Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2727/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **St Barbara Limited**

1.3. Property details

Property: Mining Lease 37/46
Mining Lease 37/564
Local Government Area: Shire of Leonora
Colloquial name: Kailis Gold Mine Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
40		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
The area applied to clear has been broadly mapped at a scale of 1:250,000 as: Beard Vegetation Association 18: Low woodland; Mulga (*Acacia aneura*); and Beard Vegetation Association 28: Open low woodland; Mulga. Mattiske Consulting Pty Ltd (2008) undertook a flora and vegetation survey of the Kailis, Trump, Poker and Forrest lease areas (including the proposed clearing area) on 5th and 6th December 2007. The following four vegetation communities were mapped for the proposed clearing area: 1. Shrubland of *Acacia ayersiana* and *Acacia aneura var. aneura* over *Acacia tetragonophylla* tall shrubs over *Eremophila forrestii subsp. forrestii*, *Eremophila platycalyx subsp. platycalyx* shrubs and *Dianella revoluta* over *Ptilotus obovatus* and Poaceae spp. on clay flats with patches of stony mantle; 2. Open Shrubland of *Acacia aneura var. aneura* and *Acacia ayersiana* over *Acacia tetragonophylla* over *Eremophila platycalyx subsp. platycalyx*, *Ptilotus obovatus*, *Maireana triptera* over *Enneapogon caerulescens*, *Cymbopogon ambiguus* on red/brown clay loams on lower slopes and flats; 3. Open Shrubland of *Acacia aneura var. aneura*, *Acacia aneura var. conifera* over *Acacia tetragonophylla* and *Acacia victoriae* over *Eremophila platycalyx subsp. platycalyx*, *Ptilotus obovatus* and *Solanum lasiophyllum* over *Aristida contorta*, *Maireana triptera* and *Sclerolaena cuneata* on red/brown clay on slopes with scattered patches of quartz and calcrete; and 4. Open Shrubland of *Acacia aneura var. ?fuliginea* and *Acacia ?jamesiana* over *Acacia tetragonophylla* over *Eremophila platycalyx subsp. platycalyx*, *Scaevola spinescens*, *Senna artemisioides subsp.*	This clearing permit application is for a Purpose Permit to clear up to 40 hectares of native vegetation within a boundary of approximately 65 hectares (GIS Database). The proposed clearing will allow St Barbara Limited to expand the Kailis Gold Mine, located approximately 5 kilometres north-west of the Leonora town site (GIS Database). The proposed expansion will involve a cutback of the existing Kailis pit, expanding two existing waste dumps to become one large dump (north waste dump), diverting a minor drainage line occurring between the two existing dumps, creating the south waste dump, installation of a new abandonment bund around the Kailis pit and development of a haul road. The proposed vegetation clearing will be undertaken using mechanical means.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The vegetation condition rating is based on information provided by Mattiske Consulting Pty Ltd (2008) in a flora and vegetation survey report and Bamford Consulting Ecologists (2008) in a fauna assessment report. The Assessing Officer, DoIR, visited the proposed clearing area on 13 August 2008 which assisted in the vegetation condition rating.

filifolia, *Atriplex nummularia*, *Ptilotus obovatus* over *Maireana ?triptera* and grasses on red/brown clays on rises with calcrete and quartz.

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 is located approximately 5 kilometres north-west of Leonora in the Eastern Murchison subregion of the Murchison Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Eastern Murchison subregion is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development (Cowan, 2002). Vegetation of the subregion is dominated by Mulga woodlands (often rich in ephemerals), hummock grasslands, saltbush shrublands and Halosarcia shrublands (Cowan, 2002). Pastoral grazing occurs over a vast majority of the subregion, and consequently, much of the subregion has been severely degraded by feral herbivores. Mining for gold and nickel in the region is considerable, with most mining tenements occurring on pastoral land (Cowan, 2002).

The proposed clearing area is partially located on the Braemore Pastoral Station (GIS Database) and is consequently severely overgrazed, as seen by the Assessing Officer, DoIR, during a site visit on 13 August 2008. Much of the area has also been subject to historical disturbances from mining activity, with an existing open cut pit, two waste rock landforms, access tracks and various other cleared areas observed on site. The flora and vegetation proposed to clear was surveyed by Mattiske Consulting Pty Ltd (2008), and no Declared Rare Flora (DRF), Priority Flora, Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) were recorded. The vegetation assemblages recorded from the area are not significant in a local or regional context, and none are protected under legislation (Pringle, 1994; DEC, 2008) cited in Mattiske Consulting Pty Ltd, 2008).

