



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4006/3
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: GWR Group Limited

1.3. Property details

Property: Mining Lease 53/971
Mining Lease 53/972
Mining Lease 53/1018
Mining Lease 53/1078
Miscellaneous Licence 53/146
Local Government Area: Shire of Wiluna
Colloquial name: John William Douth Open Pit

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
102		Mechanical Removal	Mineral Production

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 13 June 2019

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation extent in a regional context. The following Beard vegetation association is located within the application area:

202: Shrublands; mulga & *Acacia quadrimarginea* scrub.

A number of flora and vegetation surveys have been conducted within and surrounding the application area. The following vegetation communities have been recorded within the application area (Keith Lindbeck and Associates, 2010):

SIMS-B – Stony Ironstone Mulga Shrublands on rocky slopes and crests, frequently on Banded Iron Formation (BIF). Described as an *Acacia aneura* var. *microcarpa* shrubland with *Grevillea berryana* occurring on rocky outcrops usually on BIF above *Prostanthera campbellii*, *Eremophila latrobei* subsp. *latrobei*, *E. punctata*, over scattered *Ptilotus schwartzii* and *Cheilanthes brownii*;

SIMS-M – Stony Ironstone Mid-slope Mulga Shrubland. Mid-slope habitat associated with iron rich outcrops. It consists of *Acacia aneura* var. *microcarpa*, with scattered *A. pruinocarpa* above *Eremophila latrobei* subsp. *latrobei*, *Dodonaea petiolaris*, *Harnieria kempeana* subsp. *muelleri*, *Eremophila flabellata*, with *E. jucunda* subsp. *jucunda*, and *Ptilotus rotundifolius*;

DRAS – Drainage Tract Acacia Shrubland. Occurs in areas where there is more concentrated run-on. It ranges from a scattered to close tall shrubland, sometimes woodland with understorey development inversely related to upper storey cover. Species common to DRAS are also common to other sclerophyll shrubland habitats;

ASET – Acacia Shrubland over *Eremophila* and *Triodia*. Mixed Acacia shrubland generally comprised of *Acacia aneura* over mid to low shrubs including *Eremophila punctata*, *E. latrobei*, *E. forrestii*, over *Triodia melvillei*;

SIMS-C – Stony Ironstone Mulga Shrublands on rocky slopes and crests. Commonly occurring upland habitat associated with ironstone or laterite; dominated by *Acacia aneura* var. *microcarpa*, with *Grevillea berryana*, above *Eremophila latrobei* subsp. *latrobei* often with *Stenanthemum petraeum*, *Eremophila punctata*, *E. jucunda* subsp. *jucunda*, and *Sida* sp. Golden calyces glabrous;

SIME – Stony Ironstone Mulga with *Eremophila forrestii* Shrubland. Commonly occurring mulga shrubland associated with the lower slopes of the hills and ridges in the survey area. It is dominated by *Acacia aneura* var. *microcarpa*, above *Eremophila forrestii* often with *E. punctata*, *E. flabellata* and *E. jucunda* subsp. *jucunda*;

SAES – Stony Acacia *Eremophila* Shrubland. Occurs as nearly level stony plains below areas of greater relief in both greenstone and granite dominated landscapes. Soils are generally shallow (<60 centimetres) red stony

earths. SAES can be summarised as an open *Acacia aneura* shrubland on stony red earth over scattered *Eremophila* species, *Sida ectogama*, *Ptilotus obovatus*, and *P. schwartzii*;

OALS - Open Acacia Shrubland on ironstone or laterite over low scattered shrubs. Varying habitat generally dominated by *Acacia quadrimarginea* and/or *A. balsamea* with *Acacia aneura* and often *Acacia cuthbertsonii* subsp. *cuthbertsonii* over *Scaevola spinescens*, *Eremophila latrobei* subsp. *latrobei*, *Ptilotus obovatus* and *E. flabellata*. OALS frequently occurs on lateritic low rises, low outcrops of weathered BIF, rough quartz slopes and upper breakaway surfaces; and

BRXS – Breakaway Mixed Shrublands. Varied habitat closely allied with BCLS (breakaway footslopes chenopod low shrubland) in that it shares the same physical environmental characteristics. It is generally a scattered *Acacia* species shrubland above *Eremophila* species, *Ptilotus obovatus*, with *Scaevola spinescens*, and often with emergent *Eucalyptus carnei* near the foot slope edges of the breakaway scarp. It has also been recorded as a moderately close tall to mid shrubland.

