Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1250/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Robe River Mining Company Pty Ltd**

1.3. Property details

Property: ML 248SA (AML70/248)
Section 91 Licences under the *Land Administration Act 1997*;
Part A: 188/28 – 50468/2006 and Part B: 195/37 – 50468/2006

Local Government Area: Shire Of Ashburton

Colloquial name: Bungaroo Access Road

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The purpose permit area is broadly mapped as: Beard Vegetation Association 29: Sparse low woodland; mulga, discontinuous in scattered groups; Beard vegetation Association 583: Hummock grasslands, sparse shrub steppe; kanji and *Acacia bivenosa* over hard spinifex *Triodia basedowii* and *T.wiseana*; and Beard Vegetation Association 603: Hummock grassland, sparse shrub steppe; *Acacia bivenosa* over hard spinifix. Beard Vegetation Association 605: Hummock grasslands,shrub steppe; *Acacia pachycarpa* and waterwood over soft spinifex. Beard Vegetation Association 609: Mosaic: Hummock grasslands, open low tree steppe; bloodwood with sparse kanji shrubs over soft spinifex / Hummock grasslands, open low tree steppe; snappy gum over *Triodia wiseana* lateritic crust. Beard Vegetation Association 620: Hummock grasslands, shrub steppe; snakewood over soft spinifex. Beard Vegetation Association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*. Beard Vegetation Association 93: Hummock grasslands, shrub steppe; kanji over soft spinifex.	Robe River Mining Company Pty Ltd (Robe) on behalf of the Robe River Iron Associates is in the process of carrying out feasibility studies for the continuation of iron ore mining in the Robe Valley area, in particular for the development of a new mine at Mesa A/Warramboo. The feasibility studies include the evaluation of infrastructure corridors for the transport of ore from the proposed Mesa A/Warramboo mining area to Robe's existing processing facilities and railway at Mesa J. The feasibility studies require geotechnical and hydrogeological investigations within the proposed infrastructure corridor. The feasibility studies are expected to consist of; 28 ha for trace line access tracks (4 m wide and approximately 45 km long); 1 ha for test pits (between 5 to 10 per kilometre of the infrastructure corridor routes of approximately 3 m x 2 m x 2 m deep); 4 ha for geotechnical drilling for proposed bridges; 2 ha for geotechnical drilling and costean work; 15 ha for hydrogeological drilling; and 5 ha for the determination of foundation conditions for communication towers.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994) To Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	A systematic, detailed vegetation and flora survey of the proposed infrastructure route and other nearby areas was conducted by Biota in 2004-2005. From the results of this survey it is considered that the area has a moderate conservation value overall, with areas of cracking clays and areas near the Robe River having higher conservation value as they support restricted flora (Biota, 2006). One area of very high conservation significance (sand sheet vegetation) was identified adjacent to Mesa A at the Western end of the proposed infrastructure route (Robe, 2006). The flora survey which covered the proposed infrastructure corridor and other nearby areas revealed a total of 437 taxa representing 160 genera and 57 families. A total of 20 weed species were recorded during the survey, reflecting historic disturbances from pastoral and exploration activities. One Declared Weed, *Parkinsonia aculeata* was recorded. The vegetation types of the study area were generally in very good condition. Although weeds (particularly Buffel Grass *Cenchrus ciliaris*) were widespread through the loamy soils of the plains within the study area, they usually occurred as only scattered

(GIS Database; Shepherd et al. 2001)

Biota (2006a) identified seventy-two vegetation types within the study area. Broadly, these vegetation types included:

- Hard Spinifex *Triodia wiseana* and/or Soft Spinifix *Triodia epactia* hummock grasslands with a scattered to moderately dense shrub overstorey dominated by varying proportions of *Acacia ancistrocarpa*, *A. bivenosa* and/or *A. inaequilatera* on the stoney plains and low stony rises;

- Scattered trees of Snappy Gum *Eucalyptus leucaphloia* subsp. *leucophloia* over hummock grasslands of *Triodia wiseana*, sometimes with an undescribed spinifex species *Triodia* sp. nov., on stony hills and mesa crests; the shrub component was variable in both density and composition, but typically included *Acacia atkinsiana*, *A. arida* and/or *A. bivenosa*;

