



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2977/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Giralia Resources NL

1.3. Property details

Property: Exploration Licence 69/1897
Exploration Licence 69/2289
Local Government Area: Shire Of Wiluna
Colloquial name: Miss Fairbairn Hills Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia, and are a useful tool to examine the vegetation extent in a regional context. Five Beard Vegetation Associations are located within the application area (GIS Database):

18; Low woodland; mulga (*Acacia aneura*);

29; Low woodland; *Allocasuarina huegeliana* & York gum;

95; Hummock grasslands, shrub steppe; Acacia & Grevillea over *Triodia basedowii*;

178; Hummock grasslands, grass steppe; hard spinifex, *Triodia basedowii*; and

1195; Mosaic: low woodland; mulga in valleys / hummock grasslands, shrub steppe; Acacia species over *Triodia basedowii*.

Ecologia Environment Pty Ltd (2008c) conducted a targeted Rare and Priority Flora survey over the application area in July 2008. During the survey botanists transversed a 10 metre wide corridor of vegetation along 10 proposed drill lines and associated tracks, and conducted 30 x 30 metre quadrat searches at 97 proposed drill pad sites. In addition, 3.8 kilometres of access tracks and a 31 x 31 metre polygon at the proposed camp site were also surveyed (Ecologia Environment Pty Ltd, 2008c). The following eight vegetation types were identified from four different landforms during the Ecologia Environment Pty Ltd (2008c) survey.

Rocky Hilltops

1. *Acacia pruinocarpa*, *Acacia craspedocarpa* and *Acacia aneura* var. *aneura* scattered low trees over *Acacia aneura* var. *aneura* and *Acacia aneura* var. *argentea* high open shrubland over *Acacia rhodophloia*, *Lamarchea sulcata* and *Grevillea berryana* scattered shrubs over *Eremophila citrina* and *Eremophila* aff. *maitlandii* low open shrubland over *Triodia lanigera* and *Triodia schinzii* open hummock grassland.

2. *Acacia rhodophloia* and *Acacia kempeana* high open shrubland over *Grevillea berryana* and *Acacia kempeana* open shrubland over *Gompholobium polyzygum*, *Ptilotus rotundifolius* and *Acacia tenuissima* low open shrubland over *Triodia lanigera* and *Triodia schinzii* hummock grassland.

Midslopes

3. *Acacia aneura* var. *aneura* and *Acacia pruinocarpa* scattered low trees over *Acacia aneura* var. *aneura*, *Acacia aneura* var. *argentea* and *Acacia rhodophloia* high open shrubland over *Grevillea berryana*, *Lamarchea sulcata*, *Acacia marramamba* and *Acacia* aff. *stowardii* (linear form) scattered shrubs over *Eremophila citrina* and *Eremophila* aff. *maitlandii* low open shrubland over *Triodia schinzii* and *Triodia lanigera* open hummock grassland.

4. *Halgania glabra* and *Gompholobium polyzygum* low open heath over *Triodia lanigera* and *Triodia schinzii* very open hummock grassland.

Flat / Undulating Plains

5. *Acacia quadrimarginea*, *Acacia aneura* var. *macrocarpa* and *Acacia aneura* var. *aneura* high open shrubland over *Eremophila citrina* and *Eremophila galeata* shrubland over *Ptilotus obovatus* var. *obovatus* and *Ptilotus aevoides* low open shrubland over *Aristida contorta* and *Eragrostis eriopoda* very open tussock grassland.

6. *Acacia pruinocarpa* and *Acacia elachantha* low trees over *Acacia aneura* var. *aneura*, *Acacia rhodophloia* and *Acacia marramamba* high open shrubland over *Eremophila forrestii* subsp. *forrestii*, *Eremophila citrina* and *Acacia minyura* shrubland over *Eremophila margarethae* and *Eremophila* aff. *maitlandii* low open shrubland over *Eragrostis eriopoda* very open tussock grassland and *Triodia basedowii* very open hummock grassland.

7. *Acacia abrupta* scattered low trees over *Senna glutinosa* subsp. *glutinosa* and *Acacia marramamba* scattered shrubs over *Acacia pachyacra*, *Acacia* aff. *Stowardii* (linear form), *Grevillea berryana* and *Calytrix carinata* scattered low shrubs over *Triodia lanigera* open hummock grassland.