Clearing Description

John William Douth Open Pit Project.
GWR Group Limited has applied to clear up to 102 hectares within an application area of approximately 355 hectares for the purpose of mineral production. The project is located approximately 34 kilometres south-west of Wiluna in the Shire of Wiluna.

Vegetation Condition

Pristine: No obvious signs of disturbance (Keighery, 1994);

To

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

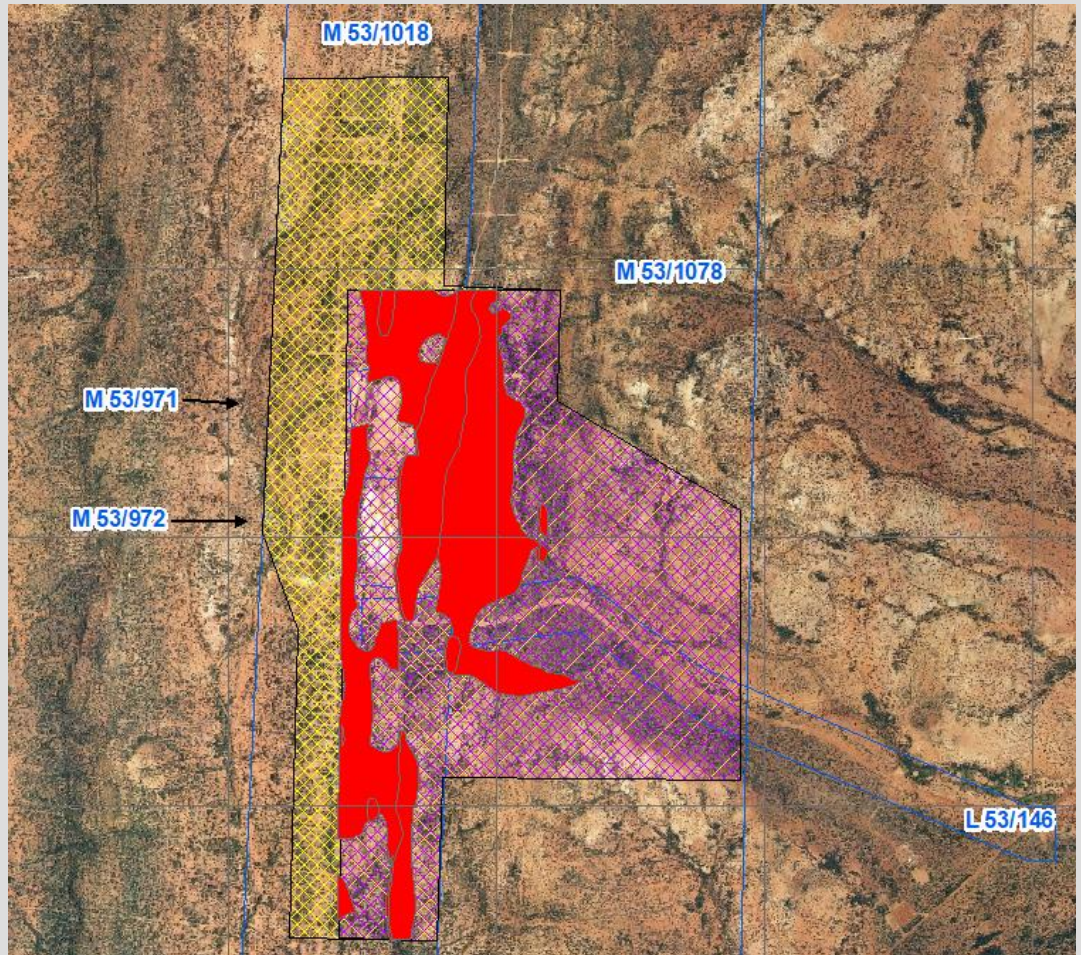
The purpose of the application is to develop the John William Douth Open Pit. This includes the construction of an open pit, waste rock dump, magazine, work area and ore storage (Keith Lindbeck and Associates, 2010).