- Tall shrublands of Snakewood *Acacia xiphophylla* over an understorey of herbs (on low-lying clayey soils) or open spinifex (on more elevated areas);

-Open forests of River Gum *Eucalytptus camaldulensis* and Silver Cadjeput *Melaleuca argentea* in the Robe River;

- Open woodlands of Coolibah *Eucalyptus victrix*, or *Corymbia candida* and/or *C. hamersleyana*, over mixed tall shrublands in moderate-sized creeks; and

- Tall shrublands dominated by various combinations of *Acacia atkinsiana*, *A. bivenosa*, *A pyrifolia*, *A. tumida* var. *pilbarensis, Gossypium australe, G. robinsonii* and *Grevillea pyramidalis* over hummock grasslands of *Triodia wiseana* and/or *T. epactia* in minor flowlines.

The total infrastructure corridor area (purpose permit application area) is approximately 2,925 ha. Robe has estimated that the total disturbance that will occur as a result of the proposed feasibility studies will be approximately 55 ha. Robe proposes to make use of existing tracks as far as practicable.

individuals (Biota, 2006). However, exceptions to this were around Yarraloola Homestead and in the vicinity of the abandoned Deepdale Homestead, where dense infestations of Buffel Grass were noted. Biota (2006) also noted that weeds such as Spiked Malvastrum, *Malvastrum americanum*, were also sometimes abundant on areas of clayey substrates in the central section of the Mesa A transport corridor. Cattle were also widespread through the survey area; grazing and trampling was pronounced in the vicinity of the Deepdale and Yarraloola homesteads, and was also evident through some areas of clayey habitat in the central section of the Mesa A transport corridor. The other main disturbance comprised vehicle tracks of varying ages through the area (Biota, 2006).

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments

Proposal is not likely to be at variance to this Principle

The area proposed to be cleared is situated within the Hamersley subregion of the Pilbara IBRA (Interim Biogeographical Regionalisation of Australia) region (GIS Database). The Pilbara Biogeographic region is listed as a medium priority for funding for land purchase under the National Reserves System Co-operative Program due to limited representation of areas in conservation reserves. Portions of various pastoral leases in the region have been nominated by the Department of Environment and Conservation (DEC), for exclusion from pastoral activities in 2015. None of the proposed exclusions are located in the vicinity of the project area (Strategen, 2006).

Kendrick (2001) describes the 'high species and ecosystem diversity' within the PIL3 Hamersley IBRA subregion as: Acacia, Triodia, Ptilotus, Corymbia, and Sida species within the Hamersley Range, and the stygofaunal crustacean fauna within calcrete environments. However, the area applied to clear is not within the Hamersley Range and although stygofauna is possible in the Robe River alluvium it is unlikely that the clearing for investigative works will have a significant impact on stygofauna in the area.

A systematic, detailed vegetation and flora survey of the proposed Mesa A transport corridor, Warramboo deposit and Yarraloola borefield was conducted by Biota in 2004-2005. A total of seventy-two vegetation types were identified within the study area (Biota 2006a). Biota (2006a) considered that the study area has a moderate conservation value overall, with areas of cracking clays and areas near Robe River having higher conservation value as they support restricted flora. One area of very high conservation significance (the sand sheet vegetation) was identified adjacent to Mesa A at the western end of the proposed infrastructure route however no clearing will be conducted in this area (Robe 2006). Similar to other study areas in the Pannawonica locality, the Biota (2006a) study area is relatively species poor in comparison to areas further east

in the Hamersley Range. This reflects two main factors: the relatively low and inconsistent rainfall typically received by the area; and the low relief of the hills in comparison to areas further east (Robe 2006). Biota (2006a) described the vegetation types within the project area to be generally in very good condition and contiguous with the surrounding vegetation of the area. A total of twenty weed species were recorded during the detailed flora and vegetation survey, reflecting historic disturbances from pastoral and exploration activities.

