



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 9379/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Juno Minerals Limited

1.3. Property details

Property: General Purpose Leases 29/22 and 29/23
Mining Leases 29/408; 29/414
Miscellaneous Licences 29/79; 29/100; and 29/121
Local Government Area: Shire of Menzies
Colloquial name: Mount Mason DSO Hematite Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
141		Mechanical Removal	Mineral Production and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 10 March 2022

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The vegetation of the application area is broadly mapped as the following Beard vegetation associations:
18: Low woodland; mulga (*Acacia aneura*);
202: Shrublands; mulga & *Acacia quadrimarginea* scrub;
483: Hummock grasslands, mixed sandplain - open mallee over sparse dwarf shrubs with spinifex ; red mallee & mixed sparse dwarf shrubs over *Triodia basedowii*;
484: Shrublands; jam thicket (GIS Database).

Several flora and vegetation surveys have been conducted over the application area, with the most recent being a detailed and targeted survey (*Drosera eremaea*) undertaken in August 2021, and a targeted survey (*Calotis* sp. Perrinvale and *Drosera eremaea*) in October 2021 by Western Botanical (2021). The following vegetation associations were recorded within the application area (Western Botanical, 2021):

Acacia (Mulga Woodlands)

- A1: *Acacia quadrimarginea*, *A. incurvaneura*, *A. mulganeura*, *A. caesaneura* (narrow phyllode form)
- Woodland over *Thryptomene decussata*, *Prostanthera althoferi* subsp. *althoferi*, *Hibbertia arcuata*, *Olearia humilis* Shrubland on BIF outcrop and upper slopes;
- A2: *Acacia incurvaneura* and *Acacia quadrimarginea*, *Acacia cockertoniana* over *Philotheca brucei*, *Hibbertia arcuata*, *Prostanthera althoferi* subsp. *althoferi* and *Dodonaea rigida* on BIF outcrop and upper slopes;
- A3: *Acacia incurvaneura*, *A. mulganeura*, *A. caesaneura* over *Eremophila forrestii* subsp. *forrestii* on sandy gravely mid to lower slopes;
- A5: *Acacia effusifolia* with emergent *Eucalyptus leptopoda*, *E. ewartiana* Mallees on orange-brown sandplain;
- A6: *Thryptomene costata* Shrubland with emergent *Acacia quadrimarginea*, *Acacia ramulosa* subsp. *ramulosa*, *A. cockertoniana* small trees on granite sheets and exfoliating outcrop;
- A7: *Acacia cockertoniana*, *A. quadrimarginea*, *A. ramulosa* subsp. *ramulosa*, *Calytrix erosipetala*, *Hibbertia arcuata*, *Ptilotus obovatus* (typical goldfields form) on lateritic duricrust hills and outcrops;
- A8: *Callitris columellaris*, *Acacia ramulosa* subsp. *ramulosa*, *Eucalyptus leptopoda* mallee on orange-brown sandplain;
- A9: *Acacia incurvaneura*, *A. ramulosa* subsp. *ramulosa*, *A. tetragonophylla*, *A. mulganeura* over *Ptilotus obovatus* (typical Goldfields form) on hardpan plains, colluvium and alluvium;
- A10: Drainage line Mulga Shrublands;

Acacia (Mulga, *Acacia sibirica*) woodlands

- A4: *Acacia sibirica* Woodland over *Dodonaea lobulata*, *Ptilotus obovatus* (Upright form, G Cockerton et. al. 15206) on weathered basalt and calcrete;

Casuarina Pauper Woodland

- C1: *Casuarina pauper* Woodland over *Ptilotus obovatus* (Upright form, G Cockerton et. al. 15206) Shrubland on weathered basalt and abundant calcrete;

Eucalypt Woodlands

- E1: *Eucalyptus* aff. *lesouefii* Woodland over *Eremophila pantonii* Shrubland on weathered basalt and abundant calcrete;
- E2: *Eucalyptus* aff. *salubris* woodland on red-brown clay, alluvium;
- E3: *Eucalyptus oleosa* emergent over *Acacia incurvaneura* and *Acacia cockertoniana* Woodland;
- E4: *Eucalyptus oleosa*, *Acacia caesaneura* over *Acacia ramulosa* subsp. *ramulosa* over *Eremophila forrestii* subsp. *forrestii*, on shallow sandy profiles over hardpan plains, colluvium and alluvium;
- E5: *Eucalyptus horistes* over *Acacia ramulosa*, *A. hemiteles*, *Senna artemisioides* subsp. *filifolia* on sandy clay;

Low Shrublands with Emergent *Acacia*, *Allocasuarina*

- *Hibbertia arcuata*, occasionally with *Calytrix* spp. Shrubland with emergent *Acacia cockertoniana*, *A. quadrimarginea*, *Allocasuarina acutivalvis* subsp. *acutivalvis* tall shrubs on lateritic duricrust outcrop; and
- *Frankenia* Shrubland on saline stony plain with kaolinitic soil.