The vegetation condition was assessed by a botanist from Recon Environmental.

Clearing permit CPS 4006/1 was granted by the Department of Mines and Petroleum (now Department of Mines, Industry Regulation and Safety) on 24 March 2011 and authorised the clearing of 64 hectares within a boundary of 249.4 hectares.

Clearing permit CPS 4006/1 was amended on 14 April 2016 for the purpose of extending the permit duration and updating the permit holder name.

GWR Group Limited have applied to amend CPS 4006/2 for the purpose of increasing the amount of clearing authorised under this Permit to 102 hectares, the amount of clearing authorised under Condition 4 to 46.45 hectares, and the permit boundary to 355 hectares.



3. Assessment of application against Clearing Principles

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

Comments

Proposal may be at variance to this Principle

Flora and vegetation surveys of the application area identified nine intact vegetation communities (Keith Lindbeck and Associates, 2019). The vegetation condition ranged from 'pristine' to 'excellent' (Keith Lindbeck and Associates, 2019). There have been a number of weed species recorded at the Wiluna West area (Recon Environmental, 2010).

Flora surveys of the Wiluna West area have recorded a total of 278 native flora taxa from 120 genera and 41 families (Keith Lindbeck and Associates, 2019). The Wiluna West banded ironstone formation has a relatively high level of floristic diversity compared to other banded ironstone formations (BIF) in the Midwest region (Government of Western Australia, 2007). Although the application area is not entirely on banded ironstone formation, there would still be expected to be a higher level of floral diversity than surrounding plain areas.

There are four species of Priority Flora recorded within the amendment area (Keith Lindbeck and Associates, 2019):

- *Sida sp. picklesiana* (Priority 3);
- *Homalocalyx echinulatus* (Priority 3);
- *Olearia mucronata* (Priority 3); and
- *Ptilotus luteolus* (Priority 3).

A targeted Threatened and Priority flora survey of the proposed Golden Monarch disturbance footprint was undertaken by NVS in August 2018. The survey involved assessment of the number of *S. picklesiana* within the disturbance footprint, and, within an 8 kilometre radius (NVS, 2018). The estimate of the regional population size of *Sida picklesiana* (P3) is very conservative as this species has not been intensely regionally surveyed. The current regional distribution of known populations of *Sida picklesiana* (P3) is approximately 160 km north, 70 km south, 67 km east and 180 km west of the proposed clearing area (Keith Lindbeck and Associates, 2019). Approximately 20% of the known population locally will be impacted (within 8 kilometre radius), with <18.89% of the known population impacted regionally (Keith Lindbeck and Associates, 2019). Although removal of the plants within the survey area is likely to have a low-medium impact on this species locally, the regional implications are considered insignificant.

The wider regional population records presented here have been collected mostly by following existing tracks and roads in the region. This limited form of searching has yielded significant results for the amount of time expended, which is perhaps an indication of the potential greater distribution and abundance of this taxon (NVS, 2018).

There are more than 118 population records of *Homalocalyx echinulatus* at Wiluna West with more than 19,000 individuals recorded across the entire project site (Keith Lindbeck and Associates, 2019). GWR expects the proposed clearing will require removal of 20 individual plants of *H. echinulatus* which comprises <1 % of the Wiluna West population (Keith Lindbeck and Associates, 2019).

The other two species have been recorded within the amended application area, however, infrastructure has been relocated to avoid disturbance to these species (Keith Lindbeck and Associates, 2019). It is considered unlikely that the proposed amendment will have a significant impact on Priority Flora in the region.