The fauna and habitat survey of the Mesa A transport corridor and Warramboo study areas recorded a total of 181 vertebrate fauna species, representing 63 families (Biota 2006). A total of 93 avifauna species, twenty mammal species (including two introduced), 67 herpetofauna species, and seven species of fish were recorded during the survey (Biota 2006).

The proposed investigative work will have a relatively narrow disturbance corridor of approximately four metres wide and will occur over an area of more than forty kilometres (GIS Database). Sumps and test pits will be backfilled upon completion and topsoil will be re-spread. Rehabilitation of drill pads, tracks and turning locations would be undertaken if the proposed route (or parts thereof) was found to be unsuitable or if a decision were made not to proceed with the Mesa A / Warramboo project (Robe 2006).

DEC (2006a) advice noted that the proponent had agreed not to disturb the sand sheet vegetation adjacent to Mesa A and agreed to the condition placed on the permit to ensure that clearing within that area is not permittted. Furthermore, DEC (2006) advised that the proponent must also minimise disturbance to vegetation in the Robe River, on the clayey plains and other vegetation types identified as being of high conservation significance as detailed in the Flora Survey Management Recommendations (Biota 2006). The application area is not likely to be of higher biodiversity than the surrounding areas, and the proposed clearing is unlikely to have any significant impact on the existing and surrounding biodiversity values in the area.

The proposal is not likely to be at variance to this principle.

Methodology

Beard (1975).
Biota (2006a).
DEC (2006a).
GIS Database:
IBRA Subregions - EA 18/10/2000.
Pre-European Vegetation - DA 01/01.
Kendrick (2001).
Robe (2006).
Strategen (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

Biota Environmental Sciences (Biota) was commissioned by Robe River Iron Associates to undertake a baseline survey of the fauna assemblage and associated habitats within the Mesa A Northern Transport Corridor and Warramboo. Based on the predominant landforms and vegetation structure, three main fauna habitats were identified within the proposed transport corridor: Drainage Lines; Scree Slopes and Stony Rises; and Valley Floors and Plains (Biota 2006a). With the exception of one, all the vegetation types found within the above habitats were also recorded in surveyed areas outside of the area proposed to be cleared. These vegetation types are also expected to occur more broadly in the Pannawonica region (Robe 2006).

Six Priority 4 species listed under the *Wildlife Conservation Act 1950* were recorded from Mesa A Northern Transport Corridor; Ghost Bat *Macroderma gigas*, Western Pebble-Mound Mouse *Pseudomys chapmani*, Star Finch (Western) *Neochmia ruficauda subclarescens*, Australian Bustard *Ardeotis australis*, and *Notoscincus butleri* (Biota 2006). A further five Schedule and seven Priority listed species have either been recorded from the region, or may occur with the survey area (as determined by a search of the CALM Rare Fauna Database); Orange Leaf-Nosed Bat *Rhinonicteris aurantius* (S1), Night Parrot *Pezoporus occidentalis* (S1), Pilbara Olive Python *Liasis olivaceus barroni* (S1), Wood Sandpiper *Tringa glareola* (S3), Peregrine Falcon *Falco peregrinus* (S4), *Ramphotyphlops ganei* (P1), Pilbara Dragonfly *Antipodogomphus hodgkini* (P2), Pilbara Damselfly *Nosoticta Pilbara* (P2), Long-Tailed Dunnart *Sminthopsis longicaudata* (P4), Lakeland Downs Mouse *Leggadina lakedownensis* (P4), Bush Stone-Curlew *Burhinus grallarius* (P4), and Fortescue Grunter *Leiopotherapon aheneus* (P4). Additionally, the Northern Quoll, *Dasyurus hallucatus* is listed as Endangered at the Federal level, though it is not included under the Wildlife Conservation (Specially Protected Fauna) Notice 2005. The Night Parrot is also listed as Endangered at the Federal level, while the Pilbara Olive Python and Orange-leaf-nosed Bat are listed as Vulnerable (Biota 2006). The proposed clearing is unlikely to impact the distribution or conservation status of the above species.