Mattiske Consulting Pty Ltd (2008) recorded three introduced flora species during a flora and vegetation survey of the Kailis, Trump, Poker and Forrest lease areas (including the proposed clearing area). These three species were: Buffel Grass (*Cenchrus ciliaris*), Prickly Paddy Melon (*Cucumis myriocarpus*) and Wild Sage (*Salvia verbenaca*). Whilst none of these species were recorded in the proposed clearing area, care should be taken to ensure that the proposed clearing operations do not introduce weed species into non-infested areas. Should a clearing permit be granted, it is recommended that appropriate conditions be imposed for the purpose of weed management.

From a faunal perspective, the proposed clearing area contains habitats that are widespread in a regional context and are not deemed to be significant (Bamford Consulting Ecologists, 2008). The assemblage of vertebrate fauna expected in the survey area is typical of the Eastern Murchison subregion. Some species of conservation significance may utilise habitats in the proposed clearing area from time to time, but none would be dependent on the area (Bamford Consulting Ecologists, 2008).

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

Methodology

Bamford Consulting Ecologists (2008).
Cowan (2002).
Mattiske Consulting Pty Ltd (2008).
GIS Database:
- Interim Biogeographic Regionalisation for Australia (Subregions).
- 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

Bamford Consulting Ecologists (2008) undertook a level 1 fauna assessment of the Kailis Project area in January 2008. Desktop database searches and literature reviews were conducted to provide an inventory of species potentially occurring in the project area. Field reconnaissance was undertaken on 14 and 15 January 2008 to describe the habitat values of the site, to search for species of conservation significance, to describe potential impacts of vegetation clearing and to make recommendations to minimise, mitigate and manage impacts to fauna.

Specifically, desktop studies involved searching the following:

- Western Australian Museum Faunabase;
- Birds Australia Atlas Database;
- Department of Environment and Conservation (DEC) Threatened and Priority Fauna Database; and
- Environment Protection and Biodiversity Conservation (EPBC) Protected Matters Search Tool

Field reconnaissance involved:

- habitat assessment;
- micro-habitat searching (looking under rocks, logs, bark, raking through leaf litter, digging up burrows) for vertebrate and invertebrate fauna;
- opportunistic observations (including bird watching);
- searching for significant species and secondary evidence (diggings, burrows, tracks, scats); and
- spotlighting for nocturnal fauna.

The project area surveyed by Bamford Consulting Ecologists (2008) included the area covered by this clearing permit application but also encompassed a much larger area to the south-east of the proposed clearing area, and east of the Goldfields Highway. As a result, a number of the habitats recorded by Bamford Consulting Ecologists (2008) are not present in the area applied to clear. Similarly, the total number of species recorded cannot be used to describe species richness of the proposed clearing area (although inferences can be made). Some of the conclusions reached, and recommendations made by Bamford Consulting Ecologists (2008), relate to the survey area as a whole rather than being site-specific to the area covered by this clearing permit application.

Bamford Consulting Ecologists (2008) recorded 7 major habitats within the survey area, 2 of which are present within the proposed clearing area:

1. Gently undulating stony plains supporting sparse Mulga over Chenopod shrubland; and
2. Mulga woodland on hardpan.

Habitat 1 is the most extensive habitat in the project area and is widespread in the region (Bamford Consulting Ecologists, 2008). A large proportion of this habitat in the project area has been disturbed by previous mining activities. This was clearly evident during a site visit to the proposed clearing area by the Assessing Officer, DoIR, on 13 August 2008.The proposed clearing of this habitat is not likely to be significant given the level of degradation and widespread nature of the habitat.

Habitat 2 is also widespread in the region but is likely to support a higher species diversity than habitat 1 due to a relatively high vegetation cover in comparison to the surrounding landscape. This habitat includes minor drainage areas (like that occurring between the two existing Kailis waste rock landforms).

Impacts associated with vegetation clearing are likely to include (Bamford Consulting Ecologists, 2008):

- loss of habitat for foraging and shelter;
- habitat fragmentation;
- mortality during clearing operations;
- alteration of local hydrology;
- alteration of natural fire regime; and
- disturbance from noise and dust.

Other impacts to fauna such as increased road kill (especially of slower moving species) and an increase in the number of introduced predators are also expected; however these impacts are more closely associated with the mining operation itself as opposed to the clearing of native vegetation. The management of such impacts will be addressed during the assessment of the Mining Proposal, as required under the provisions of the *Mining Act 1978*.