The application area is located within the boundary of the Priority Ecological Community (PEC) 'Wiluna West vegetation complexes (Banded Ironstone Formation)' (Keith Lindbeck and Associates, 2010; GIS Database). This PEC has an indicative boundary of an estimated 10,670 hectares (Keith Lindbeck and Associates, 2019). The proposed clearing is for 102 hectares, 16 of which has been identified as being associated with banded ironstone formation (BIF) (Keith Lindbeck and Associates, 2010). However, the whole application area is within the indicative boundary and it is likely that the vegetation communities are representative of the PEC (GIS Database).

The vegetation group SIMS-B is closely associated with BIF. Within the larger Wiluna West area, SIMS-B has a total area of 255 hectares, of which approximately 16 hectares of clearing will occur. This equates to 6.2% of the BIF in the Wiluna West area being impacted by the proposed clearing (Keith Lindbeck and Associates, 2019).

The vegetation group SIMS-M is described as Stony Ironstone Mid-slope Mulga Shrubland (Keith Lindbeck and Associates, 2019). This group is associated with iron rich outcrops, and shows a similar vegetation composition with both upland and lower slope vegetation communities. *Sida picklesiana* has been recorded within this vegetation group, but recent surveys conclude that *Sida* occurs widely throughout the region, and is not a habitat specialist, as they are known to occur in a variety of habitats including Banded Ironstone Formation, Ironstone/quartz gravels and Sandstone (Keith Lindbeck and Associates, 2019). SIMS-M has a total area of 96.6 hectares, of which approximately 29 hectares of clearing will occur. This equates to 31% of the SIMS-M vegetation group that has been mapped in the local area (Keith Lindbeck and Associates, 2019).

The additional clearing within the swales between the BIF ridges will not likely reduce the extent of vegetation communities or significantly reduce biodiversity on the BIF occurring within the region (Keith Lindbeck and Associates, 2019).

Fauna surveys conducted in the Wiluna West area have recorded a total of 62 bird, 18 mammal, one amphibian and 28 reptile species (Keith Lindbeck and Associates, 2010). Four of these species are of conservation significance and there is the potential for a further 6 species of conservation significance to occur within the application area. BIFs of the Midwest region tend to support a distinct assemblage of fauna in comparison to the surrounding flat areas of sandplain and woodland (Government of Western Australia, 2007). The number of fauna species recorded at Wiluna West is similar to that of other BIFs within the Midwest region (Government of Western Australia, 2007).

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

Methodology Government of Western Australia (2007)
Keith Lindbeck and Associates (2010)
Keith Lindbeck and Associates (2019)
NVS (2018)

GIS Database:

- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- 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 indigenous to Western Australia.

Comments Proposal is not likely at variance to this Principle

There have been four Level 2 Fauna surveys undertaken over the amended application area with the most recent being undertaken between July and August 2018 (Keith Lindbeck and Associates, 2019). These surveys covered the entire Wiluna West area including the application area. These surveys recorded 71 bird, 27 mammal, two amphibian and 40 reptile species from the Wiluna West area (Keith Lindbeck and Associates, 2019). Four of these are conservation significant fauna:

- Brush-tailed Mulgara (*Dasyercus blythi*) – Priority 4;
- Malleefowl (*Leipoa ocellata*) – Vulnerable;
- Long-tailed Dunnart (*Sminthopsis longicaudata*) – Priority 4; and
- Peregrine Falcon (*Falco peregrinus*) – Migratory.

Four Mulgara have been recorded in spinifex sandplain approximately 10 kilometres north of the application area (Keith Lindbeck and Associates, 2010). Additional searches by Martu elders found four old burrows, four active burrows and three areas with recent tracks (Keith Lindbeck and Associates, 2010). As there is not spinifex sandplain within the amended application area, the proposed clearing is not likely to impact this species.

Fresh Malleefowl footprints were first recorded at Wiluna West during fauna surveys in 2006 and 2007 (Keith Lindbeck and Associates, 2010). A targeted search in May 2008 recorded one active mound, numerous inactive mounds and tracks along the ridge (Keith Lindbeck and Associates, 2010). No targeted searches have been carried out within the permit area. Given that Malleefowl are known from the local area it is recommended that a targeted search be undertaken prior to clearing occurring.

