



1. Application details

1.1. Permit application details

Permit application No.: 2472/1
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: HBJ Minerals Pty Ltd

1.3. Property details

Property: LOT 103 ON PLAN 40395 (LONDONDERRY 6429)
 LOT 103 ON PLAN 40395 (KARRAMINDIE 6429)
 Local Government Area: Shire Of Coolgardie
 Colloquial name:

1.4. Application

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

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
Beard vegetation associations: 9- Medium woodland; coral gum (E. torquata) & Goldfields blackbutt (E. lesouefi). 125- Bare areas; salt lakes.	The area under application is for clearing of 250 ha over 5 years for exploration within a ~14,500 ha project area (Location 59 South). The project area is located approximately 6km south-east of the Coolgardie town site.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	A flora survey conducted by Botanica Consulting (2006) identified the vegetation condition of the ten vegetation groups to be predominantly very good.
936- Medium woodland; salmon gum. (SAC Bio Datasets 15/05/2008; Shepherd, 2006).	A flora survey conducted by Botanica Consulting (2006) identified ten vegetation groups within the project area. The vegetation proposed to be cleared is described as predominantly Eucalypt Woodland (Botanica Consulting, 2006).		

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 at variance to this Principle

Aerial photography for the project area shows the area of disturbance from mining activities to be limited to existing open pits and associated infrastructure within the northern section of the ~14,500ha project area. A flora survey within the project area undertaken in November 2006 confirmed the area of disturbance to be limited to the northern section of the project area (Botanica Consulting, 2006). The vegetation immediately surrounding the disturbance area was determined to be in good condition with increasing distance from the disturbance area the vegetation health condition and biological diversity increased (Botanica Consulting, 2006).

The flora survey identified ten vegetation groups within the project area (Botanica Consulting, 2006). Eight of the vegetation groups (including, Acacia acuminata Shrublands and Transitional Eucalyptus Woodland) were identified as being in very good condition; one vegetation group (Creekline Community) was identified as being in excellent condition, and one vegetation group (Disturbance/Rehabilitation area) was identified as being in good condition (Botanica Consulting, 2006). Furthermore, only one weed species, Citrullus lanatus (pie melon) was recorded in the project area; the location of this weed was limited to the Transitional Eucalyptus Woodland vegetation group (Botanica Consulting, 2006).

There are 114 known records of 41 species of Priority Flora within the local area (50km radius) with the closest known records being *Acacia websteri* (P1) and *Micromyrtus stenocalyx* (P3), located approximately 4.6km north-west and 4.7km east of the project area, respectively.

A flora survey conducted in November 2006 by Botanica Consulting (2006) identified nine populations of the priority species, *Eremophila* sp Mt Jackson (P1) within the ~14,500ha project area. The nine populations were located within three vegetation groups: Open Shrubland; *Acacia acuminata* Shrubland; and Transitional *Eucalyptus* Woodland.

As these three vegetation groups listed above occur within the project area (Harmony, 2007) a condition to ensure that the two vegetation groups where the priority species predominantly occurs, Open Shrubland and *Acacia acuminata* Shrubland are protected, and a condition to provide a buffer around the other occurrences of the Priority species have been recommended.

Further, DEC Regional officer (DEC, 2007a) advised that disturbance of the populations of *Eremophila* sp. Mt Jackson should be avoided, where possible. DEC Regional officer (2007a) agreed with the condition to protect the *Acacia acuminata* Shrubland, and that the populations that occur within the Open Shrubland and Transitional *Eucalyptus* Woodland vegetation groups are to be avoided (for example through buffers or realignment of tracks and drill pads).

In addition, it is likely that the vegetation within the notified area, particularly areas of Salmon Gums, is utilised as suitable habitat and nesting hollows for a wide variety of fauna, and there recent records of malleefowl in the area (Biodiversity Coordination Section DEC, 2005).

Given the limited level of disturbance and that the vegetation under application may be necessary for the maintenance of Priority Flora and may comprise significant habitat for a variety of fauna including malleefowl in the local area, it is considered the project area comprises a high level of biological diversity and therefore the proposed clearing is at variance to this Principle.

