Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1608/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Barrick Gold of Australia - Plutonic Gold Mine**

1.3. Property details

Property: M52/230
M52/396

Local Government Area: Shire of Meekatharra

Colloquial name: Triple P Mining Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
114		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 proposed to be cleared has been broadly mapped at a scale of 1:250000 as: Beard Vegetation Association 18: Low woodland; Mulga (*Acacia aneura*). According to Shepherd et al (2001), there is approximately 100% of this vegetation type remaining in the Gascoyne bioregion. The Curtin University Mine Rehabilitation Group conducted a biological survey of mining leases M52/396, M52/230 and M52/231 in November 2001. This survey included the area applied to clear under this clearing permit application. The vegetation of the area applied to clear was mapped as: Mulga Low Woodland (5-15m) above Mid-Dense *Triodia basedowii* Hummock Grassland (30-70%), and *Eremophila margarethae* Dwarf Scrub (0.5 - 1m, 10-30%) over stony quartz plains (Curtin University Mine Rehabilitation Group, 2001).	This clearing permit application is for 114 hectares within a purpose permit boundary of approximately 180 hectares. The clearing will allow the proponent to extend the existing Triple P open cut mining operations.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The area applied to clear surrounds the existing Triple P open cut pits and waste dump, and includes an existing haul road. The 'Albatross' and 'Flamingo' pits are approximately 500m west of the area applied to clear. Previous disturbance has occurred as a result of exploration drilling, whilst trampling of vegetation by cattle is an evident and ongoing form of disturbance across the Triple P Project area; which lies at the boundary of the Three Rivers and Marymia Pastoral Stations.

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 area applied to clear is dissected by an operational haul road and surrounds the existing Triple P pits and waste dump. The 'Albatross' and 'Flamingo' satellite mine pits and associated waste dumps are approximately 500 metres west of the proposed clearing area. Other satellite mine pits including 'Exocet' and 'Pelican' are within 2km to the west. Such mining activity has fragmented the proposed clearing area from other areas of native vegetation, resulting in reduced connectivity for fauna species. According to Woodman Environmental Consultants (2006) there are some patches of good quality habitat in the Triple P area, however most of the vegetation has been disturbed by cattle, historic mineral exploration and current mineral exploration activities.

Given the level of disturbance that the proposed clearing area has been subject to, it is highly unlikely that it contains a higher level of biological diversity than undisturbed vegetation in the local or regional area.

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

Methodology Woodman Environmental Consulting (2006).

(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

Prior to the establishment of the Triple P mining operations, Ecologia Environmental Consultants undertook a biological survey of the Triple P project area in May 1993 (Barrick Gold, 2006a). One specimen of the Vulnerable and Schedule 1 species Mulgara; *Dasycercus cristicauda* was trapped in the area. Based on this finding, Ecologia were commissioned to undertake a detailed survey and monitoring program of the Mulgara population in the Triple P Project area (Barrick Gold, 2006a). Thirty one individual Mulgara were trapped in the area between June 1993 and June 1994, however no Mulgara have been trapped in the Triple P project area in the past 12 years; despite trapping efforts by Ecologia between 1995-1998, 2000-2002, and most recently by Woodman Environmental Consulting in June 2006 (Ecologia, 1994; 2001; Woodman Environmental Consulting, 2006).

The most recent survey of the Triple P Project area by Woodman Environmental Consulting (2006) revealed no secondary evidence of Mulgara activity (scats, tracks, burrows and diggings). Woodman Environmental Consulting (2006) reported that previous disturbance from mineral exploration activities and trampling by cattle had diminished the habitat value of much of the vegetation in the project area. The small amount of suitable Mulgara habitat present in the application area is fragmented and isolated from other areas of suitable habitat, with an existing waste dump, pit, and haul road providing barriers to Mulgara movement on three sides (Woodman Environmental Consultants, 2006).

Given the previous and existing disturbances, the DEC (2006) have advised that the proposed clearing area is unlikely to provide valuable Mulgara habitat. Small patches of Mulgara habitat within an existing mining area are unlikely to support many indivduals, particularly in the long term (DEC, 2006). No further management measures such as trapping prior to clearing are deemed necessary (DEC, 2006). Management of the Mulgara at the regional level is far more important and beneficial to the continued existence of Mulgara, as opposed to micro-managing small patches of potential Mulgara habitat within existing mine sites (DEC, 2006).

