



## 1. Application details

### 1.1. Permit application details

Permit application No.: 686/1  
Permit type: Purpose Permit

### 1.2. Proponent details

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

### 1.3. Property details

Property: M37/44  
M37/1153  
M37/1132  
E37/258  
E37/512  
P37/4326  
Local Government Area: Shire Of Leonora  
Colloquial name: Jaguar Base Metals Deposit

### 1.4. Application

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

## 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>The proposed clearing area has been mapped as Beard Vegetation Association 18: Low woodland; mulga (<i>Acacia aneura</i>) and Beard Vegetation Association 28: Open low woodland; mulga. (Shepherd et al, 2001).</p> <p>Jims Seeds, Weeds &amp; Trees (2004) identified the following vegetation communities: Low Mulga Woodlands, Mulga Woodland Plains, Mulga Flats and Open Mulga Woodlands.</p>	<p>Jabiru Metals Ltd has applied to clear up to 100 ha for the purpose of access roads, power and water lines, treatment plant site, workshops and infrastructure, waste dumps, abandonment bunds, drill pods and open pits on its Jaguar Base Metals Deposit. The application area is 43 km from North-North West of Leonora. Vegetation to be cleared consists primarily of mulga (<i>Acacia aneura</i>) associated with flats and rocky outcrops. Some existing disturbed areas occur as a result not only of historical grazing regimes but also as a result of mining activities. (Jims Weeds Seeds &amp; Trees 2004).</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p>	<p>The vegetation description was based on the flora survey report and photographs of the project area provided by Jims Seeds Weeds and Trees (2004). The application is to clear up to 100 ha within a defined application area totalling approximately 3879 ha.</p>

## 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 is not likely to be at variance to this Principle**

The proposed clearing area falls within the Eastern Murchison IBRA Sub-region. In 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002' (CALM, 2002), the sub-region is described as being characterised by its internal drainage, and extensive areas of elevated red desert sandplains 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. The area experiences an arid climate, with an average yearly rainfall of ~ 200 mm (CALM, 2002). The region remains at 100% of its pre-european vegetation extent (Shepherd et al, 2001).

The proposed clearing area is part of Tarmoola Station (GIS database) and all habitats are degraded to some degree from sheep and feral goat grazing. Jims Seeds Weeds and Trees (2004) described the proposed clearing area as Mulga Woodlands associated with red loams over siliceous hardpan, rock outcrops and drainage channels. This is consistent with the IBRA description for the subregion. Jims Seeds Weeds and

Trees (2004) advise that most vegetation communities are in good condition with the exception of the old camp area which has been subject to weed invasion. Both Beard vegetation associations found within the application area are widespread throughout the Murchison IBRA Region (GIS database).

The Eastern Murchison subregion is rich and diverse in fauna species, however most species are wide ranging and usually occur in at least one, and often several, adjoining subregions. Following a fauna survey over the application area, Biota Environmental Services (2005) noted that soil and vegetation disturbance and disruption to drainage caused by previous mining activity is evident. Very little micro habitat existed for small reptiles and mammals and most sites had minimal understorey and/or ground cover. The soil was either stony or very hard thus precluding many burrowing species. It could therefore be concluded that the application may not be as diverse in fauna species than at other undisturbed sites in the bioregion.

It is unlikely that the biodiversity of the area subject to the clearing proposal is higher than other native vegetation within the local area or within the biogeographical sub-region. DEC (2006) have advised that the proposal is not likely to be at variance to this principle.

Given all of the above, the proposal is not likely to be at variance to this principle.

**Methodology** Biota Environmental Services (2005)  
CALM (2002)  
DEC (2006)  
GIS database: Pastoral Leases – DOLA 10/01  
Pre-european vegetation – DA 01/01  
Jims Seeds, Weeds And Trees (2004)  
Shepherd et al (2001)

**(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**

A fauna survey was conducted by Biota Environmental Sciences over the application area between 29 November and 6 December 2004. The survey assessed the occurrence of vertebrate taxa, short range endemic invertebrates and stygofauna.