Biota (2006) estimated the conservation significance of fauna habitats based on an analysis of vegetation types. This assessment identified twenty-four vegetation types as having high conservation significance, and a subset of these are considered to be important in terms of fauna habitat. They include: most of the vegetation types occurring on heavy clay soils and the flowlines, as these support habitat-restricted fauna and are susceptible to erosion following physical disturbance; vegetation types and permanent pools associated with the Robe River, which occur on the major local drainage feature support several Schedule or Priority fauna species, and a high

diversity of local and migratory avifauna; and lastly, vegetation types of creeklines through stony plains which may support short-range endemic invertebrates including terrestrial snails and mygalomorph spiders (Robe 2006).

One vegetation type which Biota (2006a) considered to be of very high conservation significance is the vegetation of the sand dune and sand sheet adjacent to Mesa A. This vegetation type is likely to be restricted in distribution in both the local area and region, and supports species restricted to the deep sands of this particular habitat. This area represents an eastern intrusion of habitats considered to be more characteristic of coastal land systems and supports numerous fauna species not found elsewhere in the study area (Biota 2006). Disturbance to the fauna habitat associated with the sand-sheet adjacent to Mesa A should be avoided. Disturbance to the various vegetation which provide habitat to restricted fauna species on clay plains should also be avoided where possible and otherwise minimised.

Robe (2006) have stated that the proposed investigative work will not involve any disturbance to the very high conservation sand sheet vegetation and a condition has been placed on the permit to ensure that no clearing will occur. DEC (2006a) considers that the proposal is unlikely to have a significant impact on fauna species of conservation significance given the relatively narrow disturbance corridor. DEC (2006a) state that disturbance of fauna habitat associated with the riparian zone, and springs and pools of the Robe River must be minimised.

The proposal is not likely to be at variance to this principle.

Methodology

Biota (2006).
Biota (2006a).
DEC (2006a).
GIS Database: CALM Threatened Fauna - CALM (30/09/2005).
Robe (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

A survey for Declared Rare Flora (DRF) and Priority Flora was conducted along the entire length of the proposed infrastructure routes and other nearby areas (Robe 2006). No DRF were recorded during the survey despite systematic targeted searches for rare species through the entire study area (Biota 2006a). Five Priority 3 flora species, *Abutilon trudgenii*, *Sida* sp. Wittenoom, *Hibiscus brachysiphonius*, *Phyllanthus aridus* and *Rhynchosia bungarensis* were recorded during the survey, all of which have been recorded previously in the locality (Biota 2006a).

Abutilon trudgenii was recorded 1,777 times from the study area, occurring through all sections of the Mesa A transport corridor, the Yarraloola borefield and pipeline, and at Warramboo. Biota (2006a) estimates the population in the area to be approximately 11,000 individuals. There were close to 2,500 records (approximately 62,000 individuals) of *Sida* sp. Wittenoom from all sections of the surveyed area. Biota (2006a) considers *Abutilon trudgenii* and *Sida* sp. Wittenoom to be poorly collected rather than rare and consider that they warrant removal from the Priority listing. Given the large number of recordings, it is unlikely that the proposed clearing will impact on the conservation status of these species.

Although there appeared to be an abundance of suitable habitat (clayey substrates) within the Mesa A transport corridor, there were only three records of *Hibiscus brachysiphonius* during the survey. Two of these records were of single individuals within fifty metres of each other within the northern corridor option, approximately one kilometre east of the Deepdale road (Biota 2006a). The species *Phyllanthus aridus*, was recorded nineteen times during the flora survey. All records were from a single section of creekline within the northern rail corridor option, approximately two kilometres west of the Mesa G access road. The population in this area is estimated at over 585 individuals (Biota 2006a). Biota (2006a) state that this species is best considered as uncommon, but not rare, in the Fortescue Botanical District. Although these species were less frequently recorded in the study area, they both have relatively broad distributions through the northern part of Western Australia.

The species *Rhynchosia bungarensis* was recorded seventy times from the study area with a population estimated to be approximately 400 individuals (Biota 2006a). Biota (2006a) reports that *R. bungarensis* is common, however not abundant, in the Pannawonica area, and appears to be relatively widespread through the Pilbara.

