



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 9209/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Paulsens East Iron Ore Pty Ltd

1.3. Property details

Property: Mining Lease 47/1583
Miscellaneous Licences L08/195, L47/927, L47/938

Local Government Area: Shire of Ashburton

Colloquial name: Paulsens East Iron Ore Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
142		Mechanical Removal	Mineral production and associated activities

1.5. Decision on application

Decision on Permit Application: Grant

Decision Date: 21 May 2021

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:

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;
103: Hummock grasslands, shrub steppe; snakewood over soft spinifex & *Triodia wiseana*; and
157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana* (GIS Database).

Flora and vegetation reconnaissance surveys were conducted over the application in August 2019, March 2020 and July 2020 by Ecologia Environment (Ecologia, 2021). The following vegetation associations were recorded within the application area (Ecologia, 2021):

Vegetation associations recorded within the proposed minesite area:

SH01: *Acacia* sparse shrubland - *Acacia xiphophylla*, *A. synchronicia*, *A. bivenosa* tall sparse shrubland; *Triodia epactia*, *T. wiseana* sparse hummock grassland.

W01: *Corymbia* open woodland - *Corymbia hamersleyana* low open woodland; *Acacia citrinoviridis*, *A. anistrocarpa*, *Ventilago viminalis* tall sparse shrubland; *Triodia epactia*, *T. wiseana* open hummock grassland.

W02: *Corymbia* open woodland - *Corymbia hamersleyana* low open woodland; *A. anistrocarpa*, *Acacia arida*, *A. bivenosa* low sparse shrubland; *Triodia wiseana* open hummock grassland.

W03: *Eucalyptus* open woodland - *Eucalyptus leucophloia* low open woodland; *Acacia anistrocarpa*, *A. xiphophylla*, *Senna glutinosa* tall sparse shrubland; *Triodia wiseana* open hummock grassland.

Vegetation associations recorded within the proposed haulage road area:

SH02: *Acacia* tall sparse shrubland - *Acacia* spp. (*A. citrinoviridis*, *A. bivenosa*, *A. synchronicia*, *A. trachycarpa*) tall open shrubland; *Triodia epactia*, *T. wiseana*, *Cenchrus ciliaris* low sparse hummock grassland/tussock grassland.

SH03: *Acacia* tall sparse shrubland - *Acacia* spp. (*A. inaequilatera*, *A. pruinocarpa*, *A. bivenosa*, *A. synchronicia*, *A. acradenia*) tall sparse shrubland; *Triodia epactia*, *Triodia wiseana* low sparse hummock grassland.

SH04: *Acacia* tall sparse shrubland - *Acacia* spp. (*A. synchronicia*, *A. xiphophylla*, *A. tetragonophylla*) tall sparse shrubland; *Triodia epactia*, *Triodia wiseana* low sparse hummock grassland.

SH05: *Acacia* tall sparse shrubland - *Acacia xiphophylla*, *Acacia synchronicia* tall sparse shrubland; *Cynodon convergens*, *Dactyloctenium radulans*, *Trianthema triquetrum* low sparse tussock grassland/herbland.

SH06: *Acacia* tall sparse shrubland - *Acacia synchronicia* tall sparse shrubland; *Cynodon convergens*, *Dactyloctenium radulans*, *Trianthema triquetrum* low sparse tussock grassland/herbland.

SH07: *Acacia* tall sparse Shrubland - ±*Corymbia hamersleyana*, ±*Eucalyptus leucophloia* low isolated trees; *Acacia* spp. (*A. bivenosa*, *A. inaequilatera*, *A. pruinocarpa*, *A. synchronica*) tall-mid sparse shrubland; *Triodia wiseana* low sparse hummock grassland.

SH08: *Senna* mid sparse shrubland - *Senna glutinosa* subsp. *glutinosa*, *Senna artemisioides* subsp. *oligophylla* tall/mid sparse shrubland; *Triodia wiseana*, *Eriachne mucronata* low open hummock grassland/tussock grassland.

SH09: *Acacia* tall sparse shrubland - *Acacia citrinoviridis* tall sparse shrubland; *Eremophila fraseri* subsp. *fraseri* low sparse shrubland; *Triodia wiseana*, *Cenchrus ciliaris* low open hummock grassland/tussock grassland.

W04: *Eucalyptus* low open woodland - *Eucalyptus victrix*, *Acacia citrinoviridis* low open woodland/tall sparse shrubland; *Cenchrus ciliaris*, *Cenchrus setiger*, *Triodia wiseana* low sparse tussock grassland/hummock grassland.