- Methodology** **References:**
- Biodiversity Coordination Section, DEC (2005)
 - Botanica Consulting (2006)
 - DEC (2007a)
 - Harmony (2007)
- GIS Databases:**
- Kalgoorlie 1.4m Orthomosaic - DLI 02
 - Yilmia 1.4m Orthomosaic - Landgate03
 - SAC Bio Datasets 14/05/2008

(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 may be at variance to this Principle

Harmony (2007) advised that the following fauna species could potentially occur within the project area (14,280ha):

- Malleefowl (*Leipoa ocellate*), Vulnerable (State) WC Act and (Federal) EPBC Act;
- Slender-billed Thornbill (*Acanthiza iredalei iredalei*), Vulnerable (State) WC Act and (Federal) EPBC Act;
- Peregrine Falcon (*Falco peregrinus*), Specially Protected (State) WC Act and (Federal) EPBC Act;
- Carpet Python (*Morelia spilota imbricata*), Specially Protected (State) WC Act;
- Central long-eared bat (*Nyctophilus timoriensis* central form) (P4);
- Hooded Plover (*Thinornis rubricolis rubricolis*) (P4);
- Crested Bellbird (*Oreoica gutturalis gutturalis*, southern subspecies) (P4);
- Shy Heathwren (*Hylacola cauta whitlocki*, western subspecies) (P4) (historic record);
- White-browed Babbler (*Pomatostomus superciliosus ashbyi*, western wheatbelt subspecies) (P4).
- Fork-tailed Swift, *Apus pacificus*, (Federal) EPBC Act;
- Great Egret, *Ardea alba*, (Federal) EPBC Act;
- Cattle Egret, *Ardea ibis*, (Federal) EPBC Act;
- Rainbow Bee-eater, *Merops ornatus*, (Federal) EPBC Act.

Biodiversity Coordination Section, (BCS) DEC (2005) advice on fauna species occurring in the area included:

- Sightings of Malleefowl in the area are relatively recent. Malleefowl may be found in the project area.
- Bird species such as Peregrine Falcon, White-browed Babbler, Crested Bellbird (Southern) may utilise the notified area, but as the land systems are well represented within the region the habitat present is unlikely to be 'significant' for these species.
- It is likely that the vegetation within the notified area, particularly areas of Salmon Gum woodland, is utilised as suitable habitat and nesting hollows for a wide variety of fauna.

There are no Salmon Gum woodlands within the project area; however, Salmon Gums were identified within

vegetation groups: Eucalyptus campaspe Greenstone Hill; and Eucalyptus and Melaleuca Woodland (Botanical Consulting, 2006).

DEC Regional Ecologist (DEC, 2008) advised there has been no consideration of:

- Potential for threatened butterflies. Some of the habitats described look highly suitable for two Priority One taxa - *Ogyris subterrestris petrina* Arid Bronze Azure Butterfly and *Jalmenus aridus* Inland Hairstreak Butterfly. Additionally, the area is in very close proximity to the now locally extinct population of *Ogyris subterrestris petrina* that occurred between Kalgoorlie and Coolgardie at Lake Douglas [located ~15km north-east of the project area]; and
- Short-range endemic invertebrates (SREs) which will have low powers of dispersal and thus extremely limited ability to move out of the area to be impacted. The geology of the area (i.e., a Greenstone belt) suggests a high potential for SREs.

Harmony (2007) reported that all efforts will be taken to minimise clearing and to rehabilitate at conclusion of mining to minimise any long-term impacts on habitats in the area. Management strategies to be adopted (Harmony 2007) include:

- Utilising existing tracks, firebreaks, fence lines for access where possible,
- Locating tracks so as to avoid large trees and shrubs and their root zones,
- Implementing a Weed Management Program,
- Retain trees (especially those with hollows) where possible, and
- Stockpiling vegetation to be respread where possible to provide habitat for fauna.

Given that the vegetation application may include significant habitat for fauna in the local area, including malleefowl, the proposed clearing may be at variance to this Proposal.

To mitigate any impacts from the proposed clearing, permit fauna management conditions are recommended.

Methodology References:
- Biodiversity Coordination Section, DEC (2005)
- Botanical Consulting (2006)
- DEC (2008)
- Harmony (2007)

(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 36 known records of the rare flora *Gastrolobium graniticum* within the local area (50km radius) with the closest known record being ~6.0kms north-west of the project area.

Gastrolobium graniticum is described on DEC's Florabase (WA Herbarium 1998-) as an erect, open shrub, to 2.5m high. Flowers are yellow, orange and red, flowering in Aug-Sep. Occurs on sandy soils, granite and margins of rock outcrops, along drainage lines.

A flora survey conducted in November 2006 by Botanica Consulting (2006) identified no rare flora within the project area.

Given that no rare flora was identified within the project area, it is not considered likely that the vegetation to be cleared includes or is necessary for the continued existence of, rare flora.

Methodology References:
- Botanica Consulting (2006)
- WA Herbarium (1998-)
GIS Database:
- SAC Bio Datasets 14/05/2008

(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 records of a Threatened Ecological Community (TEC) within the local area (50km radius). The nearest recorded TEC (Russell Range) is located approximately 320km south-east of the project area.

