Department of
Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1549/2
Permit type: Area Permit

1.2. Proponent details

Proponent's name: **Iluka Resources Ltd**

1.3. Property details

Property: *Mineral Sands (Eneabba) Agreement Act 1975*
Mineral Lease 267SA
Local Government Area: Shire of Carnamah
Colloquial name: Adamson Area (B)

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
25		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

The vegetation found within the proposed clearing area is part of two vegetation associations (called Beard vegetation associations) which were defined at a scale of 1:250,000 from aerial photography and interpretation of satellite imagery by Shepherd et al. (2001). Those vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation extent in a regional context. The two Beard vegetation associations located within the areas proposed to be cleared are:

379: Shrubland: Scrub Heath on lateritic sandplain in the Central Geraldton Sandplain Area; and

49: Shrublands; mixed heath (Shepherd et al. 2001).

Five types of vegetation communities were mapped at a scale of 1:10,000 by Woodman (2005) within the proposed clearing area:

W8: Very open low woodland of *Eucalyptus todtiana* and *Eucalyptus pleurocarpa* on grey sands;

W10: Open low woodland of *Eucalyptus pleurocarpa* over low shrubs dominated by *Eramea beaufortioides var beaufortioides*, *Ecdeiocolea monostachya* and *Daviesia nudiflora* on grey sands;

S11: Dense shrubland with occasional *Eucalyptus pleurocarpa* on grey sand with some lateritic gravel;

S17: Low Shrubland dominated by myrtaceous species on grey sands in a drainage line; and

LH6: Low heath dominated by *Dryandra spp.* on laterite.

Clearing Description

The proposed clearing is for the purposes of mining mineral sands. The proposed clearing is located within an area called the Adamson area which was in part previously mined in the 1980's. The majority of the mining will be within an old mine path mostly rehabilitated to pasture (37 hectares) and tree shelter belt (nine hectares). A portion of the ore body is located under native vegetation and the clearing of 25 hectares of that vegetation is sought to enable the mining of part of the ore body. The proposed clearing of native vegetation is located either side of the area of pasture which follows the previous minepath. The area proposed to be cleared will be rehabilitated to native vegetation using techniques that have been followed for previous rehabilitation by Iluka at Eneabba (Iluka Resources Ltd, 2006). An area of 13.5 hectares called Adamson (A) adjacent to the current proposal called Adamson (B) was approved to clear subject to conditions (Clearing Permit CPS 716/1, 2005).

Vegetation Condition

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994)

To

(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 review of the fauna information that has been gained from previous studies at Iluka's operations at Eneabba was undertaken in 2005 (Bamford and Bancroft, 2006). This review included a one day site inspection which occurred in October 2005. Trapping and surveys for vertebrate species have occurred at Eneabba since 1981 and studies focussing on invertebrates as an indicator of rehabilitation success since 1980. The Eneabba area has a long history of fauna investigations and the vertebrate fauna of the area has been well documented from various studies carried out as part of Iluka's operations or environmental approval requirements (Bamford 2006). Similarly the studies of the invertebrate fauna in the area are among the most extensive in Western Australia.

From previous studies and known records of fauna of conservation significance 30 species of vertebrates that are of conservation significance may occur in the Eneabba area. Of those 30 vertebrate species two that are either listed on the *Wildlife Conservation (Specially Protected Fauna) Notice 2006* or on the Department of Environment and Conservation Priority list are most likely to be impacted by the proposed clearing.

Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), listed in schedule 1 (fauna that is rare or likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2006* has been recorded in the vicinity of the Adamson area (Iluka Resources Ltd, 2005; Western Australian Museum, 2003). Bamford and Bancroft (2006) state that there appears to be no suitable breeding habitat either on the Iluka leases or sufficiently close for the breeding birds to rely on the lease for foraging. There are large areas of suitable foraging habitat in the local area and it is unlikely that the proposed clearing would significantly impact that species.