Clearing Description	Mount Mason DSO Hematite Project. Juno Minerals Limited proposes to clear up to 141 hectares of native vegetation within a boundary of approximately 2,828.97 hectares, for the purpose of mineral production and associated activities. The project is located approximately 90 kilometres north-west of Menzies, within the Shire of Menzies.
Vegetation Condition	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994); To Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).
Comment	The vegetation condition was derived from a vegetation survey conducted by Western Botanical (2021).

3. Assessment of application against Clearing Principles

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Comments **Proposal is not likely to be at variance to this Principle**

The clearing permit application area is located within the East Murchison subregion of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The East Murchison subregion represents a total area of approximately 7.8 million hectares, and is characterised by an arid climate with a mainly winter rainfall of approximately 200-250 millimetres (CALM, 2002). The subregion is rich and diverse in both its flora and fauna however most species are wide ranging and usually occur in at least one, and often several adjoining subregions. Vegetation in the subregion is dominated by mulga woodlands, often rich in ephemerals, hummock grasslands, saltbush shrublands and samphires (CALM, 2002).

Outback Ecology (2013) conducted a Level 1 flora and fauna survey of the application area, comprised of a desktop review of relevant databases and previous surveys conducted over the area, and an on-site flora, vegetation and fauna assessment. A reconnaissance survey and gap analysis was undertaken by Western Botanical in April, 2021. This was followed up with a targeted field survey assessing the numbers and distribution of *Drosera eremaea*, listed at that time as Priority 1, (inclusive of *Drosera* aff. *eremaea*) (Western Botanical, 2021). Further detailed flora surveys were also undertaken in August and October 2021 (Western Botanical, 2021).

The desktop review identified several species of flora and fauna of conservation significance, with the potential to occur within the project area, based on known distributions and habitat preferences (Western Botanical, 2021). However, the majority of these species were considered very unlikely to occur within the application area due to limited availability of suitable habitat and the extent of previous vegetation disturbance (Western Botanical, 2021).

The on-site surveys consisted of a comprehensive traverse of the project area on-foot, focussed on verifying the results of the desktop review and identifying the presence of any conservation significant flora or fauna, or significant fauna habitat features. No Threatened flora, fauna, or fauna habitats of conservation significance were identified within the application area (Outback Ecology, 2013; Western Botanical, 2021).

Six Priority flora species were identified during the field surveys, with three of these being within the application area:

- *Jacksonia lanicarpa* – Priority 1;
- *Calotis* sp. *Perrinvale* (R.J. Cranfield 7096) – Priority 3; and
- *Drosera eremaea* – Priority 3.

The survey work undertaken by Western Botanical (2021) has identified that the proposed clearing activities could potentially impact up to 12.5% of the local *Jacksonia lanicarpa* population, however is only 0.7% of the total Western Australian population. However given the number of plants have not been recorded at all known

locations in the region, the actual impact is likely to be less (Western Botanical, 2021). Given this, the proposed impact on *Jacksonia lanicarpa* is not likely to be significant on a regional scale, however is considered significant at a local scale (DBCA, 2022). Potential impacts to conservation significant flora may be minimised by the implementation of a flora management condition limiting clearing of *Jacksonia lanicarpa* to three individual plants (12.5%).

Two populations totalling approximately 20 plants of *Calotis* sp. Perrinvale (R.J. Cranfield 7096) have been identified within the application area (Western Botanical, 2021). *Calotis* sp. Perrinvale is known from 21 populations regionally and is likely under-surveyed at all sites (Western Botanical, 2021). Potential impacts of this clearing proposal to this species would be approximately 8.7% of the known regional population, which is not likely to be a significant impact.