The Long-tailed Dunnart has been recorded within four kilometres of the amended application area during surveys undertaken in 2007 and 2011 (Keith Lindbeck and Associates, 2019). This species is patchily distributed but can be locally common. It is found in the Pilbara, Murchison, Northeastern Goldfields, Ashburton and Gibson Desert regions of Western Australia (Keith Lindbeck and Associates, 2019). Surveys conducted in the Goldfields suggest that the distributional range of the Long-tailed Dunnart is far greater than previously mapped, and that they are present in low abundance over an extensive part of Western Australia, excluding the southern portion of the state (Terrestrial Ecosystems, 2011; KLA, 2012). As this species habitat is widely distributed outside the amended clearing area, the proposed clearing is unlikely to significantly impact this species.

Peregrine Falcons have been observed flying over the survey area (Ninox Wildlife Consulting, 2006). This species has a wide distribution across the state within a variety of habitats (Johnstone and Storr, 2004). It usually nests on ledges in cliffs and sometimes in hollow trees (Johnstone and Storr, 2004). No nests have been recorded and the application area is not likely to represent significant habitat for this species.

There are ten other conservation significant fauna species that have been identified as potentially occurring in the local area:

- Great Desert Skink (*Egernia kintorei*) – Vulnerable;
- Bilby (*Macrotis lagotis*) – Vulnerable;
- Princess Parrot (*Polytelis alexandrae*) – Vulnerable;
- Night Parrot (*Pezoporos occidentalis*) – Endangered;
- Bush-stone Curlew (*Burhinus grallarius*) – Priority 4;
- Striated Grasswren (*Amytornis striatus*) – Priority 4;
- Fork-tailed Swift (*Apus pacificus*) – Migratory;
- Oriental Plover (*Charadrius veredus*) – Migratory;
- Grey Wagtail (*Motacilla cinerea*) – Migratory;
- Yellow Wagtail (*Motacilla flava*) – Migratory.

Given the lack of preferred habitat and these species ecology, the application area is not likely to represent significant habitat. The habitats present are regionally widespread and not restricted to the application area. From the result of fauna surveys in the Wiluna West area none of the habitats surveyed within the application area appear to have any conservation significance (Keith Lindbeck and Associates, 2019; Ninox Wildlife Consulting, 2006).

A Short Range Endemic (SRE) survey was conducted at Wiluna West in October 2006. The search found ten species of spider, however, none of these were identified as being an SRE (Keith Lindbeck and Associates, 2010).

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

Methodology Johnstone and Storr (2004)
 Keith Lindbeck and Associates (2010)
 Keith Lindbeck and Associates (2019)
 KLA (2012)
 Ninox Wildlife Consulting (2006)
 Terrestrial Ecosystems (2011)

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, rare 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 (Keith Lindbeck and Associates, 2019).
 The vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.
 Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Keith Lindbeck and Associates (2019)
 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 (Keith Lindbeck and Associates, 2019).
 Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Keith Lindbeck and Associates (2019)
 GIS Database:
 - Threatened and Priority Ecological Communities Boundaries

(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 Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99% of the Pre-European vegetation remains (see table) (GIS Database, Government of Western Australia, 2019).

The vegetation of the application area has been mapped as the following Beard vegetation association (GIS Database):

202: Shrublands; mulga & *Acacia quadrimarginea* scrub.

According to Government of Western Australia (2019) approximately 99% of this Beard vegetation association remains at both a state and bioregional level. The local area has also been largely uncleared. Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within 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	~99.73	Least Concern	7.79
Beard vegetation associations – WA					
202	448,529	448,344	~99.96	Least Concern	22.92
Beard vegetation associations – Murchison Bioregion					
202	339,743	339,641	~99.97	Least Concern	21.26

* 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 numerous ephemeral and ill-defined watercourses within the amended application area (GIS Database). These watercourses only flow following periods of heavy rain (Keith Lindbeck and Associates, 2010). The vegetation community 'DRAS – Drainage Tract Acacia Shrubland' appears to be associated with the ill-defined drainage lines of the application area (Keith Lindbeck and Associates, 2010; GIS Database).