The Rufous Fieldwren (*Calamanthus campestris montanellus*) (Priority 4, taxa in need of monitoring).was recorded in 2001 on an Iluka lease (HGM, 2001). It is likely that Adamson (B) represents an area of suitable habitat for that species. DEC Advice received with regards to the Rufous Field Wren stated that: the proposed clearing is unlikely to impact the conservation status of the species in view of the mining and disturbance that is already occurring in the area (DEC, 2006b). Rufous fieldwrens are known to breed between July and November (Pizzey and Knight, 1997). The proposed clearing is most likely to occur in early 2007 and potential disturbance to breeding birds is unlikely as a result.

The Department of Environment and Conservation (formerly CALM) has recorded two invertebrates of conservation significance within 10 kilometres of the Adamson area (CALM, 2005). They are the Shield-Backed Trapdoor Spider (*Idiosoma nigrum*) (Schedule 1), Cockroach-like *Mecopteran Austromerope poultoni* (Priority 2, taxa with few, poorly known populations on conservation lands). Bamford (2006) have suggested that investigations into where these two significant invertebrate species might occur could be considered as part of ongoing mine expansion approvals.

Previous advice provided by the Department of Environment and Conservation for the nearby Adamson (A) proposal stated that:

It is unlikely that the Shield-Backed Trapdoor Spider and *Austromerope poultoni* would be significantly impacted as a consequence of the proposed clearing based on the habitat availability in the local area, size and extent of proposal and available knowledge of these taxa in the local area (CALM, 2005).

Provided the clearing is carried out in an incremental manner and actively rehabilitated directly after the cessation of mining activities, the proposal is unlikely to have a major impact on the local fauna (CALM, 2005). DEC has advised the advice given in relation to the two invertebrates of conservation significance for Adamson (A) also applies to Adamson (B) (DEC, 2006b).

Based on the above the proposal is not likely to be at variance to this Principle.

Methodology

Bamford and Bancroft (2006)
CALM (2005)
DEC (2006b)
HGM (2001)
Iluka Resources Ltd (2005)
Pizzey and Knight (1997)
Western Australian Museum (2003)

(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

Eleven Declared Rare Flora (DRF) species are known to occur in the Eneabba region and four have been previously located within the Eneabba mining area (Iluka Resources Ltd, 2006). They are *Eucalyptus johnsoniana, Leucopogon obtectus, Paracaleana dixonii* and *Tetratheca nephelioides ms* (Iluka Resources Ltd, 2006a). Following surveys in April and November 2005 two locations of DRF were located in the Adamson area

Woodman Environmental Consulting Pty Ltd (2005a) noted that plant community LH6 of which approximately 4.5 hectares are proposed to be cleared has high local conservation significance because of its limited occurrence and high number of priority flora species found in that community type. It should be noted that plant community LH6 has not been recognised as a TEC or as a Priority TEC to date.

Small areas of plant community type LH6 totalling approximately 104 hectares have been recorded to date within Iluka's leases (Iluka Resources Ltd, 2006). The extent of community type LH6 outside of Iluka's leases and within the existing conservation estate is not known because of the lack of detailed vegetation mapping of the conservation estate in the Eneabba region (Woodman Environmental Consulting Pty Ltd, 2005a) .

Considering the area will be rehabilitated to native vegetation post mining and the success that Iluka has achieved in previous rehabilitation, it is unlikely that the proposed clearing will impact the conservation status of plant community type LH6.

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

Methodology

DEC (2006b)
Iluka Resources Ltd (2006)
Woodman Environmental Consulting Pty Ltd (2005a)
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 may be at variance to this Principle

The Adamson (B) area is situated within the GS3 Lesueur Sandplain IBRA (Interim Biogeographic Regionalisation of Australia) subregion (GIS database). Approximately 40.9% native vegetation cover remains within this subregion (Shepherd et al., 2001) and the clearing of Adamson (B) will not reduce the remaining native vegetation cover to less than 30% within the IBRA subregion.

