



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4037/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Jabiru Metals Limited**

1.3. Property details

Property: Mining Lease 37/44
Mining Lease 37/1132
Mining Lease 37/1153
Mining Lease 37/1290
Miscellaneous Licence 37/189
Local Government Area: Shire of Leonora
Colloquial name: Jaguar Base Metals Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 3 February 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Beard vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia and are useful to look at vegetation in a regional context.</p> <p>The following Beard vegetation associations have been mapped within the application area (GIS Database):</p> <p>18: Low woodland; Mulga (<i>Acacia aneura</i>); and 28: Open low woodland; Mulga. (Shepherd, 2009).</p> <p>The application area occurs within the Jaguar and Bentley areas on the Jabiru mine site. Several desktop and field based studies have been conducted over the years within the application area vicinity. The surveys were carried out by Jims Seeds, Weeds & Trees (2004), Ecotec (2007a); Outback Ecology Services (2009) and Jaguar Metals Limited (Jabiru Metals) (2010).</p> <p>Outback Ecology Services (2009) reported that the application area was dominated by one vegetation association:</p> <p>Low (Open) Woodland of <i>Acacia aneura</i> over Open Shrubland of <i>Acacia</i> and <i>Eremophila</i> spp. over Low Open Shrubland of <i>Eremophila</i> spp.</p> <p>Ecotec (2007a) also reported that Eucalypts dominate the vegetation along creek lines, while the laterite hills and breakaways are generally very sparsely vegetated.</p> <p>Stony rises are common as were drainage areas and small braided creek lines (Jabiru Metals, 2010).</p> <p>Heavy grazing by goats, rabbits, stock and other animals have significantly reduced the understorey and shrub layers, leading to a dominance of <i>Eremophila margarethae</i> within the understorey. It is likely that the species list produced over the course of the surveys</p>	<p>Jabiru Metals Limited (Jabiru Metals) has applied to clear up to 100 hectares of native vegetation within an area of approximately 305.8 hectares (GIS Database). The application area is located approximately 65 kilometres south east of Leinster and 48 kilometres north west of Leonora (GIS Database).</p> <p>The application is for the Jaguar Base Metals Project. The initial clearing permit CPS 233/1 was issued to Jabiru Metals in April 2005 for the construction and installation of mining and processing infrastructure including roads, power and water lines, treatment plant, workshops, waste dumps and abandonment bunds within the Jaguar area. The installation of this infrastructure was mostly undertaken in 2005-2006. The current application is to clear native vegetation for the purposes of ongoing mineral production and associated infrastructure requirements (Jabiru Metals, 2010).</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994);</p> <p>To</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).</p>	<p>The vegetation condition and description is based on the flora and vegetation surveys conducted by Jims Seeds Weeds & Trees (2004) and Outback Ecology Services (2009).</p>

would be more comprehensive had heavy grazing not occurred. Tracks, drilling and other mineral exploration-related activities have had localised impacts (Jabiru Metals, 2010).

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

The application area occurs within the East Murchison (MUR1) sub-region of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This sub-region is characterised by its internal drainage, and extensive areas of elevated red desert sand plains with minimal dune development. Salt lake systems are associated with the occluded Paleodrainage system. Vegetation is dominated by Mulga Woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and Halosarcia shrublands (CALM, 2002).

Numerous flora and fauna studies (Jim Seeds, Weeds & Trees, 2004; Biota 2005; IRCE, 2005; Ecotec, 2007a; Ecotec, 2007b; Ecotec, 2009; Outback Ecology Services, 2009) have been conducted over the Jabiru Metals mine site for both the Bentley and Jaguar areas. These involved both desktop studies and field surveys.

The application area lies within the north-eastern Goldfields Region which may support over 250 species of native and introduced fauna (Pringle et al., 1994; Ecotec, 2009). A desktop review of available resources indicates 92 species of reptile, 10 frog species, 120 species of bird and 31 species of mammal are known to exist in the northern Goldfields (Ecotec 2007b). The application area and its surrounds are likely to have supported many of these species in the past, however pastoralism, mining, introduced animals and other human activity has led to a recognised decline in biological diversity (Ecotec, 2009).

Field based studies have been undertaken into the fauna present or likely to be present at the mine site by Biota (2005) and Ecotec (2007b and 2009). The Biota fauna survey (2005) recorded a total of 58 vertebrate species. This included: one amphibian, eleven reptiles, 36 avifauna four native mammals and 6 introduced mammals (Biota, 2005).

