Department of
Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 386/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: **Crescent Gold Limited**

1.3. Property details

Property: M38/1032
M38/318
M38/264

Local Government Area: Shire Of Laverton

Colloquial name: Sickle Deposit

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
95.2		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
Beard Association 18: Low woodland; Mulga (*Acacia aneura*) (Hopkins et al 2001; Shepherd et al 2001). A vegetation and fauna assessment was undertaken within the Sickle project area by MBS Environmental between 1 and 3 September 2004. The vegetation to be cleared occurs on an alluvial plain and is characterised by Mulga shrubland (*Acacia aneura*/ *Acacia ramulosa* var. *ramulosa*), with an understorey including: *Eremophila margarethae, Senna artemisioides* subsp. *filifolia, Aluta apressa* and herbaceous annuals such as *Calandrinia eremaea, Brachyscome oncocarpa and Helipterum craspedioides*. Mulga grass (*Eragrostis eriopoda*) dominates the understorey in patches under the Mulga (MBS Environmental 2004).	The proposed clearing of 95.2 ha is for the development of the Sickle gold deposit. The purpose of the clearing is to establish an open pit and associated mine site infrastructure (i.e. haul roads, laydown areas, waste rock dump). It is proposed that the vegetation and topsoil will be stripped and stored separately for later respreading on rehabilitated areas.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994) to Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The vegetation assessment was conducted at the level of reconnaissance survey as specified in EPA Guideline 51, targeting the areas of remnant vegetation on the Sickle project area (MBS Environmental 2004). The site was traversed by foot and samples of unknown flora were collected for identification. The vegetation assessment of the area was sufficient to ascertain the condition and vegetation associations. The vegetation units described for the project area are common and widespread throughout the north-eastern Goldfields (MBS Environmental 2004). Photographs of the area show the vegetation condition to be excellent to very good. The top of the hill system which runs north-south along the western side of the application area is bare and historically disturbed (MBS Environmental 2004).

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 Sickle gold mine project area is located within the Eastern Murchison Interim Biogeographical Regionalisation for Australia (IBRA) subregion (GIS database) which encompasses an area of 21,135,046 ha (GIS database). Almost 100% of the pre-European vegetation remains within this IBRA subregion (Shepherd et al. 2001).

The vegetation condition at the Sickle project area is excellent to very good (Keighery 1994) with vegetation structure intact and no evidence of weeds (MBS Environmental 2004). The area under application is located within the Mt Weld pastoral lease which is covered by pre-European vegetation association 18, Low woodland; Mulga (*Acacia aneura*), and covers over 617,000 ha of the surrounding area (GIS database). The vegetation within the area to be cleared broadly reflects the pre-European vegetation association, and is dominated by Mulga shrubland patches over a midstorey scrub, with diverse annuals and Mulga grass (*Eragrostis eriopoda*) in the Mulga interpatches (MBS Environmental 2004). The vegetation is well represented both locally and regionally throughout the north-eastern Goldfields (C Day, Botanist, MBS Environmental, pers. comm., 19 April 2006).

The vegetation and habitat assessment supplied by the proponent provides adequate information on the potential impact of the proposal on local plant communities and conservation significance flora and fauna species (CALM 2005). The Sickle site is unlikely to show higher diversity than the surrounding local area or bioregion, therefore, the proposed clearing is not likely to be at variance to this principle.

Methodology

CALM (2005)
GIS Database:
- Pre-European Vegetation - DA 01/01
- Pastoral Leases -DOLA 10/01
Keighery (1994)
MBS Environmental (2004)
Shepherd et al. (2001)

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposal is not likely to be at variance to this Principle

A habitat and fauna survey was conducted between 1 and 3 September 2004, with the habitat assessment conducted at the level of reconnaissance survey (MBS Environmental 2004). The diversity of landforms and vegetation types within the area under application are low especially in terms of ranges, ridges or caves suitable to provide fauna habitat (MBS Environmental 2004; C Day, Botanist, MBS Environmental, pers. comm., 19 April 2006).

Several species of fauna of varying conservation significance may potentially occur within the project area.

