (2020b) from 21 to 25 September, and 5 to 9 October 2020, and Biota (2020) from 11 to 14 August 2020. The following vegetation associations were recorded within the application area:</p> <p>SL - Salt lake or non-vegetated lake bed;</p> <p>S1 – Shrubland - Shrubland of <i>Allocasuarina</i> spp., <i>Acacia neurophylla</i> subsp. <i>neurophylla</i>, <i>Melaleuca ?hamata</i>, <i>Dodonaea microzyga</i> var. <i>acrolobata</i> and <i>Cryptandra</i> spp. over mixed <i>Asteraceae</i> sp. and <i>Lepidosperma</i> sp. on red-brown clayey loam and ironstone outcropping on upper slopes and ridges;</p> <p>S3 – Open Woodland - Open woodland of <i>Eucalyptus ?salicola</i> over open shrubland of <i>Bossiaea barbarae</i>, <i>Acacia assimilis</i> subsp. <i>assimilis</i> and <i>Melaleuca lanceolata</i> over <i>Lepidosperma</i> sp. on pale orange sand flats on salt lake margins;</p> <p>W2 – Woodland/Open Woodland - Woodland to open woodland of <i>Eucalyptus flocktoniae</i>, <i>E. urna</i>, <i>E. lesouefii</i> and <i>E. dundasii</i> over sparse shrubland of <i>Melaleuca sheathiana</i>, <i>Eremophila scoparia</i>, <i>Scaevola spinescens</i>, <i>Beyeria sulcata</i> and <i>Exocarpos aphyllus</i> over isolated shrubs of <i>Olearia muelleri</i> on orangered to brown clayey loam on flats and slopes;</p> <p>W3 – Open Woodland - Open woodland of <i>Eucalyptus longicornis</i> or <i>E. delicata</i> over open shrubland of <i>Melaleuca sheathiana</i> and <i>Cratystylis conocephala</i> over mixed sparse chenopod shrubland on pale brown clayey loam flats.</p> <p>W4 – Open Woodland - Open woodland of <i>Eucalyptus torquata</i> over <i>Melaleuca sheathiana</i>, <i>Dodonaea microzyga</i>, <i>Alyxia buxifolia</i>, <i>Beyeria</i> spp. and <i>Eremophila</i> spp. over <i>Scaevola spinescens</i> and <i>Ptilotus obovatus</i> on red-brown clayey loam with surface rocks on slopes and ridges.</p> <p>W5 – Open Woodland - Open woodland of <i>Eucalyptus gracilis</i>, <i>E. flocktoniae</i> and <i>E. urna</i> over sparse shrubland of <i>Olearia</i> spp. on red-orange clayey loam and sandy clay flats.</p>
Vegetation condition	<p>The vegetation surveys (Mattiske, 2020a; 2020b; Biota, 2020) indicate the vegetation within the proposed clearing area is in a Pristine to Very Good (Keighery, 1994) condition, with all highly degraded/cleared areas (existing infrastructure) rated as Completely Degraded.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	The mapped elevation of the application area is approximately 250 to 300 metres AHD. The climate of the region is arid to semi-arid, with a low average rainfall of 200 to 300 millimetres per year (CALM, 2002).
Soil description	The application area is within the soil landscape system zone 246 (Salmon Gums Mallee Zone) (DPIRD, 2022). The soil is further mapped as SV2 and Lb10 (DPIRD, 2022). Soil type SV2 is described as saline valleys with some dunes including barchan forms salt lake channels, mostly devoid of true soils, and their fringing areas, and soil type Lb10 is described as gently undulating plains with some granitic bosses and tors; acid clays common below depths of 6 inches (DPIRD, 2022).

Characteristic	Details
Land degradation risk	The local area and the area immediately surrounding the application area is highly vegetated; the proposed clearing is not likely to cause appreciable land degradation through salinity or water erosion. However, given the relatively large size of the proposed clearing and that the application area occurs on mostly brown and grey loamy soils, the proposed clearing may cause appreciable land degradation in the form of wind erosion.
Waterbodies	The desktop assessment and aerial imagery indicate that the application area partially intersects the salt lake 'Lake Dundas' (GIS Database).
Hydrogeography	The application area is within the Goldfields proclaimed groundwater area under the <i>Rights In Water and Irrigation Act 1914</i> (GIS Database). The groundwater within the application area is largely hypersaline and is consistent with the surrounding region (Pantoro, 2022).
Flora	There are no Threatened Flora and one Priority Flora species recorded within the application area (Mattiske, 2020b). There was one individual of the Priority 3 species <i>Eremophila purpurascens</i> recorded within the application area (Mattiske, 2020b).
Ecological communities	There are no known threatened or priority ecological communities (TEC/PECs) within the application area. The nearest TEC is located approximately 70 kilometres south of the application area (GIS Database).
Fauna	The application area may provide foraging habitat for several conservation significant fauna species, although none have been recorded within the application area (Western Wildlife, 2020).