The flora and vegetation surveys conducted across the vicinity of the application area recorded between 102 taxa to 151 taxa.

The vegetation recorded within the application area was described as: Low (Open) Woodland of *Acacia aneura* over Open Shrubland of *Acacia* and *Eremophila* spp. over Low Open Shrubland of *Eremophila* spp. (Jabiru Metals, 2010). Stony rises are common as are drainage areas and small braided creek lines (Jabiru Metals, 2010).

The database searches recorded a number of Priority Flora species as potentially occurring within the application area. Of these, the following four Priority Flora species were recorded during the survey:

- *Phyllanthus baeckeoides* (P3);
- *Calytrix erosipetala* (P3);
- *Calytrix uncinata* (P3); and
- *Baeckea* sp. Melita Station (P4) (Outback Ecology Services, 2009; Ecotec, 2007a; IRCE, 2005; Jim, Seeds, Weeds & Trees, 2004).

All four species have wide distributions across the Murchison bioregion (WA Herbarium, 1998).

Small communities of *Phyllanthus baeckeoides* (P3) occur within the application area, primarily on rocky hills where it grows in association with *Acacia aneura* and *Acacia quadrimarginea* (Jabiru Metals, 2010). Surveys have indicated that this species is locally abundant in the Teutonic bore and Jaguar Camp area (Jabiru Metals, 2010). This species has an average population density of approximately 2370 plants/hectare and was recorded in eleven locations within the application area vicinity (IRCE, 2005).

Specimens of *Calytrix erosipetala* have been collected from rocky rises in the far south-west of the Bentley project area and was locally abundant. This population was recorded approximately 1.4 kilometres to the south of the application area (Outback Ecology Services, 2009).

Calytrix uncinata was found in four locations within the application area within M37/44 (IRCE, 2005). It was also located within rocky hills, located near the Jaguar and Teutonic Bore mine site and camp (Ecotec, 2007a).

Baeckea sp. Melita Station was previously recorded by Jim Seeds, Weeds & Trees (2004) within M37/1153 within the plains on loam soils. It has not been recorded since this survey, however may potentially inhabit the application area.

In addition, *Santalum spicatum* (Sandalwood) was recorded approximately 17 kilometres north of the application area (Ecotec, 2007a) and is known to be scattered throughout the area. Although not Priority listed, this is a managed species and cannot be disturbed without approval from the Department of Environment and

Conservation.

In relation to the *Phyllanthus baeckeoides* and *Calytrix uncinata* which were located within the application area, it is unlikely that these Priority Flora species will be impacted by the proposed mining related activities, as it is understood that most of the populations were not located within or downstream of the application area. It is understood that Jabiru Metals currently have a management plan and educational material for mining personnel (Jabiru Metals, 2010) to protect Priority Flora species.

Five introduced flora species, *Anagallis arvensis* var. *caerulea* (Blue Pimpernel), *Citrullus lanatus* (Afghan or Pie Melon), *Cucumis myriocarpus* (Paddy Melon) *Acetosa vesicaria* (Ruby dock) and *Emex australis* (Double Gee) have been recorded within the flora and vegetation survey areas (Outback Ecology Services, 2009; Jim Seeds, Weeds & Trees, 2004). None of these species are listed as a Declared Plant (*Agriculture and Related Resources Protection Act, 1976*). The presence of weeds has the potential to reduce the biodiversity of an area, and care should be taken to ensure that weeds are not spread as a result of the proposed clearing. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

The majority of the application area occurs within the Tarmoola pastoral lease (GIS Database). All flora and fauna surveys conducted throughout the area have recorded that there has been heavy grazing by goats, rabbits, stock and other animals. Also, tracks, drilling and other mineral exploration related activities have had localised impacts (Jabiru Metals, 2010). This has significantly reduced the understory and shrub layers leading to a dominance of *Eremophila margarethae* within the understory (Jabiru Metals, 2010). As a result this has reduced the diversity of the understorey.

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

Methodology Biota (2005)
CALM (2002)
Ecotec (2007a)
Ecotec (2007b)
Ecotec (2009)
IRCE (2005)
Jim, Weeds, Seeds & Trees (2004)
Jabiru Metals (2010)
Outback Ecology Services (2009)
WA Herbarium (1998)
GIS Database:
- IBRA WA (Regions - Sub-regions)
- Pastoral Leases

(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 to be at variance to this Principle

Three potential fauna habitats are present within the application area: drainage lines, flats and stony hills (Ecotec, 2009).

