



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	10125/1
Permit type:	Purpose Permit
Applicant name:	Kimberly Granite Quarries Pty Ltd
Application received:	14 March 2023
Application area:	49 hectares
Purpose of clearing:	Mineral production
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 04/450
Location (LGA area/s):	Shire of Derby West Kimberly
Colloquial name:	Fitzroy South Quarry

1.2. Description of clearing activities

Kimberly Granite Quarries Pty Ltd proposes to clear up to 49 hectares of native vegetation within a boundary of approximately 554 hectares, for the purpose of mineral production. The project is located approximately 250 kilometres southeast of Derby, within the Shire of Derby West Kimberly.

The application is to allow for the extraction of materials to rebuild the Fitzroy crossing which was affected by floods in the Kimberly area during December 2022 and January 2023.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	2 May 2023
Decision area:	49 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 14 March 2023. DMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix B), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the purpose of the clearing to provide materials for the reconstruction on the Fitzroy crossing

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;
- potential impacts to vegetation growing in association with 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 mineral production no later than three months after undertaking clearing to reduce the risk of erosion; and
- avoid clearing riparian vegetation where possible and maintain water flows.

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)

Relevant agreements (treatys) 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 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 advised that the area of the stock pile will be cleared on an 'as required' basis and that the footprint on the location of the stock pile and quarry area will be placed as close together from each other as safety factors permit (KGQ, 2023). Other than that no evidence of avoidance or mitigation measures was provided to support the application. The potential impacts of the proposed clearing are low enough that they can be managed by avoidance and minimisation conditions on the clearing permit.

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 (see Appendix B) identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with an avoid and minimize, hygiene, and staged clearing management conditions, as well as a vegetation management condition to maintain water flows.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 6 April 2023 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WC2000/010) over the area under application (DPLH, 2023). This claim has been determined by the Federal Court 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, 2023). 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 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.

Given the purpose of this clearing permit is to extract materials to rebuild the Fitzroy crossing (as part of the Kimberley Flood Response) which was affected by floods in the Kimberly area, flora and vegetation and fauna surveys were not requested for this assessment in order to allow for works to rebuild the Fitzroy crossing to commence as soon as possible. Instead, a desktop

assessment was conducted to determine the potential impacts the proposed clearing could have on the environmental values of the area.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is surrounded by native vegetation and the landscape features of the Neillabubica and the Pigeon land systems (DPIRD, 2023; GIS Database).
Ecological linkage	According to aerial imagery, the application area does not form part of any formal or informal ecological linkages (GIS Database).
Conservation areas	There are no known or mapped conservation area within the application area (GIS Database). The closest known or mapped conservation area is Geikie Gorge National Park which is located approximately 32 kilometres north of the application area (GIS Database).
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 868: Grasslands, curly spinifex and short grass low tree savanna; snappy gum and bloodwood (<i>Eucalyptus dichromophloia</i>) over enneapogon and curly spinifex on granite; and 569: Hummock grasslands, low tree steppe; bloodwood over soft spinifex and <i>Triodia wiseana</i> (GIS Database).
Vegetation condition	Aerial imagery indicates the vegetation within the proposed clearing area is in Good (Trudgen, 1991) condition. The full Trudgen (1991) condition rating scale is provided in Appendix C.
Climate	The application area is located within a summer dominant zone marked with wet summers and dry winter with an average annual rainfall of approximately 571.6 millimetres (BoM, 2023).
Soil description	The soil within the application area is mapped as soil units BB12 and Qb34 (GIS Database). Soil unit BB12 is described as rocky limestone ranges with broad valley floors; mainly rock outcrop on hill tops and upper slopes: chief soils are shallow calcareous loams on lower slopes (Northcote et al. 1960-68). Soil unit Qb34 is described as stony undulating country with scattered granitic residuals: this unit is very variable but apparently the chief soils are neutral hard red soils. On pediment slopes and plains are alkaline hard yellow mottled soils. In other places the red earths are very common. There is much bare rock on the residuals, often with sandy detritus around their bases. All of the preceding soils are gritty. Some drainage lines have brown cracking clays (Northcote et al. 1960-68).
Land systems and land degradation risks	The application area is located within the Pigeon and Neillabubica land systems (DPIRD, 2023). The Pigeon land system is described as stony undulating country with scattered rocky hills, sandy shallow soils, grassy woodlands and curly spinifex. Most of system has low vulnerability to erosion except for drainage floors which are moderately susceptible (Payne and Schoknecht, 2011). The Neillabubica land system is described as undulating limestone country with scattered low hills and cracking clay plains. Open grassy woodlands, grasslands, and spinifex. Generally not prone to erosion (Payne and Schoknecht, 2011).
Waterbodies	The desktop assessment and aerial imagery indicate that two minor, non-perennial watercourses transect the area proposed to be cleared and branch out within it (GIS Database).
Hydrogeography	The application area is located in the Canning-Kimberley Groundwater Area which is legislated by the <i>R/W Act 1914</i> (GIS Database). The mapped groundwater salinity is of 500-1000 milligrams per litre total dissolved solids (GIS Database).
Flora	There are records of 16 priority flora species mapped within a 50 kilometre radius (local area) of the application area (GIS Database). There are no records of Threatened flora within the local area (GIS Database). See section A.2 for details.
Ecological communities	The application area does not intersect any known or mapped Threatened Ecological Communities or Priority Ecological Communities (PEC) (GIS Database). The closest record is of a PEC located approximately 12 kilometres east of the application area (GIS Database).
Fauna	There are records of 28 conservation significant fauna species within a 50 kilometre radius (local area) of the application area (GIS Database). However, two of these species are freshwater fish and cannot occur in the application area as it does not contain permanent bodies of water (GIS Database). Another one of the recorded species is a freshwater crocodiles which would not occur in the application area for the same reason (GIS Database). Ten more species are unlikely to occur within the application area given that they are waterbirds such as plovers, sandpipers, terns, stints, etc. (GIS Database). Given the lack of permanent watercourses or wetlands, only 15 conservation significant fauna are considered likely or possible to occur within the application area. See section A.3 for details