The survey area was dominated by mulga vegetation which was further classified into three fauna habitats - drainage lines, flats and stony hills. All three fauna habitats were sampled using a total of six intensive trapping grids (three grids for drainage lines, one for flats and two for Stony Hills) with five trap nights for most sites. The project area falls within the Tarmoola Pastoral Lease (GIS Database) and Biota Environmental Services (2005) stated that all habitats were degraded to some degree from sheep and feral goat grazing. In addition, soil and vegetation disturbance and disruption to drainage caused by previous mining activity was evident. Very little micro habitat existed for small reptiles and mammals and most sites had minimal understorey and/or ground cover. The soil was either stony or very hard thus precluding many burrowing species (Biota Environmental Services (2005).

One species listed under the Wildlife Conservation Notice 2005, the Peregrine Falcon (*Falco peregrinus*) (S4, fauna that is otherwise specially protected) was recorded during the fauna survey. Two birds were observed hunting over the old mine pit each day of the survey. This species occurs across most of Australia in a wide variety of habitats and has a large home range typically of 20-1500 sq km. The area of disturbance associated with the proposed clearing area should not have an adverse effect on this species considering the large area of its home range.

According to GIS databases, the only recording of rare or priority fauna species within a 50 km radius of the application area is a Bilby sighted in 2001, approximately 20 km north west from the application area.

Biota Environmental Services (2005) identified the following scheduled species that potentially could occur within the application area:

The Bilby (*Macrotis lagotis*) (S1, Fauna that is rare or likely to become extinct) which was sighted in 2001 approximately 20 kilometres to the north west of the camp area (Biota Environmental Services, 2005). This is the record located in the GIS database search stated above. No signs of Bilby activity were observed during the fauna survey and Biota Environmental Services (2005) states that it is unlikely to be present given the degraded nature of the site and the presence of herbivorous competitors.

The Malleefowl (*Leipoa ocellate*) (S1) was recorded in 1998 near the project area (Biota Environmental Services, 2005). No Malleefowl mounds were located during the survey. Due to the degraded nature of the area and the lack of nest building material Biota Environmental Services (2006) states that nesting is unlikely to occur in the vicinity of the mine site. Home ranges are typically large and the loss of foraging habitat is unlikely to be significant in a regional context. The conservation of this species is unlikely to be impacted by the proposed clearing.

A record of the Giant Desert Skink (*Egernia kintorei*) (S1) occurs approximately 120 km North of the application area (GIS database), however no evidence of that species was found during the Biota Environmental Services fauna survey. Information provided on the DEH website (2006) states that the Giant Desert Skink generally occurs on red sandplains and sand ridges, habitat not found within the proposed clearing area. Given the degraded nature of the site and the lack of suitable habitat, it is unlikely to be present in the application area.

The Mulgara (*Dasyercus cristicauda*) (S1) has been previously recorded from the general area (Biota Environmental Services, 2005). This species is distributed from the eastern Pilbara to central Australia. It's preferred habitat is hummock spinifex grasslands. Its presence within the application area is extremely unlikely because of the lack of suitable habitat (spinifex).

A Priority 1 Species of Fairy Shrimp (*Branchinella apophysata*) has been recorded at Mt Margaret approximately 100 km east of the proposed clearing area. Nothing is known of its habits or ecological requirements. Biota Environmental Services (2006) tested two bores within the proposed clearing area for the presence of stygofauna but did not find any species. Biota Environmental Services states that more comprehensive access to the aquifer would be required to provide any further comment on stygofauna occurrence in the locality.

The Biodiversity Coordination Section of the Department of Environment and Conservation (DEC, 2006) have advised that the proposed clearing is not likely to be at variance to this principle.

**Methodology** Given all of the above, the proposed clearing is not likely to be at variance to this principle.  
Biota Environmental Services (2005)  
DEC (2006)  
DEH (2006)  
GIS Database: Threatened Fauna - CALM 30/9/05

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

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

According to existing GIS databases, no rare or priority flora species are known to occur within the application area. Several priority species are known to occur within a 50 km radius of the application area.