Several well defined ephemeral creek lines and less defined drainage channels are a significant feature of the landscape. These typically have denser vegetation, large trees (i.e. *Eucalyptus camaldulensis*) providing shelter, potential nesting sites for birds, sources of food for a range of animals and a source of water for at least part of the year (Ecotec, 2007b; 2009 and Jabiru Metals, 2010). All drainage lines and several creeks are ephemeral (Ecotec, 2009). However soaks in the creek can hold water throughout the year, providing an important resource for fauna. Animal tracks (predominately kangaroos) were recorded in areas leading to the water source (Ecotec, 2009).

The landscape in the surveyed area is dominated by flat plains consisting of predominantly Mulga (*Acacia aneura*) woodland and shrubs with sparse understorey vegetation (Ecotec, 2009). The sparse understorey vegetation and/or ground cover throughout the mulga woodland/shrubland habitat provides little cover for small reptiles and mammals (Ecotec, 2009).

Lateritic breakaways and low hills are found throughout the application area, with a series of north-south trending rocky hills apparent from the Jaguar Camp to the Teutonic Bore mine site (Ecotec, 2009). The soil was either stony or very hard thus precluding many burrowing species (Ecotec, 2009). Stony hill habitat is found in only a few locations within the application area. Soil is scarce and vegetation is correspondingly sparse in these areas.

Searches of the Department of Environment and Conservation and Environment Protection and Biodiversity Conservation databases by Biota (2005) and Ecotec (2007b and 2009) of the application area and its surrounds indicated that up to twelve species of Threatened Fauna and four Migratory bird species may potentially occur in the application area:

Of the conservation listed species the Peregrine Falcon was the only Threatened Fauna recorded during the

surveys. This was found in the vicinity of the Teutonic Bore pit, located within the application area (Biota, 2005). This species occurs across most of Australia in a wide variety of habitats and has a large home range typically of 20-1500 square kilometres (Ecotec, 2009). The proposed clearing area of 100 hectares is unlikely to have any significant impact on this species considering the large area of its home range.

The Rainbow Bee-eater is listed as a Migratory species under the *Environment Protection and Biodiversity Act 1999*, and is found in a variety of habitats across most of Australia (Ecotec, 2009). They are usually observed near water where they nest in burrows dug into suitable soil nearby. The species may be an occasional visitor to the area but is most likely to be found near larger pools or dams (Ecotec, 2009).

Two priority species of reptile, the Woma (*Aspidites ramsayi*) and the Carpet Python (*Morelia spilota* subspecies *imbricata*) are possible inhabitants of the area, although neither were recorded in the Threatened Fauna database searches (Ecotec, 2009). Both are now considered to be threatened, primarily due to loss of habitat. They are known to use hollow trunks and branches of large trees (Ecotec, 2009).

The fauna habitats recorded within the survey area are well represented within the broader region (GIS Database) and the Murchison bioregion remains largely uncleared (Shepherd, 2009). The application area is immediately adjacent to an operational mine site, and the surrounding area has been largely disturbed as a result of grazing by predominantly sheep and feral goats (Ecotec 2009). Therefore it is not expected that the application area represents significant habitat for fauna.

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

Methodology Biota (2005)
Ecotec (2007b)
Ecotec (2009)
Jabiru Metals (2010)
Pringle et al. (1994)
Shepherd (2009)
GIS Database:
- 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

A search of the Department of Environment and Conservation's Declared Rare Flora and Priority Flora species database was conducted by Outback Ecology Services (2009) of the Bentley area. This area included parts of the application area within Mining Leases 37/1153 and 37/1132. A 50 kilometre radial search of the coordinates 28 27'54.28"S, 121 10'13.06"E was conducted (Outback Ecology Services, 2009). Additionally the Environmental Protected Matters Search Tool was interrogated utilising a 50 kilometre radial search of the same area (Outback Ecology Services, 2009).

The database searches of the application area showed that no Declared Rare Flora (DRF) as listed under the *WA Wildlife Conservation Act, 1950*, or threatened flora species as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC) were recorded within 50 kilometres of the application area (GIS Database; Outback Ecology Services, 2009).

No DRF were recorded during the flora and vegetation survey of the application area and none would be expected to occur (Outback Ecology Services, 2009).