Moderate impacts to *Drosera eremaea* (inclusive of *Drosera* aff. *eremaea*) are likely to occur as a result of the proposed clearing (Western Botanical, 2021). The project has the potential to impact 4,804 plants of *Drosera eremaea* within the application area. This represents an impact to 12.5% of the local population and 16.0% of the known regionally quantified numbers of this species (Western Botanical, 2021). However, the species is regarded as likely being far more abundant where it occurs than current information indicates. The flora studies commissioned by Juno Minerals has led to a re-evaluation of the taxonomic status of *Drosera eremaea* with the species now being recognised as far more abundant and widespread than previously understood. This has led to a review of the conservation status of the species by DBCA. The Priority status of *Drosera eremaea* was revised downwards from Priority 1 to Priority 3 on 25 November 2021 following incorporation of numerous specimens collected during these studies at the Western Australian herbarium (Western Botanical, 2021). Further downward-review may occur based on a widening known distribution of the species.

The northern extent of the application area falls within the (Priority 1) - Perrinvale/Walling vegetation complexes (banded ironstone formation) Priority Ecological Community (PEC) (GIS Database). The banded ironstone formation PEC's occur over the hilltops of several ranges in the midwest and goldfields regions (GIS Database). The banded ironstone formation (BIF) ranges are of significant biodiversity value, supporting distinct and restricted plant communities which are often unique to a specific range (DEC and DoIR, 2007). In a strategic review of the BIF ranges (DEC and DoIR, 2007), the various ranges were classified according to their relative biodiversity values. Mount Mason was not included in the list of areas which were considered to have the highest biodiversity and conservation values (DEC and DoIR, 2007). The Mt Ida/ Mt Mason occurrence of the PEC is mapped over a total area of approximately 11,778 hectares (GIS Database). Clearing in this area was previously approved under clearing permit CPS 5764/1 (expired). The application area intercepts less than 9% of the buffer area of the Mt Ida/Mt Mason occurrence of the PEC. However, potential impacts to the PEC are likely to be a lot lower due to the proponent only proposing to clear 141 hectares within a boundary of approximately 2,828.97 hectares, which would represent less than 2% of the PEC (GIS Database). It is expected that some vegetation associations of the area may be regionally restricted, particularly those associated with the geology of the BIF ranges and associated laterite caps and the erosion products from these ranges. These will most likely be widespread within similar landforms of the Mt Mason / Mt Ida area (Western Botanical, 2021). The proposed clearing is unlikely to have any significant impact on the continued existence of the PEC.

Western Botanical (2021) reported minor weed infestation within the application area and recorded a total of two weed species during the survey, however, none of these weed species were classified as declared plants for the Menzies district (Western Botanical, 2021). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Five fauna habitats have been identified within the application area:

- Acacia Shrubland
- Acacia Shrubland (Burnt)
- *Eucalypt lesouefi* Open woodland;
- *Eucalypt salubris* Open woodland; and
- Mulga Shrubland.

These habitat types are common and widespread within the subregion, and are unlikely to function as ecological linkages or refugia (Juno Minerals, 2021). It is also noted that the application area contains banded ironstone formations (BIF), associated with the aforementioned Perrinvale/Walling vegetation complexes (banded ironstone formation) PEC. It is expected that some vegetation associations of the application area may be regionally restricted, particularly those associated with the geology of the BIF ranges and associated laterite caps. However, these will most likely be widespread within similar landforms of the Mt Mason / Mt Ida area (Western Botanical, 2021).

The vegetation associations, fauna habitats and landform types present within the application area, are well represented in surrounding areas (Western Botanical, 2021; GIS Database). The application area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Juno Minerals (2021)
Outback Ecology (2013)
Western Botanical (2021)

GIS Database:

- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Flora
- Threatened Fauna

(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.

Comments

Proposal is not likely to be at variance to this Principle

Western Ecological (Juno Minerals, 2021) conducted a fauna survey of the application area in June 2021, and identified the following five fauna habitat types within the application area:

- Acacia Shrubland
- Acacia Shrubland (Burnt)
- *Eucalypt lesouefi* Open woodland;
- *Eucalypt salubris* Open woodland; and
- Mulga Shrubland.

These habitat types are well represented in surrounding areas and no significant fauna habitat features were recorded within the application area (Western Botanical, 2021).

A subterranean fauna sampling programme was also undertaken within the application area by Rockwater Pty Ltd from November 2011 to May 2012, in accordance with the relevant EPA guidelines (Environmental Protection Authority, 2003) (Juno Minerals, 2021). Results indicate the stygofauna community within the application area are represented by only one stygal group (*Nematoda*), suggesting a depauperate complexity for arid parts of Western Australia (Juno Minerals, 2021). Nematodes are a widespread group with few representatives confined to subterranean environments. It is considered unlikely that the proposed clearing will affect their conservation status (Juno Minerals, 2021).