Rocky Footslopes

8. *Acacia pruinocarpa* and *Corymbia deserticola* scattered trees over *Acacia aneura* var. *aneura* low woodland over *Acacia craspedocarpa*, *Acacia rhodophloia*, *Acacia xiphophylla* and *Grevillea berryana* high shrubland over *Eremophila latrobei* and *Acacia* aff. *stowardii* (linear form) open shrubland over *Eremophila* aff. *maitlandii* low shrubland over *Triodia lanigera* hummock grassland.

Clearing Description

Giralia Resources NL (Giralia Resources) proposes to clear 6.4 hectares of native vegetation within a purpose permit boundary of approximately 254 hectares (Giralia Resources, 2009). The proposed clearing is for the purpose of mineral exploration on Exploration Licences 69/1897 and 69/2289. The proposed clearing will be undertaken mechanically with a raised blade (Giralia Resources, 2008).

Vegetation Condition

Pristine: No obvious signs of disturbance (Keighery, 1994).

Comment

Giralia Resources commissioned Ecologia Environment Pty Ltd (2008c) to conduct a Declared Rare and Priority Flora survey of the application area in July 2008. Factors taken into consideration when determining the vegetation condition were; weeds, grazing, litter and ground disturbance (tracks and other cleared areas). Based on this survey the vegetation condition was derived.

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 application area falls within the boundaries of the Trainor subregion of the Little Sandy Desert bioregion, and the Carnegie subregion of the of the Gascoyne bioregion, according to the Interim Biogeographic Regionalisation of Australia (GIS Database).

The Trainor subregion is underlain by the Officer Basin and is characterised by shrub steppe of Acacias, *Aluta maisonneuvei* and Grevilleas over *Triodia schinzii* on sandy surfaces, sparse shrub steppe over *Triodia basedowii* on stony hills, with Eucalypt communities and bunch grasslands on alluvial deposits and drainage lines associated with ranges (Cowan and Kendrick, 2001). The subregion is rich in arid zone reptiles, particularly the genera *Ctenotus* and *Lerista*. Floristically, the subregion displays high diversity in the *Acacia* and *Goodenia* genera (Cowan and Kendrick, 2001). Refugia of the subregion include numerous rockholes, springs and soaks in range country.

The Carnegie subregion is underlain by the Earraheedy Basin and is characterised by sedimentary and granite ranges divided by broad flat valleys. Shallow earthy loams over hardpan occur on the plains and shallow stony loams are associated with the ranges. Low mulga communities occur on hills and plains, whilst ranges are dominated by mulga scrub and *Eremophila* shrublands (Cowan, 2001).

The application area is located within the Carnarvon Range proposed reserve. This area is listed on the Register of the National Estate for its botanical and Aboriginal heritage values (Department of the Environment, Water, Heritage and the Arts, 2008). The Carnarvon Range proposed reserve supports outlying populations of flora species known only from the Hamersley Ranges and areas further north. The area is characterised by peaks of the Range (for example, Mount Essendon at 950 metres), gorges containing permanent and semi-permanent waterholes and plains surrounding the range which are dominated by spinifex associations with some areas of mulga (Department of the Environment, Water, Heritage and the Arts, 2008).

Ecologia Environment Pty Ltd (2008c) recorded 168 flora taxa from 29 families and 57 genera during a targeted Rare and Priority Flora survey over the application area in July 2008. No Declared Rare Flora (DRF) or Threatened Ecological Communities (TEC's) were recorded during floristic surveys of the application area (Ecologia Environment Pty Ltd, 2008c). Ecologia Environment Pty Ltd (2008c) state that the survey area is of moderate botanical diversity.

Ecologia environment Pty Ltd (2008b) recorded three native mammals, 28 birds and seven reptile species during a Level 1 fauna survey of the application area in July 2008. The assessing officer considers this a moderate level of fauna diversity considering a search of relevant databases indicated that there are potentially 38 native mammal, 110 bird, 92 reptile and seven amphibian species occurring in the application area (Ecologia Environment Pty Ltd, 2008b).