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

Methodology Outback Ecology Services (2009)
GIS Database:
- Declared Rare and Priority Flora List

(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 records of Threatened Ecological Communities (TECs) within the application area (GIS Database) or any within 40 kilometres of the survey area (Outback Ecology Services, 2009). All the flora and vegetation surveys conducted within the application area did not identify any habitats representative of TECs (Jims Seeds, Weeds & Trees, 2004; Ecotec, 2007a; Outback Ecology Services 2009).

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

Methodology Ecotec (2007a)
Jims Seeds, Weeds & Trees (2004)

Outback Ecology Services (2009)
 GIS Database:
 - Threatened Ecological Sites Buffered

(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 Eastern Murchison sub-region of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). According to Shepherd (2009), approximately 100% of the Pre-European vegetation remains within the Murchison bioregion (see table).

The vegetation of the application area has been broadly mapped as Beard vegetation associations:
 18: Low woodland; Mulga (*Acacia aneura*); and
 28: Open low woodland; Mulga.

According to Shepherd (2009) approximately 100% of these Beard vegetation associations remain at both a state and bioregional level. 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 IUCN Class I-IV Reserves
IBRA Bioregion Murchison	28,120,586	28,120,586	~100	Least Concern	1.06
Beard vegetation associations - State					
18	19,892,305	19,890,275	~99.9	Least Concern	2.13
28	395,895	395,895	~100	Least Concern	0
Beard vegetation associations - Bioregion					
18	12,403,172	12,403,172	~100	Least Concern	0.37
28	224,292	224,292	~100	Least Concern	0

* Shepherd (2009)

** 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)
 Shepherd (2009)
 GIS Database:
 - Pre-European Vegetation
 - IBRA WA (Regions - Sub-regions)

(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 may be at variance to this Principle

There are no permanent watercourses or wetlands within or in close proximity to the application area (GIS Database).

There are several minor ephemeral watercourses that pass through the application area (GIS Database). It is expected that these watercourses will only flow during significant rainfall.

Jims Seeds, Weeds & Trees (2004) stated that the vegetation in the shallow drainage lines was similar to the surrounding vegetation however also supported a rich and diverse ephemeral community and *Eucalyptus camaldulensis* (River Red Gum) commonly associated with watercourses and billabongs (Western Australian Herbarium, 2010).

This description would suggest that the ephemeral watercourses support riparian vegetation despite the area experiencing an average rainfall of approximately 234 millimetres/year (BoM, 2010). Information from the Bureau of Meteorology website would suggest most rainfall is experienced in late summer and autumn when weather patterns are subject to tropical influences, although the area can experience limited rainfall at any

time.

Based on the above, the proposed clearing may be at variance to this Principle. Potential impacts to riparian vegetation as a result of the proposed clearing may be minimised by the implementation of a flora management condition.

Methodology BoM (2010)
Western Australian Herbarium (2010)
Jabiru Metals (2010)
Jims Seeds, Weeds & Trees (2004)
GIS Database:
- Hydrography, linear
- Ramsar Wetlands
- Rivers

(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 falls within the north-eastern Goldfields, as defined by Pringle et al. (1994) and is mapped as the Teutonic, Bevon, Jundee and Violet land systems (GIS Database).

The Bevon land system is described as irregular low ironstone hills, with stony lower slopes supporting mulga shrublands (DAWA, 2005). Within this land system the soils on breakaway slopes and drainage tracts are susceptible to soil erosion, particularly if perennial shrub cover is substantially reduced or the soil surface is disturbed.

The Jundee land system is described as hardpan plains with ironstone gravel mantles, supporting mulga shrublands (DAWA, 2005). Soil erosion can be initiated where tracks and diversion structures harvest water on loping land (DAWA, 2005). Widespread shrub death can be caused by water starvation where flow regimes are altered by roads and other earthworks (DAWA, 2005).

The Violet land system is described as undulating stony and gravelly plains and low rises, supporting mulga shrublands (DAWA, 2005). This land system has abundant mantles which provide effective protection against soil erosion over most of the land system. In areas which have been disturbed the soil becomes moderately susceptible to soil erosion. The narrow drainage tracts within this system are also moderately susceptible to soil erosion if disturbed (DAWA, 2005).

The Teutonic land system is described as hills and stony plains on acid volcanic rocks, supporting Acacia shrublands. This land system is generally not susceptible to soil erosion, partly as a consequence of extensive stone mantles (DAWA, 2005).