Desktop surveys identified 11 vertebrate fauna species of conservation significance with the potential to occur in the vicinity of the application area, with six of these considered to likely occur within the application area based on known distributions and habitat preferences (Juno Minerals, 2021).

- Malleefowl (*Leipoa ocellata*) (Vulnerable);
- Fork-tailed Swift (Migratory);
- Rainbow Bee-eater (*Merops ornatus*) (Migratory);
- Crested Bellbird (*Oreoica gutturalis* subsp. *gutturalis*) (Priority 4)
- Long-tailed Dunnart (*Sminthopsis longicaudata*) (Priority 4);
- White-browed Babbler (*Pomatostomus superciliosus*) (Priority 4)

All but the Fork-tailed Swift have been confirmed through prior surveys to be present within the broader survey area (Juno Minerals, 2021). Due to the highly mobile nature of the Rainbow Bee-eater, Crested Bellbird and White-browed Babbler, it is considered unlikely that the proposed clearing will have a significant impact on these species.

Two Malleefowl were observed during the June 2021 Targeted Fauna Survey, one near the beginning of the proposed haul road and inside the project area, and one near the bottom of the haul road, but just outside the project area. Malleefowl mounds were recorded at eight locations during the survey, however only three of these were within the application area, and all three were old and disused (Juno Minerals, 2021). Only one mound near the southern end of the haul road, outside of the application area was considered under construction (Juno Minerals, 2021). Malleefowl are likely to utilise the area for foraging and potentially breeding, although habitats are widespread locally and regionally. Potential impacts to Malleefowl may be minimised by the implementation of a fauna management condition requiring further searches for Malleefowl if clearing during the breeding season and avoidance of active mounds, if present.

The Long-tailed Dunnart was recorded at the base of a rocky scree at Mount Mason in 2011 (Juno Minerals, 2021). This species was not recorded in the project area during the June 2021 Targeted Fauna Survey or on any of the five camera traps that were placed out in Mulga shrubland on rocky ridges and rocky hill slopes (Juno Minerals, 2021). Given the limited number of captures during the historic survey and no captures on camera traps during the 2021 survey, the Long-tailed Dunnart is likely to occur in very low densities in this area (Juno Minerals, 2021). It is considered unlikely that the proposed clearing would result in a significant impact to this species.

None of these species are likely to be dependent on the habitat within the areas proposed to be cleared. The proposed clearing is unlikely to have any significant impact on fauna habitats at either a local or regional scale (Western Botanical, 2021).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Juno Minerals (2021)

GIS Database:

- Imagery
- Pre-European Vegetation
- Threatened Fauna

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Comments **Proposal is not likely to be at variance to this Principle**

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (Outback Ecology, 2013; Western Botanical, 2021).

The vegetation associations within the application area are common and widespread within the region (Western Botanical, 2021; GIS Database), and the native vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened flora.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Outback Ecology (2013)
Western Botanical (2021)

GIS Database:

- Pre-European Vegetation
- Threatened and Priority 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.

Comments **Proposal is not likely to be at variance to this Principle**

There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database).

A flora and vegetation survey of the application area did not identify any TECs (Outback Ecology, 2013; Western Botanical, 2021).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Western Botanical (2021)

GIS Database:

- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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.

Comments **Proposal is not at variance to this Principle**

The application area falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Murchison Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18: Low woodland; mulga (*Acacia aneura*); 202: Shrublands; mulga & *Acacia quadrimarginea* scrub; 483: Hummock grasslands, mixed sandplain - open mallee over sparse dwarf shrubs with spinifex; red mallee & mixed sparse dwarf shrubs over *Triodia basedowii*; and 484: Shrublands; jam thicket (GIS Database). Approximately 99% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).

Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands
IBRA Bioregion – Murchison	28,120,587	28,044,823	~99	Least Concern	7.77
Beard vegetation associations – WA					
18	19,892,306	19,843,148	~99	Least Concern	6.62
202	448,529	448,344	~99	Least Concern	22.91
483	439,579	439,547	~99	Least Concern	12.10
484	70,664	70,664	~100	Least Concern	6.75
Beard vegetation associations – Murchison Bioregion					
18	12,403,172	12,363,252	~99	Least Concern	4.96
202	339,743	339,641	~99	Least Concern	21.25
483	238,599	172,865	~99	Least Concern	12.89
484	69,401	69,401	~100	Least Concern	6.80

* Government of Western Australia (2019)

** Department of Natural Resources and Environment (2002)

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2019)

GIS Database:
- IBRA Australia
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments **Proposal is at variance to this Principle**

There are no permanent watercourses or wetlands within the area proposed to clear (Western Botanical, 2021; GIS Database). Several seasonal creek lines pass through the application area (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (Western Botanical, 2021). None of the vegetation types identified within the application area are considered 'riparian' vegetation (Western Botanical, 2021).