Barrick Gold play an important role in Mulgara management at the regional level and are in the process of updating the *"Plutonic Gold Mine - Management Plan for the Protection of the Mulgara, Marymia Drilling Programs; May 2003"* document, in consultation with the DEC (Barrick Gold, 2006b; 2006c). A draft version of the updated document is currently undergoing review by the DEC prior to approval. Management strategies outlined in the draft management plan demonstrate a sound commitment by Barrick Gold to Mulgara management throughout their mining operations, including the Triple P Project area. It is anticipated that this draft document will replace the existing Mulgara Management Plan in the near future, and will include a number of new committments in addition to those already in place (Barrick Gold, 2006c).

There are no records to suggest that any other fauna species of conservation significance have been found in the area applied to clear (GIS Database). The vegetation of the proposed clearing area consists largely of Mulga woodlands and Hummock grasslands; vegetation types that are abundant at a local and regional scale. Vegetation in the proposed clearing area has been subject to disturbances from exploration drilling and pastoral activities (Woodman Environmental Consulting, 2006). Given these factors, the proposed clearing is not likely to have any significant impact on fauna habitat in the region.

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

Methodology

GIS Database - Threatened Fauna - CALM 30/09/05.
Barrick Gold (2006a).
Barrick Gold (2006b).
Barrick Gold (2006c).
DEC (2006).
Ecologia (1994).
Ecologia (2001).
Woodman Environmental Consulting (2006).

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known populations of Declared Rare Flora (DRF) or Priority Flora within the area applied to clear (GIS Database). CALM database records show five populations of *Eucalyptus semota* (P1) approximately 3.2 - 13km northeast of the proposed clearing area, and two populations of *Eremophila micrantha ms* (P1) approximately 6.4 - 7.2km southwest of the proposed clearing area (GIS Database).

E. semota is not likely to occur within the proposed clearing area given its preference for pallid clay slopes below lateritic mesas (Macpherson & Greyling, 1996 cited in Ecologia, 1996). These landform features are likely to be found in the Marymia Hills to the northeast of the Triple P Project, but are not present in the proposed clearing area.

A biological survey of mining leases M52/396, M52/230 and M52/231 was undertaken by the Curtin University Mine Rehabilitation Group in November 2001. The following Priority Flora species were identified in close proximity to the proposed clearing area: *Eremophila micrantha ms* (P1), *Eremophila lanata ms* (P3), *Calytrix praecipua* (P3), and *Maireana prosthecochaeta* (P3).

Flora surveys by the Curtin University Mine Rehabilitation Group have identified five populations of *E. micrantha ms* from the Plutonic mining leases (including two populations 6.4km and 7.2km from the proposed clearing area). However, this species has not been found within the application area (Curtin University Mine Rehabilitation Group, 2001). WA Herbarium records (2006) indicate that *E. micrantha ms* has been found in the Gascoyne and Murchison on a range of substrates including red-brown sand, sandy clay, quartz, ironstone, laterite and sandstone. *E. micrantha ms* has been recorded from flats, slopes and hillsides (WA Herbarium, 2006). According to biodiversity audits conducted throughout the Gascoyne and Murchison bioregions, the processes of greatest threat to *E. micrantha ms* are grazing, feral animals, exotic weeds and changed fire regimes (CALM, 2002a; 2002b). Based on soils and topography, *E. micrantha ms* could potentially occur within the proposed clearing area. However, the proposed clearing is not likely to affect the conservation status of *E. micrantha ms* given that suitable habitat is abundant in the local and regional area.

E. lanata ms (P3) was recorded from five locations within a vegetation type described by the Curtin University Mine Rehabilitation Group as "Mulga open low Woodland over *Eremophila lanata ms* open dwarf scrub on ironstone plains". The nearest populations of *E. lanata ms* to the proposed clearing area are: surrounding the Pelican waste dump, north of the Pelican pit, and west of the entry track into Pelican pit (approximately 1 - 1.5km west of the proposed clearing area). During a separate survey in June 2001, the Curtin University Mine Rehabilitation Group recorded nine populations of *E. lanata ms* (covering an area of approximately 351 hectares) in the vicinity of the Orient Well and several open cut pits including Callop, Trout, Bream and Barra (Curtin University Mine Rehabilitation Group, 2001). These populations are approximately 17 - 22km southwest of the area applied to clear (GIS Database). The conservation status of *E. lanata ms* was downgraded from Priority 1 to Priority 3 in recent years based on the discovery of these and other populations (Curtin University Mine Rehabilitation Group, 2001). The proposed clearing is not likely to affect the conservation status of *E. lanata ms* given that no specimens of *E. lanata ms* have been found within the proposed clearing area, the vegetation type within which *E. lanata ms* was found is absent from the application area, and *E. lanata ms* is well represented in surrounding areas.