The land systems found within the application area are moderately protected from erosional forces as they have a stony mantle (DAWA, 2005). However, the removal of this stony mantle during the clearing process is likely to initiate some temporary erosion. Impedances to water flows from the construction of infrastructure may cause water starvation of vegetation downstream and thus loss of vegetation vigour (DAWA, 2005).

In relation to a previous clearing permit application (CPS 686/3) for an area adjacent to the application area the Commissioner for Soil and Land Conservation advised that the clearing may be at variance to this Principle (DAWA, 2005). Accelerated soil erosion is unlikely to occur if sensitive areas such as drainage lines are avoided or adequate provision is made to maintain the natural surface flow regime (DAWA, 2005). Furthermore, the Commissioner advised that conditions be imposed on any permit granted to avoid sensitive areas and mitigate and prevent soil erosion and loss of vegetation (DAWA, 2005).

Jabiru Metals (2010) informed that there has been extensive rangeland grazing by sheep and feral animals which has largely destroyed the understory in areas away from creek lines, therefore the areas proposed to be cleared are already degraded. Further degradation and exposure to wind and water erosion will be avoided through minimising the clearing required, managing silt runoff and ongoing rehabilitation works during the life of the mine. Topsoil and vegetative material from clearing activities will be stockpiled for closure and rehabilitation purposes (Jabiru Metals, 2010).

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

Methodology DAWA (2005)
Jabiru Metals (2010)
Pringle et al. (1994)
GIS Database:
- Rangeland Land System Mapping

(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

The application area is not located within any conservation areas or Department of Environment and Conservation (DEC) managed lands (GIS Database).

The application area is located approximately 80 kilometres east of the former Bulga Downs Pastoral Lease which is now managed by DEC (GIS Database). At this distance, it is not likely that the vegetation within the application area would act as a buffer or be important as an ecological linkage to this conservation area.

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

Methodology GIS Database:
- DEC 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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The groundwater salinity within the application area is between 1,000 - 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database) and is not expected to be altered as a result of the proposed clearing.

There are no permanent water bodies or watercourses within the application area (GIS Database). There are several minor, ephemeral drainage lines located within the application area (GIS Database). It is expected that these would only flow after or during significant seasonal rainfall events, or substantial localised falls.

With an average annual rainfall of approximately 234 millimetres (BoM, 2010) and an annual evaporation rate of 3,400 millimetres (GIS Database) there is little surface flow during normal seasonal rains. It is only during major rainfall events (summer and autumn) that there is any significant surface flow. Surface flow during these events tends to be relatively fresh.

With high annual evaporation rates and low annual rainfall there is little recharge into regional groundwater, that at this site is considered brackish (between 1,000 milligrams/litre and 3,000 milligrams/litre) (GIS database). The proposed clearing of 100 hectares of native vegetation for this proposal is unlikely to have any significant impact on regional groundwater considering the magnitude of the Yilgarn-Goldfields Groundwater Province (approximately 300,000 square kilometres) (GIS Database).

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

Methodology BoM (2010)
GIS Database:
- Evaporation Isopleths
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSA's)

(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 approximately 234 millimetres (BoM, 2010) and an annual evaporation rate of 3,400 millimetres (GIS Database) there is little surface flow during normal seasonal rains. It is only during major rainfall events that there is a likelihood of flooding which would occur within the broad valleys and lake systems of the region, most likely Lake Raeside 40 kilometres to the south of the proposed clearing area. The proposed clearing of 100 hectares is unlikely to affect the incidence or intensity of flooding.

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

Methodology BoM (2010)
GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments-Catchments

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 22 November 2010 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to this application regarding aboriginal heritage issues. A written response was provided on the matters raised.

There is one registered Aboriginal Site of Significance within the application area and several other sites within close proximity to the application area (GIS Database). 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.

There are no Native Title Claims over the area under application (GIS Database). 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*.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water, 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 GIS Database:
- Native Title Determined
- Native Title Federal
- Native Title NNTT
- Sites of Aboriginal Significance

4. References

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- Western Australian Herbarium (1998) Florabase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/>.

5. Glossary

Acronyms:

BoM Bureau of Meteorology, Australian Government
CALM Department of Conservation and Land Management (now DEC), Western Australia

DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
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
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
s.17	Section 17 of the <i>Environment Protection Act 1986</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005. Department of Conservation and Land Management, Como, Western Australia*} :-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [*Wildlife Conservation Act 1950*] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna. Department of Conservation and Land Management, Como, Western Australia*} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known

from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.