The Ecologia Environment Pty Ltd (2008b) fauna survey identified five introduced species of mammals occurring in the application area; Rabbit (*Oryctolagus cuniculus*); Cat (*Felis catus*); Donkey (*Equus asinus*); Camel (*Camelus dromedarius*); and Cow (*Bos taurus*). Introduced species are capable of out-competing native fauna for food and shelter sources. Furthermore, larger carnivorous introduced species are likely to feed directly on native fauna, reducing the biodiversity of the area.

No weed species were recorded during the Ecologia Environment Pty Ltd (2008c) Rare and Priority Flora survey. The introduction of weed species can diminish the biodiversity value of the proposed clearing area (CALM, 1999). Should a clearing permit be granted, it is recommended that appropriate conditions be imposed to minimise the risk of clearing operations spreading or introducing weeds to non-infested areas.

Ecologia Environment Pty Ltd (2008b) state that due to the low levels of disturbance anticipated during the exploration stage of this project, the biodiversity of the region is not expected to be significantly impacted.

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

Methodology CALM (1999)
Cowan (2001)
Cowan and Kendrick (2001)
Department of the Environment, Water, Heritage and the Arts (2008)
Ecologia Environment Pty Ltd (2008b)
Ecologia Environment Pty Ltd (2008c)
GIS Database:
- Interim Biogeographic Regionalisation for Australia
- Interim Biogeographic Regionalisation for Australia (Subregions)

(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

Ecologia Environment Pty Ltd (2008b) undertook a Level 1 fauna survey of the application area in July 2008. From this survey the following fauna habitats were identified.

Open Stony Hills

This fauna habitat is comprised predominantly of sparse *Acacia* spp. over an open *Eremophila* shrubland over *Triodia basedowii*, with a coarse stony ground on red-orange sand/clay (Ecologia Environment Pty Ltd, 2008b). The majority of the drill pads are proposed to be located in this fauna habitat (Ecologia Environment Pty Ltd, 2008b). This habitat typically supports few numbers of fauna species due to the lack in a diversity of ecological niches – there are few crevices in rocks or under bark for reptiles and small mammals to shelter in, a low diversity of plant species gives little food for most species, and the substrate is unsuitable for most burrowing mammals and reptiles (Ecologia Environment Pty Ltd, 2008b). An exception is the Western Pebble-mound Mouse (*Pseudomys chapmani*), listed as Priority Four (taxa in need of monitoring) by the Department of Environment and Conservation (DEC). This species prefers rocky hill slopes supporting a surface layer of regularly-sized pebbles. Although no mounds were observed around proposed drill pads during the survey, suitable habitat for this species occurs within the application area (Ecologia Environment Pty Ltd, 2008b).

The Open Stony Hills habitat is not expected to be significantly impacted by the proposed clearing. Localised loss of fauna habitat caused by clearing of the drill pads and ongoing works around the drill pads will occur within the application area. The small area that will be disturbed combined with the continuous and relatively large area of this habitat type in the region will result in no significant impacts to fauna indigenous to Western Australia relying on this habitat type (Ecologia Environment Pty Ltd, 2008b).

Floodplains

This fauna habitat is comprised predominantly of mixed *Corymbia*, *Acacia*, and *Eremophila* species in an open shrubland, over scattered *Triodia basedowii*. The substrate was primarily red-orange sandy clay with numerous small stones and pebbles. Species of conservation significance that can be found in this habitat type include:

- Greater Bilby (*Macrotis lagotis*), Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*;
- Gilled Slender Bluetongue (*Cyclodomorphus branchialia*), Schedule 1- Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*;
- A lizard (*Lerista macropisthopus remota*), listed by the DEC as Priority Two - taxa with few, poorly known populations on conservation lands;
- Long-tailed Dunnart (*Sminthopsis longicaudata*), listed by the DEC as Priority Three - taxa with several, poorly known populations, some on conservation lands;
- Australian Bustard (*Ardeotis australis*), listed by the DEC as Priority Four, taxa in need of monitoring; and
- Bush Stone-curlew (*Burhinus grallarius*), listed by the DEC as Priority Four, taxa in need of monitoring.

The Floodplains habitat is not expected to be significantly impacted by the proposed clearing. This habitat type is generally widespread and undisturbed and only a small area is expected to be cleared (Ecologia Environment Pty Ltd, 2008b).