A flora survey conducted by Jims Seeds, Weeds & Trees (2004), identified three species of priority flora within the survey area - *Phyllanthus baeckeoides* (P1), *Calytrix uncinata* (P3) and *Baeckea* sp. Melita Station (P3). This flora survey covered a wider area and was broader in scope than the subsequent Shepherdson (2005) survey which targeted populations of *P. baeckeoides* and attempted to locate new populations.

A substantial population of the priority 1 species *P. baeckeoides* occurs within the application area. *P. baeckeoides* was only known from four locations in Western Australia (Western Australian Herbarium, 2006), the population recorded by Jims Seeds, Weeds & Trees at Teutonic Bore is now a fifth population.

Jabiru Metals intend to conduct some exploration activity in an area that includes the population of *P. baeckeoides*.

Shepherdson (2005) surveyed the area now subject to this clearing application to determine the extent and distribution of the *P. baeckeoides* population within the project area and surrounds. Shepherdson (2005) determined that the species was found almost exclusively on rocky hills extending from the original Teutonic Bore town site south to the open pit. Another population was identified 2km north of the town site. It was not found at any other site.

Shepherdson (2005) determined that the average density of plants within populations was 2,372 plants per hectare. The population is known to extend over an area encompassing 209 hectares. Jabiru Metals (2006) have estimated a theoretical population size of 495,000 plants based on these figures. Despite theoretical nature of the estimate, it would appear that this is a substantial population.

Shepherdson (2005) states that *P. baeckeoides* appears to be geographically restricted to rocky slopes where it grows in association with *Acacia aneura* and *Acacia quadrimarginea* on suitable soil type. Whilst the exact nature of this association is not known, upon reaching maturity, plants are commonly seen growing independent of the *Acacia* species. Shepherdson (2005) also noted that the species appears to thrive in most disturbed areas and that accordingly, the prospects for rehabilitation are good.

Jabiru Metals (2006) have developed a *P. baeckeoides* management plan in which strategies for the management of this species are detailed. Jabiru have estimated that 3188 individual plants will be destroyed by the proposed clearing based on population density and population area. This is a small percentage of the theoretical population size.

Advice has been received from the Biodiversity Coordination Section (BCS) of DEC (2006) in regards to the potential impact of the clearing on *P. baeckeoides* which states "BCS notes that this Department's

Environmental Management Branch staff have previously provided informal advice to the proponent specifically regarding the impact assessment and management of Priority flora *Phyllanthus baeckeoides* prior to the permit decision being made by the Department of Industry and Resources Native Vegetation Assessment Branch. Taking this into account BCS concurs with the previous advice that it is unlikely that the proposed exploration activities would have a significant impact on *P. baeckeoides*".

There is little discussion in Shepherdson's report in regards to *C. uncinata* and *B. sp* Melita Station. Both were found in Jims Seeds, Weeds & Trees flora survey of 2004, however, only *C. uncinata* was found in Shepherdson's survey of 2005.

According to Florabase Records (Western Australian Herbarium, 2006) *C. uncinata* is known from 17 locations and *B. sp* Melita Station is known from 17 locations. Both species distribution is mainly Eastern Murchison IBRA sub-region, but are found in West Murchison IBRA sub-region and Yalgoo IBRA Region. It is possible that the two species are located throughout this range in suitable soil types, topography and habitat. Their conservation is unlikely to be impacted by the proposed clearing.

The Biodiversity Coordination Section of DEC (2006) have advised that the proposed clearing may be at variance to this principle.

Given all of the above, the proposed clearing may be at variance to this principle. Under conditions imposed on this clearing permit, the proponent is required to record how many *P. baeckeoides* plants are removed during the clearing. Where clearing results in the loss of *P. baeckeoides* and natural regrowth following rehabilitation does not result in a similar population density in that area as existed prior to clearing, the permit holder will be required to revegetate the area cleared under this permit by deliberately planting or seeding *P. baeckeoides* to achieve a similar population density of the population in that area as existed prior to clearing.

**Methodology**

DEC (2006)  
 Jabiru Metals (2006)  
 Jims Seeds Weeds and Trees (2004)  
 Shepherdson (2005)  
 Western Australian Herbarium (2006)

**(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 60km of the application area (GIS database). Two flora surveys in 2004 by Jims Seeds, Weeds & Trees did not identify any TECs within the survey area.