A.2. Flora analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Aristida polyclados</i>	P1	Y	Y	Y	43.5 km	11	N/A
<i>Cayratia cardiophylla</i>	P2	Y	N	Y	26.4 km	7	N/A
<i>Corchorus fitzroyensis</i>	P3	Y	Y	Y	23.2 km	24	N/A
<i>Cucumis</i> sp. Bastion Range (A.A. Mitchell et al. AAM 10710)	P1	N	N	N	26.4 km	11	N/A
<i>Cullen candidum</i>	P1	N	N	N	23.2 km	5	N/A
<i>Euploca foveolata</i>	P1	Y	Y	N	23.5 km	9	N/A
<i>Euploca geocharis</i>	P1	N	N	N	42.8 km	4	N/A
<i>Fimbristylis sieberiana</i>	P3	N	N	N	46.3 km	29	N/A
<i>Goodenia byrnesii</i>	P3	Y	Y	N	8.4 km	27	N/A
<i>Goodenia sepalosa</i> var. <i>glandulosa</i>	P3	N	N	N	12.8 km	16	N/A
<i>Hibiscus calcicola</i>	P2	N	N	N	35.9 km	1	N/A
<i>Nymphaea kimberleyensis</i>	P1	N	N	N	33 km	4	N/A
<i>Owenia acidula</i>	P3	N	N	N	33.6 km	14	N/A
<i>Pterocaulon xenicum</i>	P3	Y	Y	N	43.5 km	7	N/A
<i>Schoenus punctatus</i>	P3	N	N	N	27.6 km	6	N/A
<i>Triodia pascoeana</i>	P1	Y	Y	N	21.2 km	4	N/A

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

(Western Australian Herbarium, 1998-; GIS Database)

A.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation on 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]
Barking owl	P3	N	N	29.8 km	53	N/A
Bilby	VU	N	Y	46.4 km	4233	N/A
Camaenid land snail (Limestone Billy Hills)	P1	Y	Y	5.3 km	7	N/A
Camaenid land snail (Windjana and Geiki Gorges)	P2	Y	Y	32.7 km	18	N/A
Fork-tailed swift	MI	N	N	32.1 km	410	N/A
Ghost bat	VU	N	N	42.7 km	823	N/A
Gouldian finch	P4	N	N	40.6 km	537	N/A
Grey falcon	VU	N	N	33.9 km	190	N/A
Letter-winged kite	P4	N	N	30.8 km	49	N/A
Northern brushtail possum	VU	N	N	46.6 km	7	N/A
Orange leaf-nosed bat	P4	N	N	34.3 km	113	N/A
Peregrine falcon	OS	N	N	39.7 km	1756	N/A
Princess parrot	P4	N	N	27.8 km	140	N/A
Purple-crowned fairy-wren	EN	N	N	20.8 km	312	N/A
Yellow-lipped cave bat	P2	N	N	34.5 km	95	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, MI: migratory, OS: especially protected

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> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain records of conservation significant flora or fauna or Priority Ecological Communities (GIS Database). Out of all the Priority flora recorded in the local area (see section A.2), only <i>Aristida polyclados</i> and <i>Corchorus fitzroyensis</i> were found to have matching vegetation and soil types to those of the application area. The distribution of <i>A. polyclados</i> extends across four IBRA regions and one of the recorded populations is located within Purnululu National Park (Western Australian Herbarium, 1998-). The distribution of <i>C. fitzroyensis</i> extends across two IBRA regions (Western Australian Herbarium, 1998-). Given these flora species are widespread and not restricted to the application area, the proposed clearing is not likely to have significant impact on these species if they were to occur in the area proposed to be cleared. Any amendments requested for this clearing permit should be accompanied by a flora survey to confirm the presence or absence of any conservation significant flora or fauna species.</p> <p>From the assessment of existing clearing permits near the application area, it is likely that weeds are present in the area proposed to be cleared. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.</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 does not contain records of conservation significant fauna or fauna habitats (GIS Database). Out of all the conservation significant fauna species recorded in the local area (see section A.3), only the camaenid land snail (Limestone Billy Hills) and camaenid land snail (Windjana and Geiki Gorges) were found to occupy the same vegetation type as the one present in the application area. However the proposed clearing is unlikely to significantly impact these camaenid land snails given that both of these species occur in litter piles, rubble heaps, and deep crevices of limestone, as well as under limestone boulders or pavements (Pearce, 2005). Leaf litter piles do not occur within the application area (GIS Database) and the clearing of native vegetation is unlikely to impact the rest of these features if they were to occur within the application area. Additionally, camaenid land snails occupy a highly restricted range, a colony of camaenid land snails may inhabit an area no greater than a small pocket of rocks and can have a range as small as 0.01 square kilometres (Pearce, 2005). The closest record of any of these species to the application area is 5.3 kilometres away (GIS Database).</p>	Not likely to be at variance	No
<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 are no records of Threatened flora species within the application area or within the local area (50 kilometre radius) (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>There are no known or mapped Threatened Ecological Communities within the application area (GIS Database).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		

Assessment against the clearing principles	Variance level	Is further consideration required?
<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 Ord Victoria Plain IBRA Bioregion (GIS Database). Over 99 per cent of the pre-European vegetation still exists in the Ord Victoria Plain Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 868 and 569 (GIS Database). These vegetation association have not been extensively cleared as over 99 per cent of the pre-European extent of these vegetation associations remain 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 (32 kilometres) (GIS Database), the proposed clearing is not likely to have an impact on the environmental values of any known or mapped 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>There are two drainage lines that intersect the application area and branch off within it (GIS Database). However, no permanent watercourses or wetlands are located within the application area (GIS Database). Potential impact to water flows and native vegetation growing in association with the drainage lines can be managed by a vegetation management condition to avoid clearing riparian vegetation where possible and maintain water flows.</p>	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>Most of the areas of the land systems within the application area are not susceptible to erosion (Payne and Schoknecht, 2011). However, drainage floors within the Pigeon land system are moderately susceptible to erosion (Payne and Schoknecht, 2011). Potential land degradation impacts from the propose clearing can be managed by a staged clearing condition which indicates that mining activities must commence within three months of clearing to prevent cleared areas from being exposed for long periods of time.</p>	May be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Given no permanent water courses, wetlands, or Public Drinking Water Source Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>Given no permanent water courses, or wetlands are recorded within the application area (GIS Database) and that the annual evaporation average (2,400 millimetres) is higher than the annual rainfall average (571.6 millimetres), the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.</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 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 D. Sources of information

D.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
- 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)

D.2. References

Kimberly Granite Quarries Pty Ltd (KGQ) (2023) Clearing permit application form, CPS 10125/1, received 14 March 2023.
Bureau of Meteorology (BoM) (2023) Bureau of Meteorology Website – Climate Data Online, Nerrima Station. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 11 April 2023).

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- Department of Planning, Lands and Heritage (DPLH) (2023) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 12 April 2023).
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- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) Atlas of Australian Soils, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
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- Pearce, K. (2005) Camaenid Land Snails of the East Kimberly Interim Recovery Plan (2005-2010). Department of Conservation and Land Management and Western Australian Threatened Species and Communities Unit, Wanneroo, Western Australia.
- 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.
- Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 11 April 2023).

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
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 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.