Given this vegetation community is associated with a watercourse, the proposed clearing is at variance to this Principle. However, species common to this vegetation community are also common to other sclerophyll shrubland communities in the local area (Keith Lindbeck and Associates, 2010). This vegetation type is common throughout the Wiluna West and wider area (Keith Lindbeck and Associates, 2010). As they are ill-defined and only sporadically flow, the proposed clearing is not expected to have a significant impact on local watercourses.

Methodology Keith Lindbeck and Associates (2010)

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 is not likely to be at variance to this Principle

The application area has been mapped as occurring on the Gabanintha and Sherwood land systems (GIS Database). The Gabanintha land system is characterised by whitestone hill ranges and very open mulga (Mabbutt et al., 1963). The Sherwood land system is characterised by widespread stony granite plains with laterite breakaways (Mabbutt et al., 1963). The alluvial fan unit of the Sherwood land system is prone to shallow gullying (Mabbutt et al., 1963).

The Wiluna West Range is similar to most Banded Ironstone Formations (BIF's) of the Yilgarn Craton which are characterised by a stony surface mantle which provides effective protection against soil erosion (Government of Western Australia, 2007). The disturbance or removal of this stony mantle may initiate soil erosion. However, given the poor soil coverage on BIF's there is likely to be a minimal amount of erodible material within the application area (Government of Western Australia, 2007).

Given the application area's elevated position in the landscape the proposed clearing is not likely to cause any water logging or an increase in the ground water level causing salinity.

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

Methodology Government of Western Australia (2007)
Mabbutt et al. (1963)

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 ex-pastoral station Mooloogool Station, located approximately 45 kilometres 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

With an average annual rainfall of 255.6 millimetres and an average annual evaporation rate of 3,800 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2019; GIS Database). Being located on a range, the topography within the application area facilitates surface water runoff as opposed to ponding, hereby reducing the risk of flooding.

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

Methodology BoM (2019)

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 April 2019 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 (WC07/3) over the area under application (DPLH, 2019). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are two registered Aboriginal Sites of Significance within the application area (DPLH, 2019). 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 (2019)

4. References

- BoM (2019) Bureau of Meteorology Website – Climate Data Online, Wiluna. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 4 June 2019).
- DPLH (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 4 June 2019).
- 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.
- Government of Western Australia (2007) Strategic Review of the Conservation and Resource Values of the Banded Iron Formations of the Yilgarn Craton. Published jointly by the Department of Environment and Conservation and the Department of Industry and Resources, Perth, Western Australia.
- 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>
- Johnstone, R.E and Storr, G.M (2004) Handbook of Birds of Western Australia Vol. I, Western Australian Museum, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Keith Lindbeck and Associates (2010) Supporting document for clearing permit application: Golden West Resources – John William Douth Pit. Report prepared for Golden West Resources, by Keith Lindbeck and Associates, September 2010.
- Keith Lindbeck and Associates (2019) Supporting document for clearing permit application: Golden Monarch Gold Project & JWD Iron Ore Project. Report prepared for GWR Group Limited, by Keith Lindbeck and Associates, April 2019.
- Mabbutt JA, Litchfield WH, Speck NH, Sofoulis J, Wilcox DG, Arnold JA, Brookfield M and Wright RL(1963). General report on the lands of the Wiluna-Meekatharra area, Western Australia, 1958.CSIRO Land Research Series No. 7.
- NVS (2018). *Targeted Counts of Sida picklesiana (P3) within the Wider Local Populations on the Herbert Lukin Range (Wiluna)*. Report prepared for GWR, by Native Vegetation Solutions, 19 September 2018.
- Ninox Wildlife Consulting (2006) A Vertebrate Fauna Survey of the Wiluna West Project Area, Western Australia. Report prepared for Golden West Resources, by Ninox Wildlife Consulting, November 2006.

5. Glossary

Acronyms:

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)
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government

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)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , 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.