The Biodiversity Coordination Section of DEC (2006) have advised that the proposed clearing is not likely to be at variance to this principle.

**Methodology**

Given all of the above, the proposed clearing is not likely to be at variance to this principle.  
 DEC (2006)  
 GIS Databases: Threatened Ecological Community Database - CALM 15/07/03.  
 Jims Seeds, Weeds & Trees (2004)

**(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**

	Pre-European area (ha)	Current extent (ha)	Remaining %	Conservation Status	Pre-european % in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Murchison	28120557*	28120557*	100*	Least Concern**	1.1 (1.1)*
Shire of Leonora	3291565	Not known	N/A	N/A	N/A
Beard veg assoc. (state extent)					
- 18	19892436*	19892436*	100*	Least Concern**	2.1 (2.1)*
- 28	395898*	395898*	100*	Least Concern**	0 (0)*

\* Shepherd et al. (2001)

\*\* Department of Natural Resources and Environment (2002)

Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002)

Presumed extinct	Probably no longer present in the bioregion
Endangered*	<10% of pre-European extent remains
Vulnerable*	10-30% of pre-European extent exists
Depleted*	>30% and up to 50% of pre-European extent exists
Least concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

\* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

Explanation:

According to Shepherd et al (2001), at a regional level, the Murchison IBRA Region remains at approximately 100% of its pre-european vegetation extent. According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002) these values give the region a Conservation Status of 'Least Concern'.

The application area falls within the Leonora Shire. Given that the Leonora Shire falls wholly within the Murchison bioregion it could be concluded that the Shire remains at approximately 100% of its pre-european vegetation extent. There is no data however, as to the Shire's current vegetation extent.

According to Sherperd et al (2001), statewide, the vegetation associations as described by Beard (18 and 28) both remain at approximately 100% of their pre-european vegetation extent. According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002) these values give both vegetation associations a Conservation Status of 'Least Concern'.

As vegetation has remained largely uncleared within the Murchison IBRA region, the percentage of vegetation within IUCN reserves has not changed since European settlement.

**Methodology** Given all of the above, the proposed clearing is not at variance to this principle.  
Department of Natural Resources and Environment (2002).  
GIS Databases: Pre-European Vegetation - DA 01/01;  
Interim Biogeographic Regionalisation of Australia - EA 18/10/00  
Shepherd et al. (2001).

**(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**

The proponent has applied to clear up to 100 ha of vegetation within a defined application area approximately 3879 ha in size. Orthophotos of the application area show many natural incised drainage channels beginning higher in the landscape and then joining lower in the landscape in broader, more shallow drainage channels. GIS databases describe the drainage lines as "Watercourses - minor, non perennial". Jims Seeds, Weeds & Trees (2004) describe the drainage lines as two metres deep and ten metres wide higher in the landscape and narrow and shallow lower in the landscape.

Jims Seeds, Weeds & Trees (2004) stated that the vegetation in the lower, shallow drainage lines was similar to the surrounding vegetation but supported a rich and diverse ephemeral community and *Eucalyptus camaldulensis*, commonly known as 'river gum' described on Florabase (Western Australian Herbarium, 2006) as occurring in association with watercourses and billabongs.

Jims Seeds, Weeds & Trees (2004) stated that the vegetation in the higher, deeper drainage lines supported dense vegetation, with large red river gums (*E. camaldulensis*) and a diverse ephemeral community.

These descriptions would suggest that the watercourses support riparian vegetation despite the area experiencing an average rainfall of ~ 230 mm/year (BOM, 2006). 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.

Given all of the above, the proposed clearing may be at variance to this principle. Under the conditions imposed on this clearing permit, where no access track is existing within 10 metres of an incised drainage channel, clearing for access shall not remove *E. camaldulensis* specimens. A condition will also be placed on the permit to prohibit clearing for exploration drill pads and associated sump areas within 10 metres of an incised drainage channel.