Biota (2006a) found the study area to support a relatively high number of species (for the locality), many of which are either listed flora of conservation significance, uncommon, poorly known and/or apparently undescribed. Therefore, the area is considered to have a moderate conservation value for overall flora. The sand sheet at Mesa A, the Robe River, and the areas of cracking clays are considered to have a higher conservation value as they support flora restricted to these habitats. Vegetation clearing should be kept to a minimum necessary for safe construction and operation of the project, particularly in areas adjacent to vegetation of higher conservation significance. Robe (2006) stated that disturbance to *Hibiscus brachysiphonius*, *Phyllanthus aridus*, and *Rhynchosia bungarensis*, will be avoided where practicable during the proposed geotechnical and hydrogeological investigations. DEC (2006a) is satisfied with this commitment.

Based on the results of the flora and vegetation survey and the disturbances proposed for the geotechnical and hydrogeological investigations, the proposed clearing raises no threat to DRF and is unlikely to impact the conservation status of the five Priority flora species.

The proposal is not likely to be at variance to this principle.

Methodology Biota (2006a).
DEC (2006a).
GIS Database:
Declared Rare and Priority List - CALM 01/07/05.
Pre-European Vegetation - DA 01/01.
Robe (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) listed under the *Environmental Protection and Biodiversity Conservation Act 1999* or by the Department of Environment and Conservation (DEC) within or in the vicinity of the area applied to clear (GIS Database). No TEC's were recorded during the field surveys conducted by Biota in 2004-2005 (Robe 2006).

The proposal is not likely to be at variance to this principle.

Methodology GIS Database: Threatened Ecological Community Database - CALM 12/4/05.
Robe (2006).

(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 falls within the Pilbara IBRA Bioregion and the Shire of Ashburton (GIS Database). Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in the Pilbara IBRA Bioregion, with approximately 6.3% in reserves. No specific information is available for the Shire of Ashburton. The vegetation in the application area is recorded as Beard Vegetation Associations: 29- Sparse low woodland; mulga, discontinuous in scattered groups; 583- Hummock grasslands, sparse shrub steppe; kanji and *Acacia bivenosa* over hard spinifex *Triodia basedowii* and *T. wiseana*; and 603- Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* and hard spinifex; 605- Hummock grasslands,shrub steppe; *Acacia pachycarpa* and waterwood over soft spinifex; 609- Mosaic: Hummock grasslands, open low tree steppe; bloodwood with sparse kanji shrubs over soft spinifex / Hummock grasslands, open low tree steppe; snappy gum over *Triodia wiseana* lateritic crust; 620- Hummock grasslands, shrub steppe; snakewood over soft spinifex; 82- Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; and 93- Hummock grasslands, shrub steppe; kanji over soft spinifex (GIS Database). According to Shepherd et al. (2001), approximately 100% of these vegetation types remain.

	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation Status**	% in IUCN Class I-IV reserves
IBRA Bioregion - Pilbara	17,804,163*	17,794,650*	99.9%	Least concern	6.3%
Shire of Ashburton	No information available				
Beard vegetation associations					
- 29	7,904,064	7,904,064	100%	Least concern	5.2%
-583	243,119	243,119	100%	Least concern	40.9%
-603	56,728	56,728	100%	Least concern	0.0%
-605	114,119	114,119	100%	Least concern	0.4%
-609	74,118	74,118	100%	Least concern	0.0%
-620	15,540	15,540	100%	Least concern	0.0%
-82	2,565,930	2,565,930	100%	Least concern	10.5%
-93	3,044,326	3,044,326	100%	Least concern	1.9%

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

In consideration of the above, the proposed clearing area does not represent a significant remnant of native vegetation.

The proposal is not at variance to this principle.