Clearing Description	Paulsens East Iron Ore Project Paulsens East Iron Ore Pty Ltd ('Paulsens') proposes to clear up to 142 hectares of native vegetation within a boundary of approximately 485.442 hectares, for the purpose of mineral production and associated activities. The project is located approximately 160 kilometres south-east of Onslow, within the Shire of Ashburton.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994). To Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).
Comment	The vegetation condition was derived from vegetation surveys conducted by Ecologia (2021). The proposed clearing is for the construction and operation of the Paulsens East Iron Ore Project. The clearing footprint will include an open mining pit, waste dump, crushing and screening plant, accommodation and supporting infrastructure. A portion of the haul road is also included in the scope of the clearing permit application (Ecologia, 2021).

3. Assessment of application against Clearing Principles

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

Comments	<p>Proposal not likely to be at variance to this Principle</p> <p>The clearing permit application area is located within the Hamersley subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion (GIS Database). The Hamersley sub-region is the southern section of the Pilbara Craton. Broadly, low mulga (<i>Acacia aneura</i> and close relatives) woodland occurs over bunch grasses on fine textured soils in valley floors, and <i>Eucalyptus leucophloia</i> open woodlands over <i>Triodia brizoides</i> (and other <i>Triodia</i> species) occur on skeletal soils of the ranges (CALM, 2002). The climate is semi-arid tropical, with an average rainfall of 300 millimetres, falling mainly in summer cyclonic events (CALM, 2002).</p> <p>Reconnaissance flora and vegetation surveys and a basic fauna survey were undertaken over the application area in August 2019, March 2020 and July 2020 (Ecologia, 2021). Nine vegetation types were described for the application area from the field results based on floristics and structure (Ecologia, 2021). Vegetation condition was described as excellent to very good, with little evidence of disturbance other than the impacts of previous mineral exploration programmes along the mining tenement (Ecologia, 2021; GIS Database). No Threatened or Priority Ecological Communities have been recorded within or near the application area, and none were described as part of the recent field survey (Ecologia, 2021; GIS Database).</p> <p>A total of 81 flora species from 48 genera and 23 families were recorded as part of the survey of the application area (Ecologia, 2021). No Threatened flora species are known to occur within the local area, based on a 50 kilometre radius database search, and none were recorded within the application area as part of the flora survey (DBCA, 2007-; Ecologia, 2021).</p> <p>Out of 13 priority flora species identified through desktop studies as having some likelihood of occurring within the application area, only one species was identified during targeted field searches (Ecologia, 2021; Paulsens, 2021a): <i>Triodia pisolitica</i> (P3). The species was recorded from a single location on a steep ironstone ridge within the southern boundary of the application area. It is estimated that between 50 and 100 individuals occur at this location (Ecologia, 2021).</p> <p><i>Triodia pisolitica</i> is typically found on crests and upper slopes of mesas, gullies and/or gorges and Ecologia (2021) conclude that there is a low likelihood of significant numbers of the species occurring elsewhere within the application area, based on targeted searches. Record indicate that the species is sparsely widespread locally and found through several bioregions (Ecologia, 2021; Western Australian Herbarium, 1998-).</p> <p>Furthermore, Paulsens (2021a) have confirmed that the proposed project infrastructure can be positioned to avoid the surveyed location of this Priority species. Hence, potential impacts of the proposed clearing to <i>Triodia pisolitica</i> may be minimised through implementation of a restricted clearing condition. As such, the proposed clearing is not considered likely to impact the conservation status of the species.</p>
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The fauna desktop review outlined a total of 224 vertebrate species recorded from within 40 kilometres of the application area (DAWE, 2021; DBCA, 2007-; Ecologia, 2021). These were comprised of one fish species, five amphibian species, 74 reptile species, 116 bird species and 28 mammal species. This includes 8 conservation significant vertebrate species deemed likely to possibly occur within the application area, based on habitat preferences and distribution records (DAWE, 2021; DBCA, 2007-; Ecologia, 2021).