Overall, Bamford Consulting Ecologists (2008) concluded that the assemblage of vertebrate fauna expected in the survey area is typical of the Eastern Murchison subregion. Most species expected are widespread, however a few may have restricted or habitat limited distributions. The survey area contains mostly widespread and common habitats, apart from 3 significant habitats which should remain undisturbed. These 3 habitats are located outside of the proposed clearing area. The habitats include a banded ironstone ridge on the eastern side of Goldfields Highway, a major incised creekline (located approximately 200 metres south-east of the proposed clearing area) and an ironstone rise with outcroppings and small caves (also located away from the proposed clearing area on the opposite side of Goldfields Highway).

A site visit to the proposed clearing area was conducted by the Assessing Officer, DoIR, on 13 August 2008. Based on this visit and other supporting documentation supplied with the clearing permit application, the Assessing Officer is satisfied that St Barbara Limited has generally selected degraded areas to clear in order to implement the Kailis Project. Recommendations made by Bamford Consulting Ecologists (2008) to avoid banded ironstone ridges, rises and outcroppings and major creeklines have been abided by. Whilst there will be some unavoidable impacts to fauna should a clearing permit be granted, these are considered minor and it is unlikely that any significant habitat for indigenous fauna species would be impacted by the proposed clearing.

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

Methodology Bamford Consulting Ecologists (2008).

(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

According to available databases, there are no known records of Declared Rare Flora (DRF) or Priority Flora within the proposed clearing area (GIS Database). The nearest known record of DRF is a population of *Conospermum toddii*, located approximately 165 kilometres north-east (GIS Database). The nearest known records of Priority Flora are several populations of *Grevillea inconspicua* (P4) and *Hemigenia exilis* (P4) located approximately 32 kilometres north-west and 45 kilometres west north-west respectively (GIS Database).

Mattiske Consulting Pty Ltd (2008) undertook a flora and vegetation survey of the proposed clearing area and surrounds on the 5th and 6th December 2007. No DRF or Priority Flora taxa were recorded. Four vegetation communities were mapped from the area, all of which are common both locally and regionally. Grazing and previous mineral exploration and related activities have resulted in significant disturbance, which was observed by the Assessing Officer, DoIR, during a site visit on 13 August 2008.

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

Methodology

Mattiske Consulting Pty Ltd (2008).
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

According to available databases, there are no known Threatened Ecological Communities (TEC's) in the proposed clearing area (GIS Database). The nearest known TEC is located approximately 145 kilometres north-west of the proposed clearing area.

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

Methodology

GIS Database:
- Threatened Ecological Communities.

(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 area applied to clear is within the Interim Biogeographic Regionalisation for Australia (IBRA) Murchison bioregion (GIS Database). According to Shepherd et al (2001) there is approximately 100% of the pre-European vegetation remaining in the Murchison bioregion. The vegetation of the application area is classified as Beard Vegetation Association 18 - Low woodland; Mulga (*Acacia aneura*); and Beard Vegetation Association 28 - Open low woodland; Mulga.

There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Associations 18 and 28 in the Murchison bioregion (Shepherd et al, 2001). Whilst both vegetation associations are poorly represented in reserves, the area proposed to clear does not represent a significant remnant of vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Associations 18 or 28 below current recognised threshold levels, below which species loss increases significantly.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Murchison	28,120,558	28,120,558	~100	Least concern	1.1
Beard veg assoc. – State					
18	19,892,437	19,890,348	~100	Least concern	2.1
28	395,899	395,899	~100	Least concern	0
Beard veg assoc. – Bioregion					
18	12,403,248	12,403,248	~100	Least concern	0.4
28	224,294	224,294	~100	Least concern	0

* Shepherd et al. (2001) updated 2005
** 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 et al (2001).
GIS Databases:
- Interim Biogeographic Regionalisation of Australia.
- Pre-European Vegetation.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments

Proposal is at variance to this Principle

There are no permanent watercourses or wetlands in the proposed clearing area (GIS Database; St Barbara Limited, 2008). One minor ephemeral watercourse is located within the proposed clearing area which would occasionally flow during heavy rainfall events. A site visit by the Assessing Officer, DoIR, was able to confirm that no incised drainage channel is present; however native vegetation is of a higher density in this area. Should a clearing permit be granted, the minor ephemeral drainage line will be consumed by the expansion of two existing waste rock landforms to become one large landform. A shallow channel (maximum depth of 100 millimetres) would be constructed to divert drainage around the proposed waste rock landform footprint and into a larger drainage system located to the north of the project area, a few hundred metres upstream of the present confluence (St Barbara Limited, 2008).

It is the proponent's responsibility to liaise with the Department of Water to determine whether a Bed and Banks permit is required for the proposed diversion, in accordance with section 17 of the *Rights in Water and Irrigation Act 1914*.