It is therefore not considered likely that the vegetation proposed to be cleared comprises the whole or part of or is necessary for the maintenance of a threatened ecological community.

Methodology GIS Database:
- SAC Bio Datasets 14/05/2008

(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 likely to be at variance to this Principle

The vegetation under application is mapped within Beard Vegetation types 9, 125 and 936, which have 99.7%, 94.2% and 96.7% of pre-European vegetation extent remaining respectively (Shepherd, 2006).

The State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents the clearance of ecological communities with an extent below 30% of that present Pre-European settlement (Commonwealth of Australia, 2001). The vegetation types within the area under application are above the recommended minimum of 30% representation.

Given the high representation of the vegetation types identified with the areas under application, the vegetation under application is not considered to be significant as a remnant in an extensively cleared area.

However, it is noted that the Beard vegetation types are not well represented in secure tenure.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregions*				
- Coolgardie	12 912 208	12 707 623	98.4	
Beard Vegetation types*				
9	240 509	239 898	99.7	7.8
125	3 491 833	3 287 864	94.2	7.0
936	698 753	675 658	96.7	3.6

*(Shepherd 2006)

Methodology

References:

- Commonwealth of Australia (2001)
 - Shepherd (2006)
- GIS Databases:**
- Pre-European Vegetation
 - Interim Biogeographic Regionalisation of Australia
 - SAC Bio Datasets 15/05/2008

(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 several minor non-perennial watercourses and a non-perennial salt lake, Lake Brown, located within the ~14,500ha project area. Therefore, it is considered likely that some of the vegetation under application is associated with waterbodies.

A flora survey conducted within the project area by Botanica Consulting (2006) identified vegetation growing in association with the creeklines to be vegetation group Creekline Community. This vegetation group was considered to be in excellent condition with limited disturbance and no weed species (Botanica Consulting, 2006). Therefore, the vegetation is considered to have significant environmental values.

Given that some of the native vegetation to be cleared is growing in an environment associated with water bodies and is in excellent condition, the clearing as proposed is at variance to this Principle.

To mitigate any impacts from the proposed clearing, conditions to exclude the creekline vegetation and vegetation associated with Lake Brown (chenopod shrubland), and to maintain a 50m buffer to these areas will be recommended.

Methodology

Reference:

- Botanica Consulting (2006)

GIS Databases:

- Geodata, Lakes
- Hydrography, linear

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

Comments Proposal may be at variance to this Principle

DAFWA (2007) advised that the proposed clearing for exploration is not likely to cause soil erosion provided the

susceptible land units (mainly drainage zones) are avoided.

The northern half of the project area is interpreted to be Moriarty land system, low rise, loamy plains and drainage zone land units (DAFWA, 2007). The soils on the low rises are reasonably resistant to soil erosion being protected by stony mantles. The drainage zone soils area susceptible to soil erosion if disturbed (DAFWA, 2007).

The southern half of the project area is interpreted to be Gumland land system, loamy plains, alluvial plains and drainage tract land units (DAFWA, 2007). The soils of the latter land units are susceptible to erosion if the soil is disturbed or the natural surface water flow regime is altered (DAFWA, 2007).

Given the risk of erosion associated with the removal of native vegetation in the southern half of the project area, the proposed clearing may be at variance to this Principle.

Management actions to be undertaken by Dioro include utilising existing tracks and creek crossings and the immediate rehabilitation of cleared areas which will assist in the avoidance of long-term land degradation (Harmony, 2007).

To mitigate any impacts from the proposed clearing near drainage zones, conditions requiring revegetation will be imposed.

Methodology References:
- DAFWA (2007)
- Harmony (2007)

(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 may be at variance to this Principle**
There are no conservation reserves within the project area with the nearest reserves being two DEC managed lands, Yallari Timber Reserve and Scahill Timber Reserve, which adjoin the south-east boundary and south west boundary of the ~14,500ha project area, respectively. In addition, Kangaroo Timber Reserve is located approximately 5.5km west and Karamindie State Forest is located approximately 8.3km east of the project area.

Timber Reserves were originally established as Sandalwood Reserves and are now managed as conservation estate for flora and fauna (DEC, 2007b).

A flora survey within the project area undertaken in November 2006 confirmed the area of disturbance to be limited to the northern section of the project area (Botanica Consulting, 2006). The vegetation within the disturbance area was determined to be in good condition with the vegetation being sparse with the vegetation becoming less sparse and aesthetically healthier, with increasing distance from the disturbance area (Botanica Consulting, 2006).

Due to the distance to the DEC Managed Lands (Timber Reserves), the project area may provide an ecological linkage between Yallari Timber Reserve and Scahill Timber Reserve. DEC Regional officer (DEC, 2007b) has recommended the implementation of a buffer to allow for a fauna corridor between the timber reserves.