Eighteen terrestrial vertebrate fauna species were recorded as part of the fauna surveys, comprised of 11 birds, five mammals and two reptile species, all of which were found within their known ranges (DAWE, 2021; DBCA, 2007-; Ecologia, 2021). Of these, three fauna species of conservation significance were identified within the application area during the survey, or known from previous records (Ecologia, 2021): the western pebble-mound mouse (*Pseudomys chapmanii*, P4), the Pilbara leaf-nosed bat (*Rhinionictoris aurantia* [Pilbara], T) and the Northern Quoll (*Dasyurus hallucatus*, EN). The fauna habitat types and fauna diversity noted within the application area are consistent with regional records and are well represented locally (DAWE, 2021; DBCA, 2007-; Ecologia 2021).

Three introduced flora species (weeds) were recorded within the application area in low abundance and generally restricted to disturbed floodplains and drainage lines: *Cenchrus ciliaris* (buffel grass), *Cenchrus setiger* (Birdwood grass) and *Vachellia farnesiana* (mimosa bush) (Ecologia, 2021). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower 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.

The vegetation associations, fauna habitats and landform types present within the application area, are well represented in surrounding areas (Ecologia, 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.

Methodology	CALM (2002) DAWE (2021) DBCA (2007-) Ecologia (2021) Paulsens (2021a) Paulsens (2021b) Western Australian Herbarium (1998-)
	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 at variance to this Principle An initial basic fauna survey and habitat assessment was conducted in August 2019, and a targeted survey for the northern quoll (<i>Dasyurus hallucatus</i> , EN) was conducted in November 2019 (Ecologia, 2021). Three broad fauna habitats were recorded within the application area (Ecologia, 2021): <ul style="list-style-type: none">▪ Minor Drainage Lines: Generally small, shallow and not deeply incised;▪ Rocky Ridges, Hills and Scree Slopes: Contain rocky outcrops, boulders, scree slopes and hills providing shelter for rock-dwelling species in crevices and caves; and▪ Stony Plains: Undulating plains with scattered trees and shrubs over hard spinifex on stony loamy substrates. No evidence of recent fire was identified from the study area and all of the spinifex was relatively mature. These habitat types are considered well represented locally and regionally, none being of national, state or regional significance (Ecologia, 2021; Paulsens, 2021b). The 'Rocky Ridges, Hills and Scree Slopes' habitat type is considered to be the most significant habitat with the application area for some species of conservation significance, including the northern quoll (<i>Dasyurus hallucatus</i> , EN) (Cramer and Dunlop, 2018; Ecologia, 2021). The proposed clearing will impact a portion of this habitat (Paulsens, 2021), however the habitat type it is not locally or regionally restricted, and a significantly larger ridgeline fringing the southern boundary of the application area provides a contiguous area of higher quality caves, boulders and denning habitat nearby (Ecologia, 2021).
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The northern quoll (*Dasyurus hallucatus*, EN) was recorded from motion sensor cameras at several locations

within the 'Rocky Ridges, Hills and Scree Slopes' habitat type within the application area, and three different individuals were identified (Ecologia, 2021). This indicates that a permanent, low-density population of the northern quoll exists within this part of the application area, and it is likely that quolls use ridgelines as dispersal habitat (Ecologia, 2021). When comparing the spatial occurrence of northern quolls and northern quoll habitat in a regional context, the population occurring within the application area is not likely to be necessary for the long-term survival of this species (Ecologia, 2021).

Echolocation calls for the Pilbara leaf-nosed bat (*Rhinoicteris aurantia* (Pilbara), T) were recorded at five locations using ultrasonic acoustic recording units during the fauna survey (Ecologia, 2021). Analysis of call times and locations indicate that a bat roost is most likely located to the south and east of the application area (Ecologia, 2021). Ghost bats (*Macroderma gigas*, VU) have also been recorded locally (DAWE, 2021; DBCA 2021; DBCA, 2007-) and are often found cohabiting with the Pilbara leaf-nosed bat.

The main ridgeline running through the centre of the application area was inspected and found devoid of suitable bat roosting caves, overhangs or adits (Ecologia, 2021). The possibility of the roost being located within the study area cannot be completely discounted, however is considered unlikely (Ecologia, 2021). Records also indicate that bats forage within the application within all three habitat types found within the application area, and contiguous swathes of similar foraging habitat are found outside of the study area (Ecologia, 2021; Paulsens, 2021b). Hence, the application area is unlikely to represent significant habitat for these species.

The application area falls within the distribution range of the night parrot (*Pezporus occidentalis*, EN), however no suitable habitat (i.e., old, long unburnt spinifex and chenopod plains) was identified from the application area during the survey (DBCA, 2021; DBCA, 2007-).