Drainage Line

This fauna habitat type consists of scattered *Corymbia* over mixed *Acacia* and *Senna* species. The substrate was sandy to gravelly which provides habitat for burrowing species (Ecologia Environment Pty Ltd, 2008b).

Some of the proposed access tracks cross drainage lines and localised disturbance at these sites is expected. No significant impacts are expected due to the small area that is proposed to be disturbed and the low level of disturbance expected (Ecologia Environment Pty Ltd, 2008b).

Mulga Woodland

This fauna habitat comprised predominantly of mulga woodland was found on both the hill slopes and flats, with rocky, gravelly and sandy/clay substrates. Mulga (*Acacia aneura*) dominated, with scattered *Acacia pruinocarpa*, over a mixed *Eremophila* shrubland and scattered *Triodia basedowii* (Ecologia Environment Pty Ltd, 2008b). Numerous rabbit burrows were observed, as well as several Varanid and Agamid burrows. Dead wood and stumps provided shelter for geckos and other small skinks (Ecologia Environment Pty Ltd, 2008b).

Several survey sites, tracks and the camp site are proposed to occur in this habitat type. Localised loss of habitat is expected to be higher than other habitat types due to the need for larger trees (which form the main structural component of this habitat type) to be removed to provide access for drilling and other exploration equipment (Ecologia Environment Pty Ltd, 2008b). Although the impacts to this habitat type are expected to be higher than other habitat types, there is no significant impact to this habitat type expected (Ecologia Environment Pty Ltd, 2008b).

Ecologia Environment Pty Ltd (2008b) have stated that clearing and development of the identified drill pads and infrastructure associated with exploration activities will not significantly impact on the fauna habitats identified during this survey.

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

Methodology Ecologia Environment Pty Ltd (2008b)

(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

Ecologia Environment Pty Ltd (2008c) conducted a targeted Rare and Priority Flora survey over the application area in July 2008.

According to available databases the following Declared Rare and Priority Flora species are known to occur within a 50 kilometre radius of the application area.

- *Thryptomene wittweri* (Rare);
- *Eremophila anomala* (Priority One);
- *Eremophila ostrina* (Priority One);
- *Halosarcia* sp. Yanneri Lake (S. van Leeuwin 3002) (Priority One);
- *Ptilotus chrysocomus* (Priority One);
- *Tetricornia* sp. Blue Hill (D.J. Edinger Nats 61) (Priority One);
- *Tetradlea chapmanii* (Priority One);
- *Dampiera atriplicina* (Priority Two);
- *Gonocarpus ephemerus* (Priority Two);
- *Calytrix praecipua* (Priority Three);
- *Daviesia arthropoda* (Priority Three);
- *Eremophila arachnoides* (Priority Three);
- *Eremophila caespitosa* (Priority Three);
- *Frankenia glomerata* (Priority Three);
- *Gonocarpus pycnostachyus* (Priority Three);
- *Maireana prosthochaeta* (Priority Three);
- *Microcorys macredieana* (Priority Three);
- *Mimulus repens* (Priority Three); and
- *Comersperma viscidulum* (Priority Four).

None of the above listed flora taxa were recorded during reconnaissance and ground surveys during the Ecologia Environment Pty Ltd (2008c) Rare and Priority Flora survey. It is unlikely the sporadic clearing of 6.4 hectares of native vegetation in a purpose permit boundary of 254 hectares will impact on the continued existence of DRF or Priority Flora.

One Priority Flora taxon, *Goodenia nuda* (Priority Three), was recorded during the Ecologia Environment Pty Ltd (2008c) Rare and Priority Flora survey. This species was not recorded from within the application area and therefore it is unlikely the vegetation of the application area is necessary for the continued existence of this species.

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

Methodology Ecologia Environment Pty Ltd (2008c)

(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 (TECs) in the vicinity of the application area (GIS Database). The nearest recorded TEC is the Ethel Gorge aquifer stygobiont community, located approximately 210 kilometres north of the clearing permit application area (GIS Database). The proposed clearing will not impact this community.

No state-listed Priority Ecological Communities (PECs) occur within or near the proposed clearing area (Ecologia Environment Pty Ltd, 2008c).