A similar percentage (39.4 %) of remaining native vegetation is found within the Shire of Carnamah.

The vegetation associations present within the Adamson (B) area are classified as Beard vegetation associations 49 and 379 (GIS Database). Approximately 37.0% of Beard vegetation association 49 remains of its pre-European extent, while only 26.7% of Beard vegetation association 379 remains within the IBRA subregion (Shepherd et al., 2001). Of the remaining extent 18.7% or 18475 hectares (379) and 22.2% or 2724 hectares (49) of their current remaining extent are protected within reserves in the Lesueur Sandplain IBRA subregion (Shepherd et al., 2001).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Geraldton Sandplains	3,136,277	1,324,440	~42.2	Depleted	15.3
IBRA Subregion – Lesueur Sandplains	1,171,805	478,987	~40.9	Depleted	17.7
Local Government – Carnamah	287,493	113,136	~39.4	Depleted	N/A
Beard veg assoc. – State					
49 379	52,494 547,767	23,802 113,427	~45.3 ~20.7	Depleted Vulnerable	40.2 22.4
Beard veg assoc. – Bioregion					
49 379	39,721 546,586	12,916 113,268	~32.5 ~20.7	Depleted Vulnerable	7.6 5.0
Beard veg					

Guidelines with regards to soil erosion caused by wind (Wells and King, 1989) indicate that this area has a capability class of IV which allows clearing with wind protection. Careful planning will be required to avoid wind erosion problems at the site. To minimise the potential for wind erosion as well as minimise the potential for dust issues to occur topsoil stockpiles and other open areas are routinely stabilised by Iluka Resources using vegetation such as rye grass, native vegetation mulch, glue on or gravel. The process of clearing native vegetation involves the cutting of the vegetation above ground level (native vegetation mulching) leaving the plants root systems in place. Such a technique minimises the potential for wind erosion to occur. The mulched vegetation is then immediately used to cover recently reinstated areas and is an important component of the native vegetation rehabilitation process carried out on site.

Iluka Resources Limited currently implements a number of measures to manage water and wind erosion as part of their operations (Iluka Resources ltd, 2003) and compliance under the *Mineral Sands (Eneabba) Agreement Act 1975*. Drainage mechanisms are put in place during operations and rehabilitation to control water flows (Iluka Resources Ltd, 2005). Drainage design is considered in mine planning and controls include bunding cleared areas to ensure water runoff from disturbed areas is contained. Drainage design is also considered in rehabilitation and measures such as contour banks are installed as required.

The creekline present in the south eastern corner of the application area only contains water during significant rainfall events. It has not had any water for several years, however in the event that water did occur any surface water flows would be contained within the disturbance area (Iluka 28/11/06).

As part of its reporting requirements under clause 8 of the *Mineral Sands (Eneabba) Agreement Act 1975* Iluka is required to submit detailed triennial reports that specifically address water quality, surface water discharge, rehabilitation plans and monitoring. Officers of DoIR, DEC, and DoW inspect the operation at least once a year as part of the Mineral Sands Agreement Rehabilitation Coordinating Committee (MSARCC) to review soil erosion and water management issue.

Department of Agriculture and Food Western Australia (DAFWA) advice received on the 28th November 2006 indicates that the assessment carried out by DoIR for the 716 permit adjacent (Adamson (A)) also applies to the Adamson (B) area. DAFWA advised that the proposal is unlikely to be at variance to Principle g (DAFWA, 2006).

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

Methodology
DAFWA (2006)
Iluka (28/11/06)
Iluka Resources Ltd (2005)
Iluka Resources Ltd (2003)
Wells and King (1989)
GIS Database:
Statewide Topographic Contours

(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 (South Eneabba Nature Reserve) is situated three kilometres to the west of the area proposed to be cleared (GIS Database). The proposed clearing area does not form a buffer nor does it contribute an ecological linkage to that reserve.