C. praecipua (P3) was located 2km northeast of the Triple P pit during the November 2001 survey. This species was found growing within a vegetation type restricted to one small area of low Greenstone hills with ferruginous gravel on slopes and rocky laterite along ridges (Curtin University Mine Rehabilitation Group, 2001). A population of *C. praecipua* was found earlier in 2001, approximately 1.5km south of the proposed clearing area; also on Greenstone Hills (Curtin University Mine Rehabilitation Group, 2001). Whilst the area applied to clear does not contain Greenstone Hills, it is characterised by sedimentary rock outcropping within a larger area of granitic rock (DAFWA, 2006). Given that *C. praecipua* is known to prefer skeletal sandy soils over granite and laterite, breakaways and outcrops; it could potentially occur within the proposed clearing area (WA Herbarium, 2006). However, no specimens of *C. praecipua* have been recorded within the area applied to clear, and there is an abundance of suitable habitat throughout the Marymia breakaway hills; located northeast of the proposed clearing area. The conservation status of *C. praecipua* is not likely to be affected by the proposed clearing.

M. prosthecochaeta (P3) is known from 14 locations throughout the Plutonic mining leases, with the local population estimated in excess of 4,000 plants (Ecologia, 1996). Ecologia (1996) located 12 populations approximately 5km southwest of the proposed clearing area; growing on gently sloping plains with clayey soils covered by a surface layer of ironstone and quartz. *M. prosthecochaeta* was found growing in association with *Acacia aneura*, *Maireana georgei*, *Maireana triptera*, *Senna glutinosa subsp. x luerssenii* and *Senna artemisiodes subsp. x sturtii.* The Curtin University Mine Rehabilitation Group (2001) located a population of *M. prosthecochaeta* approximately 2.5km east southeast of the proposed clearing area, growing on similar ground in association with similar vegetation. These soil and vegetation types are known from the proposed clearing area (Curtin University Mine Rehabiliitation Group, 2001). Based on this information, *M. prosthecochaeta* could potentially occur within the area applied to clear. However, the proposed clearing is not likely to affect the conservation status of this species given that no specimens of *M. prosthecochaeta* have been found within the application area, there is an abundance of suitable habitat in the local and regional area, and discovery of numerous populations in recent years has seen the conservation status of ths species downgraded from Priority 1 to Priority 3 (Curtin University Mine Rehabilitation Group, 2001).

There is no evidence to suggest that the proposed clearing area contains DRF or Priority Flora, or represents significant habitat for such flora.

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

Methodology GIS Database - Declared Rare and Priority Flora List- CALM 01/07/05.

CALM (2002).
Curtin University Mine Rehabilitation Group (2001).
DAFWA (2006).
Ecologia (1996).
Macpherson & Greyling (1996).
WA 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 known Threatened Ecological Communities (TEC's) in close proximity to the area applied to clear (GIS Database). The nearest known TEC is the Ethel Gorge aquifer stygobiont community, which is approximately 210km to the north of the application area (GIS Database). It is highly unlikely that the proposed clearing will have any impact upon this TEC considering its distance from the area applied to clear.

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

Methodology GIS Database - Threatened Ecological Communities - CALM 12/04/05.

(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 IBRA Gascoyne bioregion (GIS Database). According to Shepherd et al (2001) there is approximately 100% of the pre-European vegetation remaining in this bioregion. The vegetation of the application area is classified as Beard Vegetation Association 18: Low woodland; Mulga (*Acacia aneura*). According to Shepherd et al (2001) there is approximately 100% of this vegetation type remaining. The area applied to clear does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European Area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% in IUCN Class I-IV Reserves*
IBRA Bioregion - Gascoyne	18,075,253	18,075,253	~100%	Least concern	1.9%
Shire of Meekatharra	No Information Available				
Beard Vegetation Association - -18	19,892,437	19,890,348	~99.99%	Least concern	2.1%

Based on the above, the proposed clearing is not at variance to this principle.