Methodology Department of Natural Resources and Environment (2002).
GIS Database:
IBRA Subregions - EA 18/10/2000.
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

The area proposed to be cleared lies within eight kilometres of the Robe River, intersecting the river at four locations (GIS Database). The proposed investigative works will include some geotechnical and hydrogeological drilling and associated works on the bed and banks of the Robe River (Robe 2006). Construction of access tracks on the southern and northern banks of the Robe River between Mesas B and C and to the east of Mesa H will be required to allow access for geotechnical drilling to determine founding levels for the proposed bridges. It is estimated that construction of the tracks, drill pads, and sumps will result in disturbance of approximately four hectares (Robe 2006). Smaller scale geotechnical investigations will be conducted near other minor drainage lines.

Kendrick (2001) lists the springs and pools of the Robe River from forty kilometres east of Pannawonica to North West Coastal Highway as wetlands of subregional significance. The value of these areas includes running spring ecosystems, with large deep permanent pools and possibly stygofauna in shingle of the river bed (Kendrick 2001). Threatening processes include grazing, invasive weed species, mining upstream, and dewatering discharge (Kendrick 2001).

Robe (2006) stated that the proposed work will be conducted only when significant flow is not present in the Robe River in the areas of interest. Furthermore, disturbance near watercourses will be minimised as far as practicable. A section 17 permit to interfere with bed and banks under the *Rights in Water and Irrigation Act 1914* will be obtained by Robe River Mining Company prior to disturbing any areas on the bed and banks of the Robe River or any other named drainage lines. Hydrocarbons will be stored in the support vehicles and will not be stored on the ground near any water courses (Robe 2006). Sumps and test pits will be back-filled upon completion of the geotechnical and hydrogeological investigations and topsoil will be re-spread. Rehabilitation of drill pads, tracks and turning locations will be undertaken if the proposed route (or parts thereof) is found to be unsuitable or if a decision is made not to proceed with the Mesa A/Warramboo Project (Robe 2006). It is unlikely that clearing vegetation along the Robe River and other minor drainage lines will be of environmental significance given the minor extent and nature of the clearing.

The proposal is not likely to be at variance to this principle.

Methodology GIS Database:
Linear Hydrography - DoE 13/04/2005.
Rivers 250K - GA
Topographic Contours, Statewide - DPLA 12/09/02
Kendrick (2001).
Robe (2006).

(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

According to the Technical Bulletin 92: An Inventory and Condition Survey of the Pilbara Region, Western Australia (2004), the application area is mapped to be on the following land systems; Boolgeeda, Cane, Capricorn, Mallina, McKay, Nanutarra, Newman, Peedamulla, River, Robe, Sherlock, Stuart, and Urandy (GIS Database).

Advice received from the Office of the Commissioner of Soil and Land Conservation (DAFWA, 2006) in relation to this permit application stated:

> "Units of the following land systems are assessed as being vulnerable to soil erosion if disturbed. They are:- Stuart: Lower plain land unit; Cane: Stony plain, gilgai plain and drainage tracts (highly susceptible); Robe: Drainage floor/channel; River: all; Sherlock: Stony alluvial plain; and Urandy: Alluvial plain and drainage zone.
>
> The proposed clearing is for investigative purposes and will be rehabilitated, therefore as much as possible stony mantles protecting underlying soils should be left undisturbed.
>
> Caution should be exercised where the proposed survey lines cross slopes and intersect the many drainage lines along the proposed routes. (Water spreading structures may be required).

In most situations, the return of top soil and cleared vegetation on to the areas disturbed should result in reasonable regeneration occurring. Grazing pressure may need to be managed during the initial phase of rehabilitation in sensitive areas (e.g river frontage).

It is concluded that the proposed clearing of 55 hectares may be at variance with principle (g) for soil erosion."

The proponent advised that Robe River Mining has ISO 14001 certification and the Expansion Projects group has a detailed Environmental Management System, dealing with procedures for all types of ground disturbing activities and rehabilitation practices (Rio Tinto 2006). It reinforces environmental care through implementation of Rio Tinto's Environmental best practices, including regular environmental monitoring and audits of activities (Rio Tinto 2006). Access will be by existing tracks where possible and any new access will be as per DoIR guidelines, earthmoving equipment must use "raised blade" techniques or scrub rake in level terrain (Robe 2006).