DEC in their advice has stated that it would appear unlikely that the proposal would be seriously at variance to any of the biodiversity principles (DEC, 2006b).

Based on the above he proposal is not likely to be at variance with this principle.

Methodology
DEC (2006b)
GIS Database:
CALM Managed Lands and Waters
Eneabba 1.2m Orthomosaic

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

Comments

Proposal is not likely to be at variance to this Principle

The proposed clearing area is not located within a Public Drinking Water Supply Area (GIS Database).
The whole of the Eneabba operations are subject to Licence 5646/7 under part V of the *Environmental Protection Act 1986*. The licence provides controls over groundwater and surface water runoff water quality by requiring an annual report on water quality, quantity and result monitoring against ANZECC guidelines and previous results. Condition W2(b) (i-v) defines discharge limits (pH, salinity, turbidity, erosion and impacts on

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.

Clearing permit CPS 1549/1 for the Adamson (B) project was originally granted on 7 December 2006. This clearing permit is being amended to extend the expiry date of the permit, from 6 January 2009 to 15 March 2010. Additionally standard reporting and recording conditions have been added to the permit.

Methodology DEC (2006a)
GIS Database:
Aboriginal Sites of Significance
Native Title Claims

3. Assessor's comments

Comment

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

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

4. References

Bancroft W.J. & Bamford M.J. (2006) Fauna Review Eneabba, Unpublished report prepared by M.J. & A.R. Bamford Consulting Ecologists for Iluka Resources. Dated 15th February 2006.

CALM (2005) Land Clearing proposal advice. Advice to Director General, Department of Industry and Resources (DoIR). Department of Conservation and Land Management, Western Australia (18/8/05).

DAFWA (2006) Advice to the DoIR Native Vegetation Assessor, from the Department of Agriculture and Food Western Australia (email dated 28/11/06).

DEC (2006a) Advice provided by the DEC in relation to EP and Water Licences, (email dated 14/11/06).

DEC (2006b) Land Clearing proposal advice. Advice to the DoIR Native Vegetation Assessor, from the Biodiversity Coordination Section of the Department of Environment and Conservation, Western Australia (email dated 23/11/06).

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.

Desmond A and Chant A (2001) Geraldton Sandplain 3 (GS3-Lesueur Sandplain subregion) in: A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002. Report published by CALM, Perth, WA.

HGM Maunsell (November 2001) Iluka Resources Limited Baseline Fauna Survey for IPL Central and IPL North.

Iluka (28/11/06). Advice provided by email from Iluka's Environmental Advisor to the DoIR Native Vegetation Assessor in relation to soil erosion.

Iluka Resources Limited (2003) Midwest operations Environmental Management Program Triennial Report 2003-2007. Unpublished Report.

Iluka Resources Limited (2005) Eneabba Mineral Sands Mine Adamson A proposal, June 2005. Unpublished report.

Iluka (2006) Eneabba and Narngulu Operations Environmental Management Program, Interim Report. Unpublished report dated 15 March 2006.

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

Wells and King (1989) Land Capability assessment methodology for rural residential development and associated agricultural land uses. Land resources Series No1. Department of Agriculture, Western Australia.

Western Australian Museum (2003) Faunabase search results for reptile, mammals and birds collected between latitude and longitude -29.7629, 115.3828 & -29.9633, 115.1636.

Western Australian Museum (2003) Faunabase search results for reptile, mammals and birds collected between latitude and longitude -29.7629, 115.3828 & -29.9633, 115.1636.

Woodman Environmental Consulting Pty Ltd (2005a) Flora and Vegetation Assessment, Adamson vegetation survey area, May 2005. Unpublished report prepared for Iluka Resources Limited Eneabba Operations.

Woodman Environmental Consulting Pty Ltd (2005b) Significant Flora Assessment, