



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9819/1
Permit type:	Purpose Permit
Applicant name:	Opis Resources Pty Ltd
Application received:	22 July 2022
Application area:	50 hectares
Purpose of clearing:	Mineral exploration and associated activities
Method of clearing:	Mechanical Removal
Tenure:	Exploration Licences 69/3424, 69/3425
Location (LGA area/s):	Shire of Ngaanyatjaraku
Colloquial name:	Mt Squires Project

1.2. Description of clearing activities

Opis Resources Pty Ltd proposes to clear up to 50 hectares of native vegetation within a boundary of approximately 29,000 hectares, for the purpose of mineral exploration and associated activities. The project is located approximately 87 kilometres east of Warburton within the Shire of Ngaanyatjaraku.

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	31 August 2023
Decision area:	50 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 22 July 2022. DMIRS advertised the application for a public comment for a period of 21 days, and one submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix C), relevant datasets (Appendix F) supporting information provided by the applicant (Appendix A) including the results of a flora and vegetation survey, 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;
- potential impacts to conservation significant flora; and
- potential impacts to habitat for conservation significant fauna.

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 is unlikely to lead to have adverse impacts on the conservation of significant flora and fauna and the impacts of clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

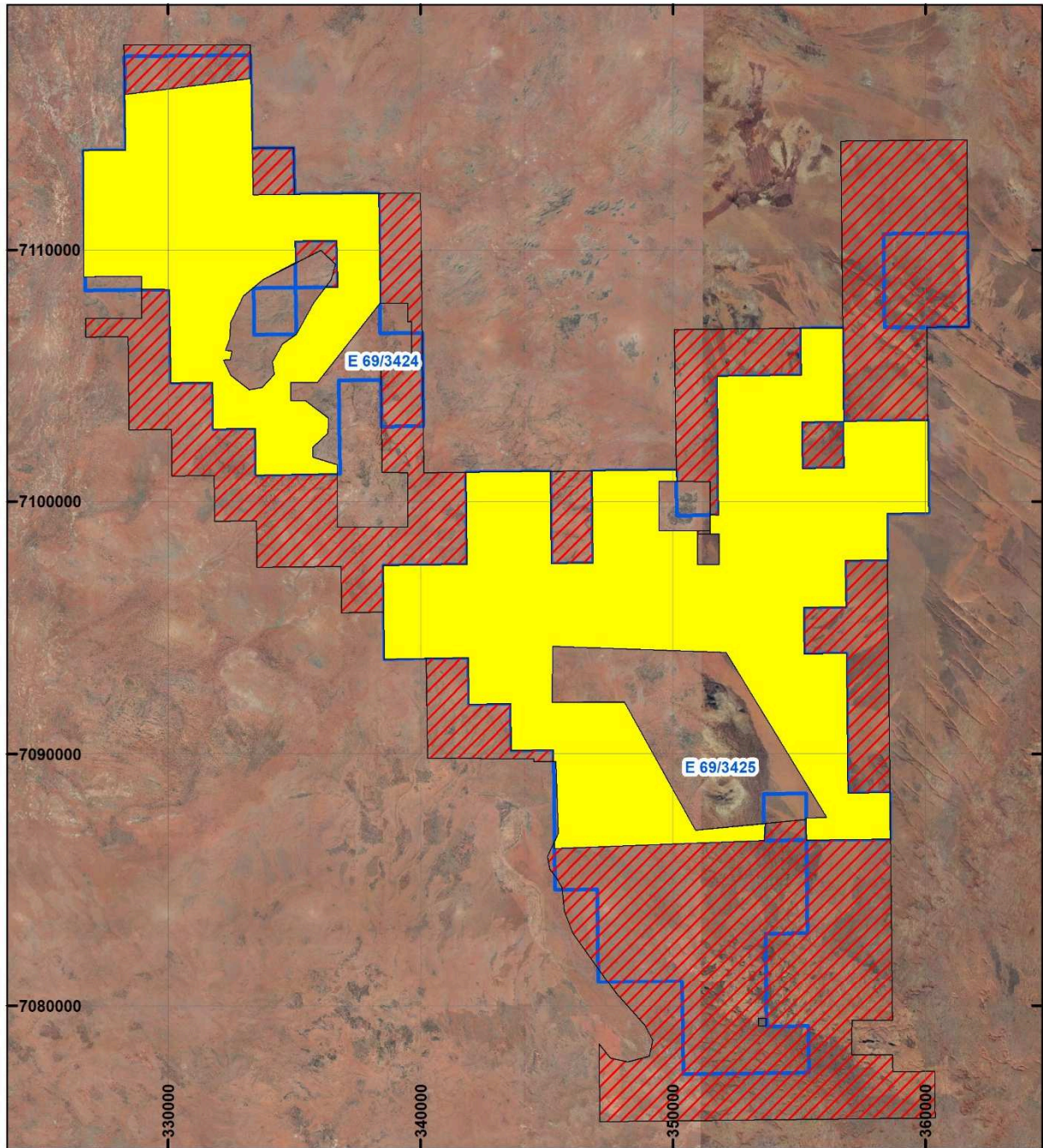
The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- no clearing of native vegetation within 10 metres of known locations of *Aenictophyton anomalum* (P1), *Indigofera warburtonensis* (P1), *Isotropis winneckeii* (P1), *Amaranthus centralis* (P3), *Tephrosia* sp. Central (P.K. Latz 17037) (P3), *Daviesia arthropoda* (P3);
- a pre-clearance survey to identify any burrows of fauna species, where burrows have been identified, no clearing of native vegetation occurs within 50 metres of any burrows;

- a pre-clearance survey for malleefowl mounds, where areas proposed to be cleared during the malleefowl breeding season must be inspected to identify any active malleefowl mounds, and where mounds have been identified, no clearing occurs within 50 metres of the mound; and
- a pre-clearance survey for greater stick-nest rat nests, and where nests have been identified, no clearing occurs within 50 metres of the nest.

1.5. Site map

A site map of proposed clearing is provided in Figure 1 and 2 below.



LEGEND

Clearing Instruments

- Mining Tenements
- Areas Approved to Clear
- Areas excised

Orthophotography sourced from Landgate

Scale 1:220,000
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.

WA Crown Copyright 2002

Figure 1. Map of the permit area. The yellow area indicates the area of authorised clearing under the granted clearing permit. The red hatched areas represent areas excised from the original application.

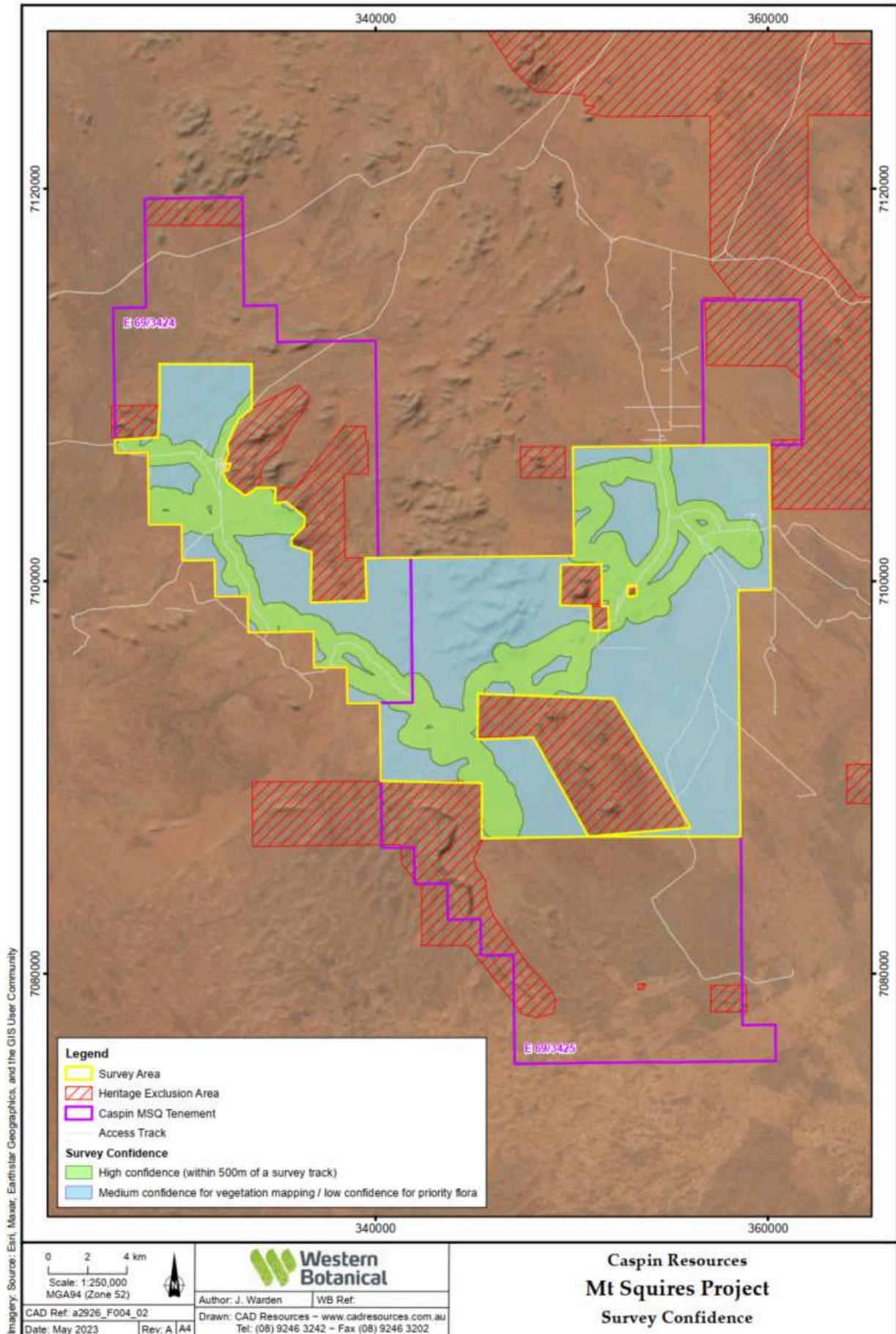


Figure 2. Map of the previous tenement boundaries and survey area. The yellow outlines the total survey area. The green and blue areas indicate the level of confidence of the flora survey and vegetation mapping. The purple line indicates the previous tenement boundaries of the original application.

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)
- *Country Areas Water Supply Act 1947* (WA) (CAWS 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 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, 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

During the assessment, and following discussions with DMIRS, the applicant conducted a more recent flora and vegetation survey over the application area.

Opis Resources Pty Ltd (2023) has advised the following avoidance and mitigation measures:

- Significantly reduced the permit boundary (from 60,500 hectares to 29,000 hectares) and excised heritage areas from the application area.
- Committed to avoid clearing of conservation significant flora species.
- Committed to avoid clearing of any burrows of fauna, consequently, avoiding impacts to conservation significant fauna is present.

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 (flora and fauna). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values - Clearing Principle (a)

Multiple flora and vegetation surveys have been undertaken within the application area and its surroundings. These surveys include, but are not limited to:

- 1) Western Botanical (2012) – Assessment of Flora and Vegetation of the Mt Squire Prospect E 69/2067;
- 2) Western Botanical (2016) – Desktop Review of Flora, Vegetation and Fauna – Mt Squires Tenements E 69/3424 and E 69/3425, West Musgraves; and
- 3) Western Botanical (2018) – Level 1 Targeted Flora and Vegetation Survey – West Musgraves E 69/1530 and E 69/3425.

Due to the size of the permit boundary within a region poorly known in terms of biological data, the applicant was recommended to undertake a targeted flora and vegetation survey over the application area to assess the current biological features, the presence of conservation significant flora species and the potential impacts caused by the clearing activities.

Since the completion of this targeted flora and vegetation survey, the tenements boundaries have changed (GIS Database). Therefore, the permit boundary had to be substantially reduced to align with the current tenement boundaries, consequently, the survey included areas that are no longer within the current application area (refer to section 1.5 Site Map).

A total of 231 flora species were recorded within the survey area, comprising 42 families and 126 genera, including one species of interest, i.e. *Swainsona* aff. *microphylla* (J. Warden & E.J. Mellersh WB40907); however, this species is not considered restricted and has been recorded growing on the sand dunes of the Central Ranges (Western Botanical, 2023).

No Threatened or Priority Ecological Communities, or Threatened flora are known to occur within the application area and none were recorded during various flora and vegetation surveys (Western Botanical, 2016; 2023; GIS Database). However, six Priority flora species have been recorded within the application area:

- *Aenictophyton anomalum* (P1)
- *Indigofera warburtonensis* (P1)
- *Isotropis winneckeii* (P1)
- *Amaranthus centralis* (P3)
- *Tephrosia* sp. Central (P.K. Latz 17037) (P3)
- *Daviesia arthropoda* (P3)

A total of 30 individuals of *Thryptomene* sp. Warburton (M. Henson & M. Hannart 32433) (P1) were recorded during the survey, albeit outside of the application area (GIS Database).

A total of 20,186 individuals of *Aenictophyton anomalum* (P1), 15,142 individuals of *Indigofera warburtonensis* (P1), 8,000 individuals of *Isotropis winneckeii* (P1), 387 individuals of *Amaranthus centralis* (P3), 703 individuals of *Tephrosia* sp. Central (P.K. Latz 17037) (P3) and 7 individuals of *Daviesia arthropoda* (P3) were recorded within the survey area (Western Botanical, 2023). As the survey covered a larger area than the current application, some of the individuals fall outside of the application area. Nevertheless, potential impacts to the Priority flora species above mentioned may be minimised by the implementation of a flora management condition. This condition will restrict the clearing within 10 metres of all Priority flora individuals recorded within the application area.

The current application area is mostly aligned with the recently surveyed areas and vegetation mapping. Part of the northwest section of the application area has not been surveyed or it does not have confident vegetation mapping (see section 1.5 for reference). However, given the size of the proposed clearing (50 hectares) within a boundary of approximately 29,000 hectares, and the implementation of a flora management condition restricting the clearing of the recorded Priority flora species, it is very unlikely that the clearing activities will have significant impacts to the conservation status of the potential flora species that may be present in the northwest section of the application area.

Three introduced species were recorded in the survey area, *Cenchrus ciliaris*, *Malvastrum americanum*, and *Tribulus terrestris*, none of them are classified as Weeds of National Significance (WONS) (Western Botanical, 2023). Weeds have the potential to out-compete native flora and reduce the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition."

It is recommended that any subsequent amendment application of this permit requiring the increase of the amount of clearing in the northwest section or to increase the permit boundaries, would be supported by additional flora and vegetation surveys over these areas.

Conclusion

Based on the above assessment, it is considered that the impacts of the proposed clearing on potential habitats for Priority and Threatened flora and conservation significant fauna species is not likely to be significant if avoidance, mitigation and management measures are implemented.

For the reasons set out above, it is considered that the impacts of the proposed clearing on habitats for conservation significant flora and fauna species can be managed with conditions to be environmentally acceptable. There is potential for weeds being present within the application area and the proposed clearing has the potential to exacerbate the spread of weeds.

Conditions

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds.
- no clearing of native vegetation within 10 metres of known locations of *Aenictophyton anomalum* (P1);
- no clearing of native vegetation within 10 metres of known locations of *Indigofera warburtonensis* (P1);
- no clearing of native vegetation within 10 metres of known locations of *Isotropis winneckeii* (P1);
- no clearing of native vegetation within 10 metres of known locations of *Amaranthus centralis* (P3);
- no clearing of native vegetation within 10 metres of known locations of *Tephrosia* sp. Central (P.K. Latz 17037) (P3); and
- no clearing of native vegetation within 10 metres of known locations of *Daviesia arthropoda* (P3).

3.2.2. Biological values - Clearing Principle (b)

Assessment

According to available database, there are no records of conservation significant fauna species within the application area, however, seven species, totalling 130 records, have been registered within 20 kilometres of the application area (GIS Database). Approximately 96 % of the total records pertain to brush-tailed mulgara (*Dasyercus blythi* - P4), and the remaining percentage refer to greater bilby (*Macrotis lagotis* - VU), malleefowl (*Leipoa ocellata* (VU), greater stick-nest rat (*Leporillus conditor* - VU), great desert skink (*Liopholis kintorei* - VU), marsupial mole (*Notoryctes* sp. - P4), and striated grasswren (*Amytornis striatus* - P4) (GIS Database).

Striated grasswren are unlikely to be impacted as birds can easily move to adjacent areas and their habitats are abundant outside of the application area.

According to the vegetation mapping (Western Botanical, 2023) and fauna records from nearby areas (GIS Database), the application area may have suitable habitats for greater bilby (*Macrotis lagotis*), brush-tailed mulgara (*Dasyercus blythi*), malleefowl (*Leipoa ocellata*), great desert skink (*Liopholis kintorei*), and marsupial mole (*Notoryctes* sp.). Potential impacts to these species habitats may be minimised by the implementation of a fauna management condition. The condition restricts the clearing within 50 metres of any burrow or mounds.

The single record of greater stick-nest rat (*Leporillus conditor*) is historical, and given the size of the permit boundary (29,000 hectares) in relation to the size of clearing (50 hectares), it is unlikely that the proposed clearing will significantly impact this species or its habitat even if present. Nevertheless, potential impacts to this species can be minimised by a fauna management condition restricting the clearing of their nest if present.

Due to the challenging nature of engaging fauna specialists to undertake pre-clearance surveys in a remote region, the proponent has committed to avoid any fauna burrows or nests, if identified, prior to the clearing activities (Opis Resources Limited, 2023). Therefore, this conservative approach has high chances to avoid impacts to the habitats of the conservation fauna species abovementioned and other fauna species with similar habitat behaviour, i.e. diggers or evident nest builders.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on habitats for conservation significant fauna species can be managed with conditions to be environmentally acceptable.

Conditions

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

- a pre-clearance survey to identify any burrows of fauna species, where burrows have been identified, no clearing of native vegetation occurs within 50 metres of any burrows;
- a pre-clearance survey for malleefowl mounds, where areas proposed to be cleared during the malleefowl breeding season must be inspected to identify any active malleefowl mounds, and where mounds have been identified, no clearing occurs within 50 metres of the mound; and
- a pre-clearance survey for greater stick-nest rat nests, and where nests have been identified, no clearing occurs within 50 metres of the nest.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 4 October 2022 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. One submission was received in relation to this application (Appendix B).

There is one native title claim (WC2004/003) 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 two registered Aboriginal Sites of Significance within the tenements but not within the application area (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Cultural Heritage Act 2021* 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*.

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
Targeted Priority Flora and Vegetation Assessment of the Mt Squires Project prepared by Western Botanical in March 2023 and rectified in May 2023 (survey conducted in October/November 2022).	This survey was conducted per request of the Environmental Officer. The survey identified seven Priority flora species within the survey area, and their locations were protect from clearing accordingly. The results helped inform the assessment of principles (a), (b) and (c).

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
One direct interest party submission was received requesting that no clearing nor exploration vehicles will be permitted to enter or cross Papulankutja Road, unless the proponent follows certain conditions specified by the direct interest party.	DMIRS has made the permit holder aware of the direct interest party's concerns and put both parties in contact to each other. It is noted that this matter falls outside the scope of the <i>Environmental Protection Act 1986</i> ; therefore, DMIRS does not have the authority to assess this matter.

Appendix C. Site characteristics

Characteristic	Details
Local context	The project is located approximately 87 kilometres east of Warburton, within the Shire of Ngaanyatjaraku in the extensive land use zone (GIS Database). The predominant land use in the region is grazing of native pastures, conservation, mining activity and urban development.
Ecological linkage & Conservation areas	The nearest conservation area is the Gibson Desert Nature Reserve which is located approximately 118 kilometres north of the application area (GIS Database). The application area does not represent an ecological linkage to other areas of vegetation.
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>18: Low woodland; mulga (<i>Acacia aneura</i>); 39: Shrublands; mulga scrub; 236: Hummock grasslands, shrub steppe; mulga and mallee (marble gum) over hard spinifex; and 252: Hummock grasslands, shrub steppe; mulga and mallee over soft spinifex.</p> <p>A flora and vegetation survey was conducted over the application area by Western Botanical during October, 2022. The following vegetation associations were recorded within the application area (Western Botanical, 2016; 2023):</p> <ul style="list-style-type: none"> • Calcrete Platform hummock grassland; • Hardpan Mulga Woodland; • Mulga Grove; • <i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i> low shrubland; • Sand Dune <i>Acacia - Grevillea</i> shrubland; • Sand Dune <i>Eucalyptus gamophylla</i> over Spinifex hummock grasslands; • Calcrete Sand Swale shrubland; • Low Mallee Woodland; • Melaleuca Eremophila Open shrubland; • Acacia over Wanderie Grass; • <i>Acacia aneura</i> low open woodland over <i>Eremophila latrobei</i> subsp. <i>latrobei</i>; • Mulga low Woodland Over Spinifex hummock grasslands; • <i>Eucalyptus intertexta</i> Open Woodland; • Clay Pan Playa; • Low Open Woodland of <i>Callitris glaucophylla</i> and <i>Ficus brachypoda</i>; • <i>Acacia aneura</i>, <i>Acacia pruinocarpa</i> low open woodland over <i>Triodia pungens</i> and <i>Eriachne mucronata</i> hummock grassland; • <i>Acacia aneura</i> over <i>Indigofera</i> sp. Warburton (A.A. Munir 5209) low shrubland; • Low open <i>Acacia aneura</i> woodland over <i>Eriachne mucronata</i>; • Tall open shrubland of <i>Acacia kempeana</i> over; • <i>Thryptomene</i> sp. Warburton (M.Henson & M.Hannart 32433); and • Scattered <i>Acacia aneura</i> over shrubs and grasses.
Vegetation condition	<p>The vegetation survey (Western Botanical, 2016; 2023) indicate the vegetation within the proposed clearing area is in pristine to excellent (Keighery, 1994) conditions, described as:</p> <ul style="list-style-type: none"> • Pristine – Pristine or nearly so, no obvious signs of disturbance.

Characteristic	Details
	<ul style="list-style-type: none"> Excellent – Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species. <p>The full Keighery (1994) condition rating scale is provided in Appendix E.</p>
Climate and landform	The application area is mapped within elevations of approximately 450 – 550 metres AHD (GIS Database). The climate of the region is arid, and the annual rainfall average of approximately 244.2 millimetres (BoM, 2022).
Soil description and land degradation risk	The soil is mapped as part of the following soil systems (DPIRD, 2022): <ul style="list-style-type: none"> BA37 atlas system – Ranges and hills mainly on granitic rocks; rock outcrop is extensive; My109 atlas system – Outwash plains and dissected fan and terrace formations flanking ranges of sedimentary and some metamorphic, volcanic, and granitic rocks; and AB48 atlas systems – Very gently undulating plain traversed by longitudinal dunes.
Waterbodies and hydrogeography	The desktop assessment and aerial imagery indicate there are several ephemeral watercourse intersecting the application area (GIS Database). The application area is located within the East Murchison Groundwater Area (RIWI Act); however, it is not within a Public Drinking Water Source Area (GIS Database).
Flora	Targeted flora and vegetation survey undertaken recorded six Priority flora species within the application area (Western Botanical, 2023).
Ecological communities	There are no mapped Threatened or Priority Ecological Communities (TEC/PEC) within the application area or the 10 kilometres radius (GIS Database).
Fauna	No conservation significant fauna species have previously been recorded within the application area (GIS Database). Western Botanical (2016) conducted a desktop review and identified 11 conservation significant fauna species as previously being recorded within 50 kilometres of the tenement boundary.