A total of twenty weed species were recorded during the detailed flora and vegetation survey conducted in 2004-2005, reflecting historic disturbances from pastoral and exploration activities (Robe 2006). Some weed species (particularly *Malvastrum americanum*, *Cenchrus ciliaris* and *C. setigerus*) were found to be widespread throughout the surveyed area, although they typically occured as scattered individuals. Major weed infestations are currently localised in the vicinity of historic and present stock watering points, particularly near the Yarraloola and Deepdale Homesteads. One declared plant, *Parkinsonia aculeata* was recorded during the survey (Robe 2006). Two small stands approximately 300 metres apart comprising four and eight shrubs of this species respectively were recorded from the bed of the Robe River in the area of the prospective Yarraloola borefield (Biota 2006a). These individuals should be eradicated.

The proposed clearing has the potential to introduce additional weed species and/or spread existing populations within the proposed clearing area boundary, particularly in areas with dense weed infestations. The proposed investigative work will include the removal of soil and vegetative material from earthmoving vehicles at appropriate locations to minimise the spread of weeds along the proposed infrastructure corridor.

DEC (2006a) notes that a high number of weed species were recorded during the Biota survey, including a declared plant *Parkinsonia aculeata*. DEC advise that the proponent must adhere to strict hygiene procedures and undertake active weed management to prevent the further spread of weeds. This should be outlined in the Environmental Management Plan (EMP) for the project (DEC 2006a).

The proposal is not likely to be at variance to this principle.

Methodology Biota (2006a).
DAFWA (2006).
DEC (2006a).
GIS Database:
Hydrography, linear - DoE 01/02/04.
Rangeland Land System Mapping - DA.
Soils, Statewide, DA 11/99.
Topographic Contours, Statewide - DPLA 12/09/02.
Robe (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**
There are no conservation areas in the vicinity of the area proposed to be cleared (GIS Database). The nearest Department of Environment and Conservation managed lands is the Cane River Conservation Park which is approximately 35 kilometres from the application area (GIS Database). Given the distance, it is unlikely the proposed clearing will have any impact on this conservation area.

The proposal is not likely to be at variance to this principle.

Methodology GIS Database: CALM Managed Lands and Water - 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 is not likely to be at variance to this Principle**
The area applied to clear is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The application area is contained within the Robe River Catchment area and is in close proximity to the Robe River, a major, non-perennial watercourse. There are also a number of minor, non-perennial watercourses which traverse the application area (GIS Database). Robe (2006) is committed to conducting the proposed works only when significant flow is not present in the Robe River in the areas of interest. A permit to interfere

with bed and banks under the *Rights in Water and Irrigation Act 1914* will be obtained prior to disturbing any areas on the bed and banks of the Robe River or other named drainage lines (Robe 2006). Robe (2006) have also stated that disturbance near watercourses will be minimised as far as practicable.

The groundwater of the area is recorded as between 500-1000 tds/mg/l (GIS Database). Seasonal rainfall events in the catchment are likely to drive impacts on surface water quality rather than vegetation clearing alone. Hydrocarbons will be stored in the support vehicles and will not be stored on the ground near any water courses (Robe 2006).

Given the size and nature of the proposed clearing combined with the proposed management measures, it is unlikely the proposal will have any significant impact on the surface water quality or groundwater table within the Robe River Catchment area.

The proposal is not likely to be at variance to this principle.

Methodology GIS Database:
Groundwater Provinces - WRC 98.
Groundwater Salinity, Statewide - 22/02/00.
Hydrography, Linear - DoE 01/02/04.
PDWSA Protection Zones - DoE 7/1/04.
Public Drinking Water Source Areas (PDWSAs) - DoE 28/4/05.
Rivers 250K - GA
Topographic Contours, Statewide - DOLA 12/09/02.
Robe (2006).

(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 the application area is approximately 350 mm, which falls predominantly over the December to March period (GIS Database; Robe 2006). Flooding is known to occur in the area applied to clear following heavy rainfall which is generally associated with cyclonic activity (Robe 2006). Given the local climatic conditions, it is unlikely that the removal of 55 hectares of vegetation over a distance of more than forty kilometres will have a significant influence on the run-off and flood regimes in the local area.