The Great Desert Skink (*Egernia kintorei*) listed under Schedule 1 (Fauna that is rare or is likely to become extinct) of the Wildlife Conservation (Specially Protected Fauna) Notice 2005 was trapped in the Laverton region in 1967 and may persist in the region (CALM 2004 as cited in MBS Environmental 2004). However, the vegetation of the Sickle site is characterised by Mulga habitat and not the sand plain vegetated by spinifex that characterise the habitat for this species (McAlpin 2001), therefore, the Great Desert Skink is not likely to be present.

One mammal species, the Mulgara (*Dasycercus cristicaudata*) which is listed as Vulnerable under the *Environmental Protection and Biodiversity Conservation Act 1999* and under Schedule 1 (Fauna that is rare or is likely to become extinct) of the Wildlife Conservation (Specially Protected Fauna) Notice 2005 may potentially occur within the proposed clearing area (MBS Environmental 2004). The habitat requirements of the Mulgara are clayey sand and sandy loam soils, with spinifex cover between 10 - 60%. Spinifex habitat was not present over the project area, thus the likelihood of Mulgara occurring in the area is low.

Two bird species of conservation significance are considered to potentially utilise the habitat of the proposed clearing area. The Peregrine Falcon (*Falco peregrinus*) listed under Schedule 4 (Other specially protected fauna) of the Wildlife Conservation (Specially Protected Fauna) Notice 2005 and the Australian Bustard (*Ardeotis australis*, Priority 4) have previously been observed within the project area (MBS Environmental 2004). Given that the vegetation of the project area is well represented in the Northern Goldfields, it is unlikely that this localised clearing will affect the habitat and distribution of these species, and that of other bird species which may utilise the area.

Three bird species listed on the Japan Australia Migratory Bird Agreement (JAMBA) or the China Australia Migratory Bird Agreement (CAMBA) were not recorded during the September 2004 survey by MBS Environmental but may potentially occur within the proposed clearing area. These are the Oriental Dotterel

(*Charadrius asiaticus*; JAMBA), Rainbow Bee-eater (*Merops ornatus*; JAMBA) and the Great Egret (*Ardea alba*; CAMBA). The proposed clearing area is not the species primary habitat and they may disperse throughout the project area at different times of the year. Due to the localised area applied to be cleared, the proposed clearing is unlikely to impact on key breeding and feeding habitat for these migratory bird species (MBS Environmental 2004).

The habitat assessment supplied by the proponent provides adequate information on the potential impact of the proposal on conservation significant fauna species (CALM 2005). The proposal is not likely to be at variance to this principle as it is a localised disturbance and the vegetation types and landforms are well-represented throughout the surrounding north-eastern Goldfields.

Methodology CALM (2004)
CALM (2005)
CALM Fauna Database (2004)
GIS Database:
- Pre-European Vegetation - DA 01/01
MBS Environmental (2004)
McAlpin (2001)

(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 CALM datasets, there are no records of Declared Rare Flora (DRF) or Priority flora species within 50 km of the proposed area of clearing (GIS database).

A vegetation and flora assessment of the Sickle project area was undertaken by MBS Environmental in September 2004. Prior to the site assessment a CALM database search between the coordinates 28°22' - 28°55'S and 122°14' - 122°41'E was undertaken to identify flora species listed under the WA *Wildlife Conservation Act 1950* which may potentially occur within the application area (MBS Environmental 2004).

No Declared Rare Flora species were located during the flora and vegetation survey (MBS Environmental 2004).

The Priority 1 species *Phyllanthus baeckeoides* was identified within the Sickle project area during the flora survey in September 2004 (MBS Environmental 2004). A targeted survey for *Phyllanthus baeckeoides* was undertaken by MBS Environmental during March 2006 to determine the impact of the proposal upon this species. *Phyllanthus baeckeoides* was found to be widespread through the system of low hills running north-south along the western side of the Sickle project area (MBS Environmental 2006). As a result of the survey, Crescent Gold have relocated the laydown and waste dump to the alluvial plains to the north-west and north-east of the open pit respectively, areas which do not support *Phyllanthus baeckeoides* (MBS Environmental 2006). The realignment of the laydown area and waste dump has drastically reduced the number of individuals of the local population impacted by the proposal, from approximately 38% to approximately 4%, however, due to the location of the ore body a small number plants from the local population will be removed (MBS Environmental 2006). CALM has advised that the overall impacts of the amended waste dump proposal on the conservation status of *Phyllanthus baeckeoides* appears to be low and manageable (CALM 2006).