**Methodology** BOM (2006)  
DEC - Florabase (2006a)  
GIS Databases: - Hydrography, linear - DOE 01/02/04  
Western Australian Herbarium (2006)

**(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 includes the Jundee and Violet land systems as well as small areas of the Bevon and Teutonic land systems (DAWA 2005).

The Jundee Land System is characterised by hard pan plains with ironstone gravel mantles, supporting mulga shrubland. Soil erosion can be initiated where tracks and diversion structures harvest water on sloping land (DAWA, 2005).

The Violet Land System is characterised by undulating stoney and gravelly plains and low rises supporting mulga shrublands. The drainage floors are mildly susceptible to soil erosion under extensive use. Disturbance of natural flow patterns or removal of protective stoney or gravelly mantles will cause accelerated soil erosion (DAWA, 2005).

The narrow drainage tracts of the Bevon Land System are susceptible to soil erosion. The Teutonic Land System is resistant to soil erosion if the stoney mantle remains undisturbed. Soil erosion is unlikely to occur if drainage lines are avoided (DAWA, 2005).

Based on the characteristics of those four land systems the Commissioner for Soil and land Conservation advises that the clearing may be at variance to this principle (DAWA 2005). The Commissioner advises that conditions be imposed on any permit granted to avoid sensitive areas and mitigate and prevent soil erosion and loss of vegetation.

Weed species present are restricted to an old camp area and in drainage lines south of the existing mine (Jims Seeds, Weeds & Trees, 2004). Under strict hygiene conditions, weed dispersal through vehicle movement is not likely.

Given all of the above, the proposed clearing may be at variance to this principle. Under the conditions imposed on this permit, the permit holder is required to rehabilitate the areas cleared within 12 months of clearing taking place and to prohibit clearing for drill pads and associated sump areas within 10 metres of an incised drainage channel.

**Methodology** DAWA (2005)  
Jims Seeds, Weeds & Trees (2004)

**(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 at variance to this Principle**

No conservation areas have been identified within 10km of the application area. The nearest conservation area is Wanjarii Nature Reserve over 100 km to the north of the application area (GIS database). This reserve will not be impacted by the clearing at this distance. DEC (2006) advises that the proposed clearing is not at variance to this principle.

**Methodology** Given all of the above, the proposed clearing is not at variance to this principle.  
DEC (2006)  
GIS Databases: CALM Managed Lands and Water - CALM 01/08/04.

**(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**

With an average annual rainfall of ~230mm (BOM, 2006) and an annual evaporation rate of 3,400mm per year (Luke et al, 1987) 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 mg/l and 3,000 mg/l) (GIS database) . The proposed clearing of approximately 100 ha of native vegetation over a much larger area is unlikely to have an impact on the quality of surface or groundwater.

**Methodology** Given all of the above, the proposed clearing is not likely to be at variance to this principle.  
BOM (2006)  
GIS database: Groundwater Salinity, Statewide - 22/02/00  
Luke et al (1987)

**(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 ~230mm (BOM, 2006) and an annual evaporation rate of 3,400mm (Luke et al, 1987) 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 to the south of the proposed clearing area. The proposed clearing is not likely to exacerbate flooding or increase peak flood height.

**Methodology** Given all of the above, the proposed clearing is not likely to be at variance to this principle.  
BOM (2006)  
Luke et al (1987)

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

**Comments**

There are two known native title claims over the area under application; WC99/001, WC99/010. These claims have been registered with the National Native Title Tribunal on behalf of the Wongatha and Wutha claimant groups respectively (GIS Database). However, the mining tenements have been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (ie. 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*.

Several Registered Indigenous Heritage Sites occur wholly or partly within the application area: Sullivan Creek, Teutonic Hill, Teutonic Bore 1, Teutonic Bore 2, Teutonic Bore Works, Teutonic Bore Quarry 1, Teutonic Bore Quarry 2, Teutonic Bore Quarry 3, Ngurrie (FS1) and Townsite 2 (DIA, 2006). It is the proponent's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

A submission was received during the public advertisement period. The submission asked that flora and fauna surveys be completed to identify biodiversity, fauna habitat and rare flora. The submission also requested that the assessment should consider topography, surface hydrology, soil type, vegetation type, condition and relative commonality in the surrounding environment, management of remaining vegetation and management of environmental and cultural issues such as weeds, run-off and Aboriginal heritage. The proponent has conducted the required surveys and the assessor has addressed the points raised in the submission in the decision report, against the relevant clearing principles.