Given the above, the clearing as proposed may have an impact on the environmental values of the adjacent conservation areas.

To mitigate any impacts from the proposed clearing, HBJ Minerals will maintain a 150m wide buffer to and a 500m wide corridor between, Yallari Timber Reserve and Scahill Timber Reserve.

Methodology References:
- DEC (2007b)
- Harmony (2007)
GIS database:
- DEC Managed Lands and Water

(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 may be at variance to this Principle**
There are several minor non-perennial watercourses and a non-perennial salt lake, Lake Brown, located within the ~14,500ha project area.

The northern half of the project area is interpreted to be Moriarty land system, low rise, loamy plains and drainage zone land units (DAFWA, 2007). The soils on the low rises are reasonably resistant to soil erosion being protected by stony mantles. The drainage zone soils area susceptible to soil erosion if disturbed (DAFWA, 2007).

The southern half of the project area is interpreted to be Gumland land system, loamy plains, alluvial plains and drainage tract land units (DAFWA, 2007). The soils of the latter land units are susceptible to erosion if the soil is disturbed or the natural surface water flow regime is altered (DAFWA, 2007).

Whilst the proposal is to clear 250ha within a ~14,500ha project area, the proposed clearing may result in water erosion particularly in drainage tracts and areas of stony plains. Water erosion of these soils and drainage into nearby surface water bodies may result in the deterioration of water quality. Therefore the proposed clearing is may be at variance to this Principle.

To mitigate any impacts from the proposed clearing, conditions requiring revegetation will be imposed.

Methodology Reference:
- DAFWA (2007)
GIS Databases:
- Geodata, Lakes
- Hydrography, linear

(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 250mm and an annual evaporation rate of approximately 2,600mm there is little surface flow during normal seasonal rains. Given there is little surface flow, the proposed clearing of 250 ha within a ~14,500ha project area is not likely to cause or increase the incidence or intensity of flooding.

Methodology GIS Databases:
- Evaporation Isopleths
- Isohyets

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

Comments
The area under application is within the Proclaimed Groundwater Area of Goldfields. Therefore any abstraction of groundwater would require a licence; however, this proposal of mineral exploration is not associated with groundwater abstraction.

Mineral exploration is not a prescribed premise as defined under Environmental Protection Regulations 1987 Schedule 1 - Prescribed premises. It is the proponent's responsibility to determine whether any Works Approval, or any other licences or approvals are required for future proposed works.

There are two Aboriginal Sites of Significance listed within the ~14,500ha project area, the applicant will be advised of their obligations under the Aboriginal Heritage Act 1972.

The zoning for Lot 103 on Plan 40395 (previously Part Lot 59 On Plan 226332) is rural / mining.

Lot 103 on Plan 40395 is Freehold land.

There are two native title claims over the project area; however, since the land is privately owned the Native Title has been extinguished under the Native Title Act. Therefore the clearing is considered to be a secondary approval and not a future act under the Native Title Act 1993.

Methodology GIS databases:
- Aboriginal Sites of Significance
- Native Title Claims
- RIWI Act, Groundwater Areas -
- RIWI Act, Surface Water Areas
- Town Planning Scheme Zones

4. Assessor's comments

Comment

The assessable criteria have been addressed and the clearing as proposed is at variance to Principle (a) and may be at variance to Principles (b), (f), (g), (h) and (i).

5. References

Biodiversity Coordination Section, DEC (2005) Clearing Assessment Unit's biodiversity advice for land clearing application. Advice to Director General, Department of Environment and Conservation (DEC), Western Australia. TRIM Ref IN25055

- Botanica Consulting (2006) Appendix 1: Harmony-South Kal Mines Pty Ltd; Flora survey of Location 59 (within EEL59, S57/10, L15/275 & E15/939), December 2006 Final. TRIM Ref ED1763
- Commonwealth of Australia (2001) National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- DAFWA (2007) Amended land degradation advice. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia. TRIM Ref ED1836
- DEC (2007a) Goldfields Regional advice - information on priority flora, Department of Environment and Conservation. TRIM Ref ED1796
- DEC (2007b) Goldfields Regional advice - information on timber reserves, Department of Environment and Conservation. TRIM Ref ED1814
- DEC (2008) Goldfields Regional advice - information on fauna, Department of Environment and Conservation. TRIM Ref DOC54967
- Harmony (2007) South Kal Mines Pty Ltd, Purpose Permit Application, Location 59: Assessment of Clearing Principles, January 2007, Harmony Gold, Western Australia. TRIM Ref ED1763
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P. (2006). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 12/05/2008).

6. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)