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>There are no Threatened Flora and one Priority Flora species recorded within the application area (Mattiske, 2020b). There was one individual of the Priority 3 species <i>Eremophila purpurascens</i> recorded within the application area (Mattiske, 2020b). This individual is located outside the proposed mine site layout (Pantoro, 2022).</p> <p>The vegetation within the application area is unlikely to represent any Threatened or Priority Ecological Communities (GIS Database).</p>	Not likely to be at variance	No
<p><u>Principle (b):</u> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."</p> <p><u>Assessment:</u></p> <p>The application area contains potential breeding and foraging habitat for conservation significant fauna.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u></p> <p>There are no known records of Threatened flora within the application area (GIS Database). A flora survey of the application area did not record any species of Threatened flora (Mattiske, 2020a; 2020b; Biota, 2020).</p> <p>The vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> "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."</p> <p><u>Assessment:</u></p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database).</p> <p>A flora and vegetation survey of the application area did not identify any TECs (Biota, 2020; Mattiske, 2020a).</p>		
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 Coolgardie Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 97% of the pre-European vegetation still exists in the Coolgardie Bioregion IBRA (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 9, 110, 125, 221, 524 and 3106 (GIS Database). These vegetation associations have not been extensively cleared as over 90% of the pre-European extent of these vegetation association remains uncleared at both the state and bioregional level (Government of Western Australia, 2019). The application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared (GIS Database).</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>There are no conservation areas within the application area. The nearest conservation area is approximately 10 kilometres south of the application area. Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>A small portion of the application area is situated over part of the non-perennial salt lake ‘Lake Dundas’ (GIS Database). There were no vegetation types recorded growing in association with the lake (Biota, 2020; Mattiske, 2020a; 2020b).</p>	Not at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The application area is within the soil landscape system zone 246 (Salmon Gums Mallee Zone) (DPIRD, 2022). The soil is further mapped as SV2 and Lb10 (DPIRD, 2022).</p> <p>Noting that the local area and the area immediately surrounding the application area is highly vegetated; the proposed clearing is not likely to cause appreciable land degradation through salinity or water erosion. However, given the relatively large size of the proposed clearing and that the application area occurs on mostly brown and grey loamy soils, the proposed clearing may cause appreciable land degradation in the form of wind erosion.</p> <p><u>Conditions:</u></p>	May be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Potential land degradation impacts may be minimised by the implementation of a staged clearing condition.		
<p><u>Principle (i):</u> “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.”</p> <p><u>Assessment:</u></p> <p>There are no permanent watercourses within the application area. A small portion of the application area intersects Lake Dundas, however the proposed clearing is unlikely to result in the deterioration in the quality of surface water.</p> <p>There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). The groundwater in the application area is considered to be hypersaline ranging from 14,000 to 35,000 milligrams/litre total dissolved solids (GIS Database). The proposed clearing is not expected to have any impact on the quality of groundwater in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment:</u></p> <p>The climate of the region is arid to semi-arid, with a low average rainfall of 200 to 300 millimetres per year (CALM, 2002). There are no permanent water courses or waterbodies within the application area (GIS Database).</p> <p>Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. The application area is located in a relatively flat to slightly undulating area which may on occasion be at risk of flooding following short intense rainfall events (Pantoro, 2022). Some localised increase in surface runoff may occur where vegetation is cleared. However, the impact is unlikely to be detectable in the context of the range of the natural variability of runoff. Stormwater management controls will be constructed as necessary to direct rainfall away from open excavations (Pantoro, 2022).</p>	Not likely to be at variance	No

Appendix C. 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.

Condition	Description
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 D. Sources of information

D.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)
- Bush Forever (Regional Scheme) (DPLH-022)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- 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)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Interim 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 (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)

D.2. References

- Biota (2020) Norseman Gold (Scotia) Reconnaissance Flora and Vegetation Survey. Prepared for Pantoro South, by Biota Environmental Sciences, October 2020.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DaWE (2022) Species Profile and Threats Database – *Calidris ferruginea* – Curlew Sandpiper. Department of Agriculture, Water and the Environment. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=856
- Department of Environment Regulation (DER) (2013) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf
- Department of Planning, Lands and Heritage (DPLH) (2022) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 14 April 2022).
- Department of Primary Industries and Regional Development (DPIRD) (2022) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/> (2 May 2022).
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf
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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)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
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.