The proposal is not likely to be at variance to this principle.

Methodology Robe (2006).
GIS Database:
Evaporation Isopleths - BOM (09/1998).
Mean annual rainfall surface (1975-2003) - DoE 09/05.
Topographic Contours, Statewide - DOLA 12/09/02.

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

Comments

There is a native title claim (WC99/012) over the area under application. This claim has been registered with the National Native Title Tribunal. However, the mining tenement have 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*.

There are thirty five Aboriginal sites of significance which partly overlap the application area. 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.

DEC (2006) advice received in relation to this proposal stated that:

> "A proposal for this premise is currently within the EPA process. The activities for which this clearing application is for are not prescribed activities under the *Environmental Protection Act 1986* and therefore are not subject to requiring a works approval, licence or registration."

Department of Water (DoW) (2006) advice received in relation to this proposal stated that:

> "There are a number of groundwater abstraction licences that relate to the mining activities carried out by Robe River Mining on the associated tenements to this clearing application. The most relevant to the clearing permit application are GWL98740, GWL160060, GWL107678, GWL157442, GWL155831, and GWL98740. DoW advises that there appears to be no water allocation or licensing issues that would reclude the process for the native vegetation clearing permit assessment.
> An application for a Section 17 permit to interfere with bed and banks has been received by DoW."

Clause 2(c) of the Iron Ore (Robe River) Agreement Act 1964 allows Robe to enter Crown Lands to undertake investigations for the purpose of developing detailed proposals for submission under clause 7A of the Iron Ore (Robe River) Agreement Act 1964. Robe River Mining Company Pty Ltd obtained a Section 91 Licence under the *Land Administration Act 1997* to enter upon and use the land for the purpose of 'Geotechnical test works' over the area applied to clear. The licence is made up of two parts; Part A: 188/28 – 50468/2006 and Part B: 195/37 – 50468/2006.

The proposed investigative works is preliminary work associated with the Mesa A / Warramboo minesite development proposal, which is currently under Formal Assessment by the Environmental Protection Authority (EPA). The EPA considers the activities proposed in this application to be minor and preliminary and in accordance with the provisions of section 41A(3) of the *Environmental Protection Act 1986*, the EPA has consented to this work being undertaken prior to the final decision on the Mesa A / Warramboo project (EPA 2006).

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

DEC (2006).
DoW (2006).
EPA (2006).
GIS Database:
Aboriginal Sites of Significance - DIA 04/07/02
Native Title Claims - DLI 19/12/02

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Exploration	Mechanical Removal	55	**Grant**	The proposal has been assessed against the clearing principles. The proposal is not at variance to principle e, and unlikely to be at variance for principles a,b,c,d,f,g,h,i and j. The assessing officer therefore recommends that the permit be granted subject to the following conditions: 1. The Permit Holder must not clear vegetation within the area cross hatched red on Plan 1250/1. 2. The Permit Holder shall record the following for each instance of clearing: a) the location 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; and d) the area rehabilitated in hectares. 3. The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources by 31st January each year for the life of the permit setting out the records required under condition 2 of this permit in relation to clearing carried out between 1st January and 31st December the previous year.

5. References

Beard J.S. (1975) Vegetation Survey of Western Australia. 1:100,000 Vegetation Series Map Sheet 5 - Pilbara.

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DAFWA (2006) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia, dated 6 November 2006.

DEC (2006) Licence and Works Approval Checks and Advice. Received by email from DEC Karratha Office, dated 3 August 2006.

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EPA (2006) A letter from the EPA to Robe River Mining Company Pty Ltd. Environmental Protection Authority, Western Australia.
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
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Robe (2006) Application for a Purpose Clearing Permit; Geotechnical and Hydrogeological Investigation. Additional Information prepared by Robe River Mining Company Pty Ltd, Western Australia.
Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
Strategen (2006) Mesa A / Warramboo Iron Ore Project; Public Environmental Review. Prepared for the Robe River Mining Company Pty Ltd by Strategen. July 2006.

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.
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.