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> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u></p> <p>A vegetation and targeted flora survey did not identify any Threatened flora within the application area; however, six Priority flora have been recorded within the application area.</p> <p>There are no known Threatened or Priority Ecological Communities within the permit area (Western Botanical, 2023; GIS Database).</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<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 area proposed to be cleared contains foraging and potential denning habitat for conservation significant fauna (GIS Database).</p> <p>The vegetation types, landforms and habitat types within the application area are common and widespread in the region (Western Botanical, 2016; 2023).</p>	At variance	Yes <i>Refer to Section 3.2.2, 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 (Western Botanical, 2023), and the vegetation proposed to be cleared is not expected to support any species of Threatened flora (GIS Database).</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<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 Threatened Ecological Communities (TECs) located within the application area nor within 500 kilometres radius from the application area (GIS Database).</p> <p>A vegetation survey of the application area did not identify any TECs (Western Botanical, 2023).</p>	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The application area falls within the Central Ranges and Great Victoria Desert bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). Over 99 % of the pre-European vegetation still exists in both bioregions (Government of Western Australia, 2019).</p> <p>The application area is broadly mapped as Beard vegetation associations 18, 39, 236 and 252 (GIS Database). Over 99% of the pre-European extent of these vegetation associations remain uncleared at both the state and bioregional level (Government of Western Australia, 2019). The application area does not contain any remnants nor does it form part of any remnants in the local area (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 in the vicinity of the application area. The nearest DBCA managed land is the Gibson Desert Nature Reserve which is located approximately 118 kilometres north of the application area (GIS Database).</p> <p>The proposed clearing is within the 'Ranges of the Western Desert', an area which is listed on the Register of National Estate for its unique natural values (GIS Database). The ranges of the Western Desert cover an area of approximately 8 million hectares. The small area of the proposed clearing (50 hectares) is unlikely to have any significant impact on the natural values of this area or other 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 no permanent watercourses or waterbodies within the application area (GIS Database). Ephemeral drainage lines within the project area are only likely to flow following major rainfall events. The vegetation in association with these ephemeral drainage lines are unlikely to be significantly impacted due to the relatively small area and temporary nature of the proposed clearing (50 hectares of proposed clearing within an area 29,000 hectares).</p> <p>The proposed clearing is unlikely to significant impact vegetation growing in association with watercourses or wetland.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The application area lies within the following soil landscape systems (DPIRD, 2023):</p> <ul style="list-style-type: none"> • BA37 atlas system – Ranges and hills mainly on granitic rocks; rock outcrop is extensive; • My109 atlas system – Outwash plains and dissected fan and terrace formations flanking ranges of sedimentary and some metamorphic, volcanic, and granitic rocks; and 	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<ul style="list-style-type: none"> AB48 atlas systems – Very gently undulating plain traversed by longitudinal dunes. <p>Given the application area is mainly comprised of granitic rocks, and the relatively small area and temporary nature of the proposed clearing (50 hectares of proposed clearing within an area 29,000 hectares) for mineral exploration, it is unlikely that the proposed clearing have an appreciable impact on land degradation or will be susceptible to wind erosion.</p>		
<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 Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear; though, there are several ephemeral watercourse intersecting the application area (GIS Database). However, these numbers are relatively small considering that the application area is substantially large (over 29,000 hectares). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. The proposed clearing is unlikely to result in significant changes to surface water flows.</p> <p>The groundwater in the area is saline with a Total Dissolved Solids (TDS) between 1,000 to 3,000 mg/L (GIS Database). The proposed clearing of 50 hectares for mining exploration within an application area of approximately 29,000 hectares is unlikely to cause any significant impact on the surface or groundwater quality.</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, with varied and unpredictable rainfall in the Great Victoria Desert bioregion, and slightly higher winter rainfall in the Central Ranges bioregion (CALM, 2002a; CALM, 2002b). The annual rainfall average around the application area is approximately 244.2 millimetres (BoM, 2022). In addition, the application area is located within the Warburton Basin catchment area which covers a total area of approximately 17,203,745 hectares (GIS Database). Therefore, the proposed clearing of 50 hectares is not likely to cause or exacerbate the incidence or intensity of floods in the catchment or local areas.</p> <p>Based on the above, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.</p>	Not likely to be at variance	No

Appendix E. Vegetation condition rating scale

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

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

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

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
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 F. Sources of information

F.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- 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)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography, Linear (DWER-031)
- IBRA 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)
- 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)

F.2. References

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- Department of Biodiversity, Conservation and Attractions (DBCA) (2021) Western Australian Threatened Species Scientific Committee. Available from: [Threatened species nominations for public consultation \(dpaw.wa.gov.au\)](http://dpaw.wa.gov.au)
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- Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Fauna Surveys. Available from: [2020.09.17 - EPA Technical Guidance - Vertebrate Fauna Surveys - Final.pdf](https://www.epa.gov.au/technical-guidance-vertebrate-fauna-surveys-final)
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of April 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Opis Resources Limited (2023) Additional information (email) in support to the clearing permit CPS 9819/1. Prepared by Legacy Iron Ore Limited, May 2023.
- Western Botanical (2012) Assessment of Flora and Vegetation of the Mt Squires Prospect, E69/2067. Report prepared for BHP Billiton by Western Botanical.
- Western Botanical (2016) Desktop Review of Flora, Vegetation and Fauna – Mt Squires Tenements E 69/3424 and E 69/3425, West Musgraves. Report prepared for Cassini Resources Limited by Western Botanical, September 2016.
- Western Botanical (2018) Level 1 Targeted Flora and Vegetation Survey – West Musgraves E 69/1530 and E 69/3425. Report prepared for Cassini Resources Limited by Western Botanical, February 2018.
- Western Botanical (2023) WB988 Targeted Priority Flora and Vegetation Assessment of the Mt Squires Project. Prepared for Cassini Resources Limited by Western Botanical, March 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)
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.