**Methodology** Department of Indigenous Affairs (2006)  
GIS databases: Native Title Claims-DLI 7/11/05  
Public Submission (2005)

**4. Assessor's recommendations**

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	100	Grant	<p>The proposal has been assessed against the clearing principles and the proposed clearing is found to be not at variance to principles e and h, not likely to be at variance to principles a, b, d, i and j, and may be at variance to principles c, f and g.</p> <p>The assessing officer recommends that the permit be granted subject to the following conditions:</p> <ol style="list-style-type: none"> <li>Where there is no alternative pre-existing access route, clearing for access tracks within 10 metres of an incised drainage channel, the Permit Holder shall not remove any specimens of Red River Gum (<i>Eucalyptus camaldulensis</i>).</li> <li>The Permit Holder shall not clear vegetation for exploration drill pads or associated sump areas within 10 metres of an incised drainage channel.</li> <li>When undertaking any clearing, revegetation and rehabilitation, or other activity pursuant to this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of weeds:               <ol style="list-style-type: none"> <li>clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;</li> <li>ensure that no weed-affected road building materials, mulch, fill or other material is brought into the area to be cleared; and</li> <li>restrict the movement of machines and other vehicles to the limits of the areas to be cleared.</li> </ol> </li> <li>The Permit Holder shall stockpile the vegetative material and topsoil removed by clearing in accordance with this permit and use in rehabilitation under condition 5.</li> <li>The Permit Holder shall rehabilitate each area cleared under this permit within 12 months after the Permit Holder completes exploration activities on that area.</li> </ol>

6. Where clearing results in the loss of *Phyllanthus baeckeoides* specimens, and regrowth following rehabilitation required under condition 5 of this permit, does not result in the population having similar density in that area as existed prior to clearing, the Permit Holder must revegetate the area cleared under this permit by deliberately planting or seeding *Phyllanthus baeckeoides* to achieve a similar population density in that area as existed prior to clearing.
7. The Permit Holder shall record the following for each instance of clearing:
  - a) the location of where the clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system;
  - b) the size of the area cleared in hectares;
  - c) the dates on which the area was cleared, and
  - d) the number of specimens of *Phyllanthus baeckeoides* cleared.
8. The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources by 31<sup>st</sup> January each year for the life of the permit, setting out the records required under condition 7 of this permit in relation to clearing carried out between 1<sup>st</sup> January and 31<sup>st</sup> December the previous year.

## 5. References

- Biota Environmental Sciences Pty Ltd (2005) Proposed Jaguar Mine Fauna Habitat and Fauna Assemblage Survey. Unpublished report prepared for Jabiru Metals Limited dated February 2005).
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- DAWA (2005). Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture Western Australia.
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- 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.
- Department of the Environment and Heritage (2006). *Egernia kintorei* in Species Profile and Threats Database, Department of the Environment and Heritage, Canberra. <http://www.deh.gov.au/sprat> . Accessed 15/8/2006.
- Jabiru Metals Limited (2006). Priority Flora Management Plan, *Phyllanthus baeckeoides*, Jaguar Project, June 2006. Prepared by Jeremy Shepherdson, Ecotec (WA) Pty Ltd.
- JANIS Forests Criteria (1997) Nationally agreed criteria for the establishment of a comprehensive, Adequate and Representative reserve System for Forests in Australia. A report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-committee. Regional Forests Agreement process. Commonwealth of Australia, Canberra.
- Jims Seeds, Weeds & Trees, (2004). Flora Survey - Jaguar/Teutonic Bore For Pilbara Mines Limited, September 2004. Unpublished report prepared for Pilbara Mines Limited. Kalgoorlie, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
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## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.



DA	Department of Agriculture, Western Australia.
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
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	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

### 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.