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

However, it is necessary to consider the proposed clearing in context (St Barbara Limited, 2008):

- the watercourse has previously been disturbed by grazing and mineral exploration activity;
- the watercourse has been diverted in the past for mining purposes;
- the watercourse flows very rarely, with a very limited flow duration approximating the length of the storm from which it was generated;
- vegetation downstream of the ephemeral watercourse is likely to benefit from occasional flows, but is not likely to be dependent on it for survival;
- the proposed diversion will route the watercourse into the same receiving waters downstream, albeit a few hundred metres upstream of the present confluence;
- Mattiske Consulting Pty Ltd (2008) did not record any distinctive wetland vegetation associations along the drainage line during a flora and vegetation survey of the Kailis Project area; and
- Bamford Consulting Ecologists (2008) did not list the minor drainage feature as a significant habitat for fauna during a fauna assessment of the Kailis Project area. In comparison, a major watercourse with an incised drainage channel, fringing riparian vegetation and seasonal pools of water is located some 200 metres south-east of the proposed clearing area and was classed as being of high conservation significance. This watercourse will not be impacted by the proposed clearing.

On this basis, it is unlikely that the proposed clearing will impact on any watercourses or wetlands of significant environmental value. Provided that the drainage diversion is constructed correctly, impacts to watercourses are manageable. The construction of the diversion drain will be regulated by the Mining Proposal approval process (a requirement of the *Mining Act 1978*), and possibly the *Rights in Water and Irrigation Act 1914* (should a Bed and Banks permit be deemed necessary).

Methodology Bamford Consulting Ecologists (2008).
Mattiske Consulting Pty Ltd (2008).
St Barbara Limited (2008).
GIS Database:
- Hydrography, linear.

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

Comments

Proposal is not likely to be at variance to this Principle

Land System mapping by the Department of Agriculture Western Australia has mapped the proposed clearing area as the Gundockerta Land System, with a small portion within the boundary of the Rainbow Land System (GIS Database).

The Gundockerta Land System is characterised by extensive, gently undulating stony plains supporting bluebush shrublands. Saline plains and adjacent alluvial tracts are susceptible to water erosion where the stony mantle is absent and/or vegetation cover is reduced. The vegetation of this land system is highly preferred for grazing by introduced and native mammals, rendering it susceptible to overgrazing and consequent degradation (Pringle et al, 1994).

The Rainbow Land System is characterised by hardpan plains supporting Mulga shrublands. Alluvial plains are typically subject to sheet flow and are often characterised by fine ironstone gravel mantles and sparse, generally narrow and unincised concentrated drainage tracts. The Rainbow Land System is generally not susceptible to soil erosion; however impedance of sheet flow can initiate soil erosion and cause water starvation of vegetation downslope (Pringle et al, 1994).

A site visit to the proposed clearing area by the Assessing Officer, DoIR, was undertaken on 13 August 2008. The Gundockerta and Rainbow Land System descriptions given by Pringle et al (1994) are accurate, and the site was noted to be severely overgrazed. Vegetation descriptions given are also consistent with those provided by Mattiske Consulting Pty Ltd (2008) for the proposed clearing area. Existing waste rock landforms and an open cut pit are present at the site, resulting in permanent changes to the natural landscape. Following the proposed vegetation clearing, further open cut pit development and construction of waste rock landforms is proposed which will result in further fundamental changes to the natural landscape.

There is a potential for waste rock landforms to erode and impact upon the surrounding landscape if adequate construction and management practices are not implemented, however this is outside the scope of this assessment. Construction and management of waste rock landforms is addressed through the *Mining Act 1978* approval process to ensure that safe, stable and non-erosive landforms are constructed which can be blended into the natural environment.

In accordance with tenement conditions for Mining Leases 37/46 and 37/564, topsoil from cleared areas will be stripped and immediately re-spread or stockpiled for later use in rehabilitation. At the completion of mining operations, all disturbed areas will be ripped and revegetated with local native grasses, shrubs and trees. Rehabilitation and revegetation serve many purposes, one of which is to minimise the potential for land degradation.

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

Methodology Mattiske Consulting Pty Ltd (2008).
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 proposed clearing area is not located within a conservation area (GIS Database). According to available databases, the nearest conservation area is an un-named 'C Class' nature reserve, located approximately 61 kilometres south-south east of the proposed clearing area.