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

Methodology Ecologia Environment Pty Ltd (2008c)
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 application area is within the Interim Biogeographic Regionalisation for Australia (IBRA) Gascoyne and Little Sandy Desert bioregions (GIS Database). According to Shepherd et al. (2001) there is approximately 100% of the pre-European vegetation remaining in the Gascoyne and Little Sandy Desert bioregions (see table below).

The vegetation of the application area is classified as Beard Vegetation Associations 18; low woodland; mulga (*Acacia aneura*), 29; sparse low woodland; mulga, discontinuous in scattered groups, 95; hummock grasslands, shrub steppe; Acacia and Grevillea over *Triodia basedowii*, 178; hummock grasslands, grass steppe, hard spinifex, *Triodia basedowii*, and 1195; Mosaic: low woodland; mulga in valleys / hummock grasslands, shrub steppe; acacia species over *Triodia basedowii* (GIS Database). There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Associations 18, 29, 95, 178 and 1195 at the bioregional level (Shepherd et al., 2001).

Whilst Beard Vegetation Associations 18, 29, 95, 178 and 1195 are poorly represented in conservation reserves, the proposed clearing area 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, 29, 95, 178 and 1195 below current recognised threshold levels.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Gascoyne	18,075,253	18,075,253	~100	least concern	1.9
IBRA Bioregion – Little Sandy Desert	11,089,900	11,089,900	~100	least concern	4.6
Beard veg assoc. – State					
18	19,892,437	19,890,348	~100	least concern	2.1
29	7,904,064	7,904,064	~100	least concern	0.3
95	1,224,652	1,223,665	~99.9	least concern	1.5
178	578,162	578,162	~100	least concern	0.3
1195	424,643	424,643	~100	least concern	0
Beard veg assoc. - Gascoyne					
18	3,273,632	3,273,632	~100	least concern	2.5
29	3,802,497	3,802,497	~100	least concern	0
95	442,545	442,545	~100	least concern	0
178	33,052	33,052	~100	least concern	0
1195	11,068	11,068	~100	least concern	0
Beard veg assoc. -Little Sandy Desert					
18	234,593	234,593	~100	least concern	0
29	11,331	11,331	~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 application area (GIS Database). A number of minor ephemeral watercourses intercept the application area (GIS Database).

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

The proposed exploration programme has been designed to minimise impacts upon drainage lines. Ecologia Environment Pty Ltd (2008b) state that some access tracks cross drainage lines and localised disturbance at these sites is expected. No significant impacts are expected due to the small area that will be disturbed and the low level of disturbance expected. It is relevant to note that Cowan (2001) states that the Carnegie subregion has no vegetation which can be described as riparian given the episodic inundation of drainage lines within the region.

Methodology Cowan (2001)
Ecologia Environment Pty Ltd (2008b)
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

The methods of clearing are proposed to be raised blade and lowered blade clearing (Ecologia Environment Pty Ltd, 2008a). Raised blade methods ensure equipment blades are above the ground level to minimise soil displacement and erosion potential. This type of clearing is preferred for access tracks as it leaves soil and root systems intact and minimises erosion potential.

Lowered blade methods present a higher potential for soil displacement. However, this type of clearing will only be used within drill pad sites where management practices will ensure land degradation is minimised.

Erosion risks associated with vegetation clearing will be minimised by the implementation of the following management strategies, as outlined in the Exploration Environmental Management Plan (Ecologia Environment Pty Ltd, 2008a):

- vehicles will use only designated tracks;
- previously disturbed areas will be used wherever possible;
- raised blade clearing procedures should be used wherever possible to preserve root stock and minimise disturbance to topsoil. Where clearing is conducted using 'blade down' methods, topsoil will be stripped and stockpiled for use in rehabilitation;
- erosion and sedimentation will be minimised by the construction of erosion control berms;
- mature trees and large shrubs will be avoided where possible; and
- all clearing activities will be scheduled to minimise the time between initial clearing and rehabilitation.

Provided cleared areas are rehabilitated post-clearing, the potential for land degradation will be reduced. The following condition has been placed on the tenement to reduce land degradation:

"All costeans and other disturbances to the surface of the land made as a result of exploration, including drill pads, grid lines and access tracks, being backfilled and rehabilitated to the satisfaction of the Environmental Officer, Department of Mines and Petroleum. Backfilling and rehabilitation being required no later than six months after excavation unless otherwise approved in writing by the Environmental Officer, (DMP)" (eMiTS, 2009).

This condition does not require top soil and vegetation to be stockpiled after clearing. Should a clearing permit be granted it is recommended a condition be placed on the permit for the purposes of rehabilitation.

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

Methodology Ecologia Environment Pty Ltd (2008a)

(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 application area is located within the Carnarvon Range proposed reserve (GIS Database). This area is listed on the Register of the National Estate for its botanical and Aboriginal heritage values (Department of the Environment, Water, Heritage and the Arts, 2008).

The Carnarvon Range proposed reserve was first registered in 1978 and covers an area of approximately 258,000 hectares some 150 kilometres north of Wiluna (Department of the Environment, Water, Heritage and the Arts, 2008). The area is formally declared an Environmentally Sensitive Area (ESA) in accordance with Regulation 6 (1) (b) of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

The Carnarvon Range proposed reserve supports outlying populations of flora species known only from the Hamersley Ranges and areas further north. The area is characterised by peaks of the Range (for example, Mount Essendon at 950 metres), gorges containing permanent and semi-permanent waterholes and plains surrounding the range which are dominated by spinifex associations with some areas of mulga (Department of the Environment, Water, Heritage and the Arts, 2008).

The proposed clearing (6.4 hectares) represents less than 0.01 % of the Register of the National Estate area (approximately 258,000 hectares). Giralia Resources have an Exploration Environmental Management Plan in place that will ensure that environmental impacts associated with this proposal are minimised (Ecologia Environment Pty Ltd, 2008a).

No weeds were recorded during the Ecologia Environment Pty Ltd (2008c) Rare and Priority Flora survey. The introduction of weeds may have the ability to impact on the environmental values of the Carnarvon Range proposed reserve. Should a clearing permit be granted it is recommended that conditions be put in place for the purposes of weed management.

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

Methodology Department of the Environment, Water, Heritage and the Arts (2008)
Ecologia Environment Pty Ltd (2008a)
Ecologia Environment Pty Ltd (2008c)
GIS Database:
- Register of the National Estate

(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 application area is not located within a Public Drinking Water Source Area (GIS Database). There are no permanent watercourses or wetlands in the application area, however, some minor ephemeral drainage lines are present. It is unlikely that the proposed vegetation clearing will deteriorate the quality of surface water in the area.

Groundwater within the application area is fresh to brackish, at between 1,000 - 3,000 milligrams/Litre of Total Dissolved Solids (GIS Database). Given the large size of the Nabbyer Groundwater Province (6,069,699 hectares) (GIS Database) and the relatively small size of the proposed clearance area (6.4 hectares) it is unlikely that the clearing project will impact on the quality of the groundwater.

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

Methodology GIS Database
- Groundwater Salinity, Statewide
- Groundwater Province
- Hydrography, linear
- Public Drinking Water Source Area

(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 of 6.4 hectares of native vegetation for access tracks and drill pads is not expected to increase the incidence or intensity of natural flood events given the small area to be cleared in relation to the size of the Lake Carnegie catchment area (6,867,525 hectares; GIS Database).

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

Methodology GIS Database:
- Hydrographic Catchments
Officer Chris HEARY

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 2 March 2009 by Department of Mines and Petroleum, inviting submissions from the public. One public submission was received by a direct interest party acting on behalf of the native title claimant group regarding issues relating to heritage surveys.

There is one native title claim over the area under application (GIS Database). This claim (WC03/002) 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 application area (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 Database:
-Aboriginal Sites of Significance
-Native Title Claims

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles and is not likely to be at variance to Principles (a), (b), (c), (d), (g), (h), (i) and (j), is at variance to Principle (f) and is not at variance to Principle (e).

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

5. References

- CALM (1999) Environmental Weed Strategy for Western Australia, Department of Conservation and Land Management, Perth, western Australia.
- Cowan, M (2001) Gascoyne 2 (GAS2 – Carnegie subregion) In a Biodiversity Audit of Western Australia's 53 Biogeographic subregions. Department of Conservation and Land Management, Perth, Western Australia.
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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
DMP	Department of Mines and Petroleum
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.