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to vegetation growing in association with watercourses may be minimised by the implementation of a watercourse management condition.

Methodology Western Botanical (2021)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments **Proposal may be at variance to this Principle**

The application area lies within the Bandy, Bevon, Brooking, Marmion, Monitor, Rainbow, Sherwood, Waguin and Yowie land systems (GIS Database). These land systems have been mapped and described in technical bulletins produced by the former Department of Agriculture (now the Department of Primary Industries and Regional Development).

The Bandy land system is described as gritty-surfaced plains and low outcrops of granite with scattered acacia shrublands. This land system is generally not susceptible to soil erosion (Pringle et al., 1994).

The Bevon land system is described as dissected uplands with mulga shrublands. This land system may be susceptible to erosion if vegetation cover is removed (Pringle et al., 1994).

The Brooking land system is described as prominent ridges of banded iron formation supporting mulga shrublands. This land system is not generally susceptible to erosion (Pringle et al., 1994).

The Marmion land system is described as gently undulating sandplains with mixed shrublands and hummock grasslands. This land system may be susceptible to erosion if vegetation cover is removed (Pringle et al., 1994).

The Monitor land system is described as distributary alluvial fans and wash plains supporting mulga - chenopod shrublands. This land system is not generally susceptible to erosion (Pringle et al., 1994).

The Rainbow land system is described as hardpan plains supporting mulga shrublands. This land system is not generally susceptible to erosion (Pringle et al., 1994). However, impedance of sheet flow can initiate erosion and cause water starvation and consequent loss of vigour in vegetation downslope (Pringle et al., 1994).

The Sherwood land system consists of breakaways, kaolinised foot slopes and extensive gently sloping plains on granite supporting mulga shrublands and minor halophytic shrublands. This land system may be susceptible to erosion if vegetation cover is removed (Pringle et al., 1994).

The Waguin land system is described as sandplains and stripped granite or laterite surfaces with low fringing breakaways and lower plains; supports bowgada and mulga shrublands with wanderrie grasses and minor mixed halophytes. This land system is susceptible to erosion if vegetation cover is removed (Pringle et al., 1994).

The Yowie Land System is characterised by sandy plains supporting shrublands of mulga and bowgada with patchy wanderrie grasses. This land system is generally not susceptible to soil erosion (Pringle et al., 1994).

The proposed clearing of up to 141 hectares of native vegetation within a boundary of approximately 2,828.97 hectares, for the purposes of mineral production and associated activities may cause appreciable land degradation. Potential land degradation impacts may be minimised by the imposition of a staged clearing condition.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology Pringle et al. (1994)

GIS Database:
- Landsystem Rangelands
- Soils, Statewide

(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.

Comments **Proposal is not likely to be at variance to this Principle**

There are no conservation areas in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is the former Bulga Downs pastoral station which is located approximately 44 kilometres north, north-west of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Database:
- DPaW Tenure

(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.

Comments **Proposal is not likely to be at variance to this Principle**

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 (GIS Database). 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.

The proposed clearing is unlikely to cause deterioration in the quality of underground water.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

GIS Database:
- Hydrography, Linear
- Public Drinking Water Source Areas

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments **Proposal is not likely to be at variance to this Principle**

The climate of the region is arid, with a low average rainfall of approximately 254 millimetres per year (BoM, 2022). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (BoM, 2022; Western Botanical, 2021).

There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

BoM (2022)
Western Botanical (2021)

GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 30 August 2021 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. One submission was received in relation to this application, raising no objections to the proposal.

There are no native title claims over the area under application (DPLH, 2022). The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2022). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

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.

Methodology DPLH (2022)

4. References

- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Menzies. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 3 March 2022).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DEC and DoIR (2007) Strategic Review of the Banded Iron Formation Ranges of the Midwest and Goldfields. Department of Environment and Conservation, Department of Industry and Resources, Western Australia. [024311.pdf](https://dbca.wa.gov.au/024311.pdf) (dbca.wa.gov.au) (Accessed 4 March 2022).
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DPLH (2022) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 3 March 2022).
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
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5. 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).

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.