* Shepherd et al. (2001)
** Department of Natural Resources and Environment (2002)

Methodology Department of Natural Resources and Environment (2002)
GIS Database:
- IBRA - EA - 18/10/00.
- Pre-European Vegetation - DA 01/01.
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 is not likely to be at variance to this Principle

There are no permanent watercourses or wetlands in the area applied to clear (GIS Database). A low lying area which carries sheetwash drainage following high rainfall events is present in the application area. Water flowing through this area feeds into clearly defined creeklines further downstream (Barrick Gold, 2006). All clearing and final project designs will be such that natural water flow is not impeded (Barrick Gold, 2006). This will reduce the likelihood of flooding and ensure that vegetation downstream of the application area does not suffer water starvation.

The vegetation of this sheetwash area is not riparian, as indicated by the Curtin University Mine Rehabilitation Group (2001). An incised tributary approximately 1.5 - 2km west of the application area is more consistent with riparian vegetation, containing stands of *Acacia cyperophylla* to 8m tall and occasional trees of *Eucalyptus camaldulensis*. These species commonly inhabit creekline areas, however they are not present in the area applied to clear (Curtin University Mine Rehabilitation Group, 2001).

The proposed clearing will not remove any riparian vegetation or impact upon any downstream vegetation, provided that natural water flow is not impeded.

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

Methodology GIS Database:
- Hydrography, linear - DOE 01/02/04.
- Rivers 250K - GA.
Curtin University Mine Rehabilitation Group (2001).

(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 area applied to clear is an area of Archean basic and sedimentary rock outcropping within a larger area of granitic rock. The application area is relatively flat. (DAFWA, 2006). Red loam soils with a protective stony mantle are likely to occur within the application area. Disturbed and bare soil could be expected to erode after clearing unless precautions are taken to manage surface water run off (DAFWA, 2006).

Surface water run off and erosion control measures will be addressed in the Mining Proposal approval process, managed under the *Mining Act 1978*. The Mining Proposal must by approved by DoIR prior to the commencement of the project.

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

Methodology DAFWA (2006).

(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 Collier Range National Park is located approximately 56km northwest of the area applied to clear (GIS Database). There are no other conservation areas nearby. It is therefore unlikely that the area applied to clear is acting as a buffer for, or ecological linkage to, any conservation areas.

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 - CALM 01/07/05.

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

Comments

Proposal is not likely to be at variance to this Principle

The proposed clearing area includes a low lying area which carries sheetwash drainage during high rainfall events. Once cleared, most of this area will be used for expansion of the mine and waste dump. As such the level of exposed area able to promote sediment run off will be minimal (Barrick Gold, 2006a). Appropriate sedimentation control measures will be implemented in order to minimise sedimentation. Such control measures will be addressed in the Mining Proposal approval process, managed under the *Mining Act 1978*. Therefore the proposed clearing is unlikely to cause deterioration in surface water quality.

The proposed clearing is not expected to have any impact upon local groundwater levels or quality. Barrick Gold has a current Ground Water Licence (GWL) 151450 (3) which will allow de-watering. All water collected during de-watering will be transferred to a turkey's nest where it will be used for dust suppression around the mine site. Barrick Gold will monitor local groundwater levels during mining operations through nearby monitoring bores. All results will be included in the annual GWL report submitted to the Department of Water (Barrick Gold, 2006a). De-watering activities are more likely to have an impact upon ground water levels and quality than the proposed clearing. Any potential impacts from the de-watering fall outside the scope of the clearing permit process and will be addressed by the proponent in their Mining Proposal, which must be approved by DoIR, prior to the commencement of the project.

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

Methodology Barrick Gold (2006a).

(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 average annual rainfall of Three Rivers Pastoral Station (the closest meterological recording station to the area applied to clear) is 233.5mm (Curtin University Mine Rehabilitation Group, 2001). Average annual evaporation in the proposed clearing area is approximately 3,800mm (GIS Database). It is therefore expected that there would be little surface water flow during normal seasonal rains.