Three bird species of conservation significance have the potential to occur within the application area (DBCA, 2021; Ecologia, 2021): Fork-tailed swift (*Apus pacificus*, IA), Grey falcon (*Falco hypoleucos*, VU) and Peregrine Falcon (*Falco peregrinus*, OS). However, none of these bird species are likely to be significantly impacted by the proposed clearing as they are highly mobile taxa, with broad habitat types and distribution widespread outside of the application area (DAWE, 2021).

The Pilbara olive python (*Liasis olivaceus barroniare*, VU) may also possibly occur within the application area (DAWE, 2021; DBCA, 2020; DBCA, 2007). The species displays variable habitat preferences, and while it may visit the locality, the absence of a permanent water source indicates that the application area unlikely to contain significant permanent habitat for the Pilbara olive python (DBCA, 2007-; Ecologia, 2021; Paulsens, 2021b).

Evidence of the western pebble-mound mouse (*Pseudomys chapmanii*, P4) has previously been recorded within the application area (Ecologia, 2021). The species is known to occur regionally, in stony plains that provide pebbles of a suitable size for the construction of burrows (DBCA, 2007-; Ecologia, 2021). The species has a broader local and regional distribution range and large tracts of suitable habitat extend beyond the application area (DBCA, 2007-; GIS Database). Hence, the application area is unlikely to represent significant habitat for this species.

Paulsens (2021a) have confirmed that the mine site infrastructure will be positioned to avoid a significant portion of this habitat type within the application area. Implementation of a restricted clearing condition over that portion of the application area will minimise the impacts of the proposed clearing to Northern Quoll habitat. A narrow (up to 4 meters wide) approximately 800 metres long corridor within the proposed restricted clearing exclusion zone needs to remain accessible for disturbance, so that a communications tower can be installed at the highest point of the ridgeline (Paulsens, 2021c).

Furthermore, implementation of a fauna management condition is recommended, to enable dispersal and relocation, and minimise the potential direct impact to the northern quoll or other fauna species of conservation significance, as a result of the proposed clearing activities.

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

Methodology

DoE (2016)
Cramer and Dunlop (2018)
DAWE (2021)
DBCA (2007-)
DBCA (2021)
Paulsens (2021a)
Paulsens (2021b)
Paulsens (2021c)
Ecologia (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 (Ecologia, 2021).

The vegetation associations within the application area are common and widespread within the region (Ecologia, 2021; GIS Database), and the 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 Ecologia (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 (Ecologia, 2021).

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

Methodology Ecologia (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 Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Pilbara Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; 103: Hummock grasslands, shrub steppe; snakewood over soft spinifex & *Triodia wiseana*; and 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana* (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 – Pilbara	17,808,657	17,731,764	~99	Least Concern	10.12
Beard vegetation associations – WA					
82	2,565,901	2,553,206	~99	Least Concern	11.5
103	614,596	614,463	~99	Least Concern	4.9
157	502,728	499,311	~99	Least Concern	18.12
Beard vegetation associations – Pilbara Bioregion					
82	2,563,583	2,550,888	~99	Least Concern	11.5
103	614,056	613,923	~99	Least Concern	4.9
157	199,832	198,409	~99	Least Concern	5.8

* 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 (GIS Database). One seasonal creek line passes through the eastern edge of the application area (Ecologia, 2021; GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (CALM, 2002).

Based on the above, the proposed clearing is at variance to this Principle. However the vegetation survey of the application area did not identify any riparian vegetation (Ecologia, 2021), and impacts from the proposed clearing to vegetation growing in association with watercourses is likely to be minimal.

Nevertheless, potential impacts to vegetation growing in association with the watercourses may be minimised by the implementation of a watercourse management condition.

Methodology CALM (2002)
Ecologia (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 Capricorn, Newman, Paraburdoo and Rocklea 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 Capricorn land system is described as ranges and hills with steep rocky upper slopes, more gently sloping stony footslopes, restricted stony lower plains and valleys; angular and rectangular drainage patterns of moderate to high density; relief up to 180 metres, supporting low shrublands of hard spinifex. This land system's stoniness confers resistance to erosion (Payne et al., 1988; Van Vreeswyk et al., 2004).

The Newman Land System is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard

spinifex grasslands. Each of the landforms in the land system have a mantle of abundant pebbles of ironstone and other rocks, which translates to a low soil erosion risk (Payne et al., 1988; Van Vreeswyk et al., 2004).