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

Methodology GIS Database:
- CALM Managed Lands and Waters.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not likely to be at variance to this Principle**
There are no perennial surface water features in the proposed clearing area (GIS Database). An ephemeral drainage line exists between the two existing waste rock landforms. The watercourse flows very rarely, with a very limited flow duration approximating the length of the storm from which it was generated (St Barbara Limited, 2008). Should a clearing permit be granted, this drainage feature will be diverted into a larger drainage line located to the north-west of its current location. The proposed diversion will route the watercourse into the same receiving waters downstream, albeit a few hundred metres upstream of the present confluence (St Barbara Limited, 2008). It is unlikely that the diversion would affect the quality of surface water.

The proposed clearing area is not located within a Public Drinking Water Source Area (GIS Database). The Leonora Water Reserve is located approximately 4.3 kilometres to the north (GIS Database). The groundwater table has been exposed in the existing Kailis Pit, and the water is saline (20,000 - 45,000 mg/L TDS) like much of the groundwater around Leonora (St Barbara Limited, 2008). Previous mining activity in the area has not resulted in any significant alteration to groundwater quality. Mine dewatering will lower the groundwater level from 18 metres below surface to approximately 77 metres below surface (St Barbara Limited, 2008). Dewatering is not expected to impact vegetation in the area as rooting depth is unlikely to extend to 18 metres

and vegetation is unlikely to be dependent upon saline groundwater (St Barbara Limited, 2008).

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

Methodology St Barbara Limited (2008).
GIS Database:
- Hydrography, linear.
- Public Drinking Water Source Areas (PDWSAs).

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments

Proposal is not likely to be at variance to this Principle

The proposed clearing area is located approximately five kilometres north-west of Leonora (GIS Database). Leonora is located in an arid environment with an average annual rainfall of approximately 235 millimetres (Bureau of Meteorology, 2008). Heavy rainfall events are occasionally experienced from remnants of tropical cyclones (St Barbara Limited, 2008).

One minor ephemeral drainage line exists in the proposed clearing area. The watercourse flows very rarely, with a very limited flow duration approximating the length of the storm from which it was generated (St Barbara Limited, 2008). Should a clearing permit be granted, it is proposed to divert the drainage route into a larger drainage system to the north of the proposed clearing area. A major incised creekline exists approximately 200 metres south-east of the proposed clearing area (GIS Database; Bamford Consulting Ecologists, 2008). This creekline would carry large volumes of water following heavy rainfall events, and ephemeral pools of water are known to persist here for extended periods of time following storm events (Bamford Consulting Ecologists, 2008). The proposed vegetation clearing is not expected to have any impact upon the natural flow regimes of this watercourse.

The proposed clearing of 40 hectares of native vegetation is not expected to increase the incidence or intensity of natural flood events given the small area to be cleared (40 hectares) in relation to the size of the Raeside - Ponton catchment (11,589,532 hectares) (GIS Database).

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

Methodology Bamford Consulting Ecologists (2008).
Bureau of Meteorology (2008).
St Barbara Limited (2008).
GIS Database:
- Hydrographic Catchments - Catchments.

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

Comments

There is one native title claim over the area under application (GIS Database). This claim (WC99_001) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Sites of Aboriginal Significance within the area applied to clear (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

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 Databases:
- Aboriginal Sites of Significance.
- Native Title Claims.

4. Assessor's comments

Comment

The Clearing Principles have been assessed and it is deemed that the proposed clearing is at variance to Principle (f), not likely to be at variance to Principles (a), (b), (c), (d), (g), (h), (i) or (j) and not at variance to Principle (e).

Should a clearing permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, record keeping and permit reporting.

5. References

Bamford Consulting Ecologists (2008) Fauna Assessment of the Kailis Project. Prepared for: St Barbara Limited. 20 February 2008.

Bureau of Meteorology (2008) Climate Statistics for Australian locations - Leonora. Available: http://www.bom.gov.au/climate/averages/tables/cw_012046.shtml. Accessed: 7 October 2008.

Cowan, M. (2002) Murchison 1 (MUR1 - East Murchison subregion) in 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002'. Department of Conservation and Land Management, Western Australia.

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.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Mattiske Consulting Pty Ltd (2008) Flora and Vegetation Survey of the Kailis - Trump and Poker - Forrest Lease Areas. Prepared for: St Barbara Limited. March 2008.

Pringle, H.J., Van Vreeswyk, A.M., & Gilligan, S.A. (1994) Technical Bulletin No. 87: An inventory and condition survey of the north-eastern Goldfields, Western Australia. Department of Agriculture, South Perth, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia (updated 2005).

St Barbara Limited (2008) Overview of the Kailis Gold Mine Expansion.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
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.
DoW	Department of Water
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.