There are no permanent watercourses in the vicinity of the application area, and the clearing of 114 hectares within the Gascoyne River Catchment (7, 524, 961 hectares) is unlikely to increase the incidence or intensity of flooding (GIS Database).

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

Methodology GIS Database:
- Evaporation Isopleths - BOM 09/98
- Hydrographic Catchments - Catchments - DOE 23/3/05.
- Rivers 250K - GA.

Curtin University Mine Rehabilitation Group (2001).

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

Comments

There is one native title claim over the area under application. This claim (WC03/002) has been registered with the National Native Title Tribunal (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 known 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.

The clearing permit application was advertised by DoIR, inviting submissions from the public. One public submission was received, raising concerns regarding the potential impacts of the proposed vegetation clearing on flora and fauna, water quality, Sites of Aboriginal Significance, and Native Title rights. The proposed mine pit expansion area lies partly within two different mining tenements (M52/230 and M52/396). The two mining tenements cover a total area of approximately 1280 ha, and hence the proposed clearing of up to 114 ha constitutes a small percentage of the total area covered by these two mining tenements (GIS Database). The potential impacts of the proposed clearing on flora, fauna and water quality are further addressed under the relevant clearing principles. There are no Sites of Aboriginal Significance recorded within M52/396. There is one registered Aboriginal Site of Significance, located on the boundary of M52/230 (Site ID 20063 - Art). This site is located approximately 360m from the boundary of the area applied to clear (GIS Database) and consequently it is unlikey to be affected by the proposed vegetation clearing.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

Methodology GIS Database:
- Aboriginal Sites of Significance - DIA 04/07/02.
- Native Title Claims - DLI 19/12/04.

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	114	**Grant**	The clearing principles have been addressed and the proposal is not at variance to principle (e) and not likely to be at variance to principle (a), (b), (c), (d), (f), (g), (h), (i) and (j). It is therefore recommended that the permit be granted, subject to the following conditions: 1. 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; d) the area rehabilitated in hectares; e) the method of clearing; f) the purpose of clearing. 2. The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources by 1 March each year for the life of the permit setting out the records required under condition 1 of this permit in relation to clearing carried out between 1 January and 31 December of the previous year. This report can be included as an addendum to the Annual Environmental Report.

Explanatory Note:

1. In this permit **Annual Environmental Report** means a report produced as a requirement of tenement conditions under the *Mining Act 1978.*

5. References

Barrick Gold (2006a) Plutonic Gold Mine - Land Clearing Principles: Triple P.

Barrick Gold (2006b) Plutonic Gold Mine: Management Plan for the Protection of the Mulgara, Marymia Drilling Programs; May 2003.

Barrick Gold (2006c) Plutonic Gold Mine: Management Plan for the Protection of the Mulgara, September 2006 (Draft Version).

CALM (2002a) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Gascoyne 3 (GAS 3 Augustus subregion).

CALM (2002b) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Murchison 2 (MUR 2 Western Murchison subregion).

Curtin University Mine Rehabilitation Group (2001) Outline for Biological and Environmental Components of a Notice of Intent, Albatross/Flamingo Project - Homestake Plutonic Gold Mine (M52/396, M52/230, M52/231 Leases).

DAFWA (2006) Land degradation assessment report. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR), received 1 December 2006. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia.

DEC (2006) Minutes of a Meeting, Barrick Gold - Plutonic Gold Mine, Triple P Project Meeting between Barrick Gold and DEC Environmental Management Branch, 14 September 2006.

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.

Ecologia Environmental Consultants (1994) Triple P Project: Mulgara, Dasycercus cristicauda population survey.

Ecologia Environmental Consultants (1996) Rosella - Parrot Gold Project: Environmental Assessment.

Ecologia Environmental Consultants (2001) Homestake Gold - Mulgara Monitoring 2001.

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

Macpherson, C.J. & Greyling, P.M. (1996) Eucalyptus semota (Myrtaceae), a new species from the Ashburton District of Western Australia, Nuytsia 10 (3): 437-441.

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.

WA Herbarium (2006). Florabase - The Western Australian Flora. Department of Environment and Conservation. http://florabase.calm.wa.gov.au/

Woodman Environmental Consulting (2006) Plutonic Gold Mine - Mulgara, Dasycercus cristicauda investigations.

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.