The Paraburdoo land system consists of isolated low basalt hills, extensive stony gilgai plains; stony upper interfluvial areas with moderately dense patterns of sub-parallel tributary drainage extending downslope into broad zones with moderately dense braided drainage and major trunk channels, relief mostly less than 8 metres but isolated hills up to 25 metres. Much of the system is inherently resistant to erosion except for drainage zones which are moderately susceptible. (Payne et al., 1988; Van Vreeswyk et al., 2004).

The Rocklea land system consists of basalt hills and ridges with steep stony slopes, restricted lower slopes and stony interfluvial areas, minor gilgai plains and narrow drainage floors, moderately dense to dense branching and rectangular patterns of incised drainage and narrow valleys, relief up to 110 metres, supporting hard spinifex. The system has very low erosion hazard. (Payne et al., 1988; Van Vreeswyk et al., 2004).

The proposed clearing of up to 142 hectares of native vegetation within a boundary of approximately 485.442 hectares, for the purpose of mineral production and associated activities is unlikely to cause appreciable land degradation, although localised erosion issues associated with drainage lines may occur.

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

Potential impacts of erosion may be minimised by the implementation of a staged clearing condition and a watercourse management condition.

Methodology Payne et al. (1988)
Van Vreeswyk et al. (2004).

GIS Database:
- Landsystem Rangelands

(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 lands are the Barley Range Nature Reserve and the Cane River Conservation Park, which are located approximately 45 kilometres south-west and 65 kilometres north-west of the application area respectively (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 semi-desert tropical, with a low average rainfall of approximately 300 millimetres per year (CALM, 2002). Rainfall in the Pilbara region is generally localised and unpredictable, usually occurring during summer cyclonic or thunderstorm events, whilst winter rain is not uncommon (CALM, 2002).

High temperatures result in annual evaporation exceeding rainfall by as much as 500 millimetres per year

(Ecologia, 2021). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (CALM, 2002).

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 CALM (2002)
Ecologia(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 29 March 2021 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WC2001/005) over the area under application (DPLH, 2021). This claim has been determined by the Federal Court (WAD6007/2001) 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 is one registered Aboriginal Site of Significance within the application area (DPLH, 2021). 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.

Under the EPBC Act 1999, an action requires referral to the Federal Environment Minister if it is deemed likely to have a significant impact on a matter of national environmental significance. As a portion of the application area qualifies as critical habitat for the Northern Quoll, and there is possibility that the proposed clearing may reduce the area of occupancy of the species (DoE, 2016; Ecologia, 2021), the applicant should be notified of this referral requirement.

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 DoE (2016)
DPLH (2021)
Ecologia (2021)

4. References

- DoE (2016) EPBC Act referral guideline for the endangered northern quoll – EPBC Act Policy Statement. Department of Environment, Commonwealth of Australia, 2016.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Cramer, V. and Dunlop, J. (2018) The ecology of the northern quoll (*Dasyurus hallucatus*) in the Pilbara bioregion, Western Australia: Project plans for 2016–2020. Department of Biodiversity, Conservation and Attractions, Perth.
- DAWE (2021) EPBC Act Protected Matters Search Tool. Department of Agriculture, Water and the Environment. <https://www.environment.gov.au/epbc/protected-matters-search-tool> (Accessed 23 February 2021).
- DBCA (2021) Advice received in relation to Mining Proposal Reg ID 92872. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, 30 March 2021.
- DBCA (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Biodiversity, Conservation and Attractions. <https://naturemap.dbca.wa.gov.au/> (Accessed 23 February 2021).
- DPLH (2021) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 13 May 2021).
- 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.
- Ecologia (2021) Paulsens East Iron Ore Project – Native Vegetation Clearing Permit Application. Report prepared for Paulsens East Iron Ore Pty Ltd, by Ecologia Environment, March 2021.

- 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>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Paulsens (2021a) Additional information received in relation to Clearing Permit Application CPS 9209/1. Paulsens East Iron Ore Pty Ltd, Western Australia, 4 May 2021
- Paulsens (2021b) Additional information received in relation to Mining Proposal Registration ID 92872. Paulsens East Iron Ore Pty Ltd, Western Australia, 3 May 2021.
- Paulsens (2021c) Additional information received in relation to Clearing Permit Application CPS 9209/1. Paulsens East Iron Ore Pty Ltd, Western Australia, 18 May 2021.
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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).
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.