The vegetation assessment conducted by MBS Environmental provides adequate information on the potential impact of the proposal on local plant communities and conservation significant flora species (CALM 2005), and in consideration with the above the proposal is not likely to be at variance to this principle.

Methodology CALM (2005)
CALM (2006)
GIS Database:
- Declared Rare and Priority Flora List - CALM 13/08/03
MBS Environmental (2004)
MBS Environmental (2006)

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments **Proposal is not likely to be at variance to this Principle**
There are no records of Threatened Ecological Communities (TECs) within the area subject to be cleared (GIS database; MBS Environmental 2004; Cowan 2001). The nearest known TEC is located approximately 240 km north-west of the proposed clearing area (GIS database). The proposal is not likely to be at variance to this principle.

Methodology Cowan (2001)

GIS Database:
- Threatened Ecological Communities - CALM 12/4/05
MBS Environmental (2004)

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposal is not likely to be at variance to this Principle

The State Government is committed to the National Objective Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-European settlement (Department of Natural Resources and Environment 2002; EPA, 2000).

While the benchmark of 15% representation in conservation reserves (JANIS Forests Criteria 1997) has not been met for Beard vegetation association 18, approximately 99.9% of the pre-European extent remains for this association and it is therefore of 'least concern' for biodiversity conservation (Hopkins et al. 2001; Department of Natural Resources and Environment 2002).

	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation Status**	% in IUCN Class I-IV reserves
IBRA Bioregion - Murchison	28,206,195*	28,206,195*	~100%	Least concern	
Shire of Laverton	No information available				
Beard vegetation associations - 18	24,675,970	24,659,110	~99.9%	Least concern	2.0%

With consideration to the above, the proposal is not likely to be at variance to this principle.

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

Methodology

Department of Natural Resources and Environment (2002)
EPA (2000)
Hopkins et al. (2001)
JANIS Forests Criteria (1997)
Shepherd et al. (2001)

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

Comments

Proposal may be at variance to this Principle

There are no permanent wetlands or watercourses within the application area (MBS Environmental 2004), although three minor, non-perennial watercourses are evident within the mine layout, and a further four minor, non-perennial watercourses intercept the proposed haul road (GIS database). These minor watercourses are widespread across the landscape throughout the north-eastern Goldfields, acting as drainage channels after periods of significant rainfall (GIS database). Aerial photographs show that the vegetation surrounding these minor, non-perennial watercourses is relatively sparse (MBS Environmental 2006), therefore, it is unlikely that the vegetation would be regarded as significant riparian vegetation. Average annual rainfall at the Sickle project area is low (approximately 250-300 mm/yr), however, the area is subject to sporadic, heavy rainfall events (GIS database). Surface water runoff and soil erosion may be exacerbated in and around these non-perennial watercourses if native vegetation is cleared during heavy rainfall events. In order to minimise the risk of soil erosion occurring at the time of clearing conditions have been placed on the clearing permit which prevent the clearing of native vegetation whilst it is raining, and which require the Permit Holder to construct and maintain a culvert or floodway where the haul road crosses a drainage line.

The clearing of native vegetation for the proposed development may be at variance to this principle because of issues associated with erosion at the time of clearing.

Methodology

GIS Database:
- Rivers 250K - GA
- Lakes, 1M - GA 01/06/00
- Hydrography, linear - DOE 1/2/04
- Mean Annual Rainfall Isohyets (1975-2003) - DOE 09/05
MBS Environmental (2004)
MBS Environmental (2006)

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

Comments

Proposal may be at variance to this Principle

The proposed area to be cleared is on the Bevon land system and is described as low ironstone hills, with stoney lower slopes supporting Mulga shrublands (DAWA 2005). The soils of the application area are predominately alluvial plains of clay and silt with an ironstone pebble veneer, and a north-south running range of low hills of cemented ironstone gravel and laterite on the western side of the application area (MBS Environmental 2006). The top of the hill system is bare and has been historically disturbed as a result of exploration activities (MBS Environmental 2004). During the September 2004 vegetation survey no weed species were recorded within the proposed area of clearing (MBS Environmental 2004).

The region experiences a high evaporation rate (3200-3400 mm/yr) and low average rainfall (250-300 mm/yr), however, the area is often subject to sporadic heavy rainfall events (GIS database). Three minor, non-perennial watercourses intercept the proposed mine site layout (ore body, waste dump and laydown area) and four minor, non-perennial watercourses intercept the proposed haul road. DAWA has advised that the soils occurring at the Sickle project area are susceptible to soil erosion after clearing if the protective stoney mantles are removed and surface water is not controlled (DAWA 2005). Soil erosion may be exacerbated in and around these watercourses if the clearing were to occur prior to, or during a heavy rainfall event. In order to minimise the risk of erosion occurring conditions have been placed on the clearing permit which prevent clearing whilst it is raining and which require the Permit Holder to construct and maintain a culvert or floodway where the haul road crosses a drainage line.

Depth to groundwater in the Sickle region varies between 53 and 122 m, and with a high evaporation rate and low average rainfall, recharge to groundwater would be low, effectively minimising the risk of surface and groundwater salinity (GIS database; MBS Environmental 2004). Residency times for locally ponded waters would also be limited, reducing the risk of water logging across the proposed area to be cleared. DAWA (2005) has advised that the pit dewatering operation has potential to cause land degradation in the form of salinity if a safe disposal mechanism is not designed and implemented for water in excess of that required for dust suppression on roads. This land degradation risk is associated with the land use activity and not the clearing and will be managed under the Mining Proposal process in accordance with the *Mining Act 1978*.

In consideration of the above, the proposal may be at variance to this principle with respect to soil erosion at the time of clearing.

Methodology

DAWA (2005)
GIS Database:
- Evaporation Isopleths - BOM 09/98
- Mean Annual Rainfall Isohyets (1975-2003) - DOE 09/05

MBS Environmental (2004)
MBS Environmental (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 nearest conservation area is Goongarrie National Park which is located approximately 160 km south-west of the proposed clearing area (GIS database). Considering the distance separating the two areas, the proposal is not likely to be at variance to this principle.

Methodology

GIS Database:-
- CALM Managed Lands and Waters - CALM 1/07/05

(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 may be at variance to this Principle

The proposed area of clearing is within the Laverton Public Drinking Water Source Area (GIS database). The groundwater is typically slightly acidic to fresh brackish, with salinity ranging from 830 - 1900 mg/L Total Dissolved Solids and pH ranging between 6.3 - 6.7 (MBS Environmental 2004b). Depth to groundwater in the Sickle area ranges between 53 and 122 m and the area experiences low average rainfall (250-300 mm/yr) and a high evaporation rate (3200-3400 mm/yr) (GIS database). The Laverton area is subject to sporadic heavy rainfall events, therefore, a reasonable amount of rainfall may infiltrate to groundwater, although, given the size of the clearing (95.2 ha) compared to the size of the Laverton Public Drinking Water Source Area (264 000 ha) it is unlikely that the clearing will have any significant affect on groundwater quality (GIS database).

The proposed area of clearing does not intercept any major watercourses, therefore, it is not likely to affect surface water quality or drainage into Lake Carey, which is located approximately 27kms to the south-west of the proposal (GIS database). There are several minor, non-perennial watercourses that occur within the

clearing areas which act as drainage lines during and after significant rainfall events (GIS database). Heavy rainfall at the time of clearing could result in erosion and increased turbidity in these watercourses, which may cause deterioration in the quality of surface water. However, as these watercourses only flow for short periods after heavy rainfall events, any ponded water will quickly infiltrate or evaporate. In order to minimise the risk of erosion occurring and any possible deterioration in the quality of surface water a condition has been placed on the clearing permit which prevents the clearing of native vegetation whilst it is raining.

The proposal may be at variance to this principle with respect to potential impacts on surface water quality.

Methodology DAWA (2005)
GIS Database:
- Public Drinking Water Source Areas (PDWSAs) - DOE 28/4/05
- 250K Map Series, Hydrogeology - WRC 05/08/02
- Hydrography, linear - DOE 1/2/04
- Evaporation Isopleths - BOM 09/98
- Mean Annual Rainfall Isohyets (1975-2003) - DOE 09/05
MBS Environmental (2004)
MBS Environmental (2004b)

(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

There are no wetlands or perennial watercourses within the proposed clearing area, however, several minor, non-perennial watercourses intercept the proposed clearing area (GIS database; MBS Environmental 2004). The Sickle area experiences a high evaporation rate (3200-3400 mm/yr) and low average annual rainfall (250-300 mm/yr) (GIS database), however, the area can subject to sporadic heavy rainfall events. During heavy rainfall events the area is often subject to flooding. However, in the north-eastern Goldfields the minor, non-perennial watercourses generally only flow for short periods after heavy rainfall events, and any ponded water is quickly infiltrated or evaporated. Furthermore, the area to be cleared is unlikely to form a catchment area sufficiently large enough to cause or increase the incidence of flooding.

With consideration to the above the proposal is not likely to be at variance to this principle.

Methodology GIS Database:
- Rivers 250K - GA
- Evaporation Isopleths - BOM 09/98
- Mean Annual Rainfall Isohyets (1975-2003) - DOE 09/05
MBS Environmental (2004)

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

Comments

The Sickle Deposit Mining Proposal was referred to the Environmental Protection Authority (EPA) on 13 April 2006 due to the proposal being located within the Laverton Water Reserve, a Public Drinking Water Source Area (PDWSA). EPA advice was received by the DoIR Native Vegetation Branch on 22 May 2006. The EPA made the recommendation that the proposal be given the level of assessment: Not Assessed - Public advice given, and managed under Part V of the *Environmental Protection Act 1986* (Works Approval). As a result of the EPA's recommendation, clearing application 386/1 has been processed and assessed by the Native Vegetation Branch, DoIR.

As a result of the discovery of the Priority 1 species *Phyllanthus baeckeoides* during the flora and vegetation survey by MBS Environmental in September 2004, Crescent Gold has relocated the proposed waste dump and laydown area to reduce the total disturbance to this species. The total area applied to clear (93.2 ha) remains the same. The DoIR assessing officer informed the proponent that due to the change in the location of the proposed clearing areas the amended application will need to be re-advertised. The permit was amended on 11 April 2006 and was advertised on Monday 17 April 2006 in accordance with section 51E(4c) of the *Environmental Protection Act 1986* which requires the amended application to be advertised to invite any person/s to comment on the application within such a period as is specified in the advertisement (3 weeks). The assessment for the revised clearing application was undertaken subsequent to the advertisement.

There is a native title claim over the area under application; WC99/001. This claim has been registered with the National Native Title Tribunal on behalf of Wongatha claimant group. 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 (ie. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

The proposed clearing occurs in an area that is covered by the following Registered Indigenous Heritage Site -

Laverton 1, ID: W00086. 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.

Crescent Gold Limited's leases M38/1032, M38/318 and M38/264 have a current groundwater licence GWL160682 for the purpose of dewatering, dust supression and exploratory drilling operations granted in accordance with the *Rights in Water and Irrigation Act 1914* (DoE 2006).

Crescent Gold Limited does not have a current EP Licence or works approval for this project. A works approval application is to be submitted to DoE shortly for the refurbishment of the existing Barricoat Plant and Tailings facility (DoE 2006).

Crescent Gold Limited have submitted a Mining Proposal for the Sickle deposit project (J Cameron, Environmental Coordinator, Minerals Branch, DoIR pers. comm., 8 May 2006).

The Shire of Laverton has no objection to the application by Crescent Gold Ltd for permits to clear native vegetation (Shire of Laverton 2005).

Methodology

DoE (2005)
DoIR pers. comm. (2006)
GIS Database:
- Native Title Claims - DLI 7/11/05
- Aboriginal Sites of Significance - DIA 28/02/03
Shire of Laverton (2005)

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	95.2	Grant	The clearing principles have been addressed and the proposal is not likely to be at variance with principles a, b, c, d, e, h and j. The clearing may be at variance with principle (f) and (i) since the mine layout and proposed haul road intercept several non-perennial watercourses, which may be prone to erosion if the site is exposed to a heavy rainfall event. The clearing may be at variance with Principle (g) as DAWA has provided advice that the disturbance of the stoney mantle may cause land degradation in the form of soil erosion. The assessing officer advises that the permit be granted with the following conditions. 1) The Permit Holder shall not clear native vegetation within the area cross-hatched yellow on Plans 386/1A and 386/1B whilst it is raining. 2) The Permit Holder shall construct and maintain a culvert or floodway where the haul road crosses a drainage line. 3) The Permit Holder shall inspect each culvert or floodway constructed in accordance with condition 2 following rainfall events causing surface water runoff, or monthly if rainfall events do not occur. If erosion is observed, the permit holder shall construct silt fences and/ or sediment traps downstream of the erosion.

5. References

CALM (2004). Significant Fauna Database 2004. Search area: 28.9501°S 122.772°E, 28.3308°S 122.134°E.

CALM (2005). Land clearing proposal advice. Advice to Program Manager, Native Vegetation Assessment Branch, Department of Industry and Resources (DOIR)- Department of Conservation and Land Management, Western Australia.

CALM (2006). Land clearing proposal advice. Advice to Program Manager, Native Vegetation Assessment Branch, Department of Industry and Resources (DOIR) - Department of Conservation and Land Management, Western Australia.

Cowan, M. (2001). Murchison 1 (MUR1- Eastern Murchison subregion) in 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002'. Report published by the Department of Conservation and Land Management, Perth, Western Australia.

DAWA (2005). Soil Erosion Risk Assessment Report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture, 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.

DoE (2006). DoE licence checks. Advice to the Native Vegetation Branch, Department of Industry and Resources. Department of Environment, Western Australia.

EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.
EPA (2004) Guidance for the Assessment of Environmental Factors - terrestrial flora and vegetation surveys for Environmental Impact Assessment in Western Australia. Report by the EPA under the Environmental Protection Act 1986. No 51 WA.
Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
JANIS Forests Criteria (1997) Nationally agreed criteria for the establishment of a comprehensive, Adequate and Representative reserve System for Forests in Australia. A report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-committee. Regional Forests Agreement process. Commonwealth of Australia, Canberra.
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
MBS Environmental (2004). Vegetation and Habitat Assessment of the Euro, Sickle and Admiral Hill Project Areas, Laverton, Crescent Gold Limited.
MBS Environmental (2004b). Documentation accompanying the clearing permit application for Sickle Deposit, Laverton, Crescent Gold Limited.
MBS Environmental (2006). Focused Assessment of Priority 1 Species Phyllanthus backeoides, Sickle Project Area, Laverton, Prepared for Crescent Gold Limited, March 2006.
McAlpin, S. (2001). The Recovery Plan for the Great Desert Skink (Egernia kintorei) 2001-2011. Prepared by On behalf of the Arid Lands Environment Centre.
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.
Shire of Laverton (2005). Direct interest letter, application to clear vegetation 385/1, 386/1 and 387/1, Shire of Laverton.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAWA	Department of Agriculture, Western Australia.
DA	Department of Agriculture, Western Australia.
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

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

P1	**Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2	**Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P3	**Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
P4	**Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst

being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

R — **Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

X — **Declared Rare Flora - Presumed Extinct taxa**: taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

Schedule 1 — **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

Schedule 2 — **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

Schedule 3 — **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

Schedule 4 — **Schedule 4 – Other specially protected fauna**: being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

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

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

P2 — **Priority Two**: **Taxa with few, poorly known populations on conservation lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P3 — **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P4 — **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

P5 — **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

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

EX — **Extinct**: A native species for which there is no reasonable doubt that the last member of the species has died.

EX(W) — **Extinct in the wild**: A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR — **Critically Endangered**: A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN — **Endangered**: A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU — **Vulnerable**: A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD — **Conservation Dependent**: A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered

within a period of 5 years.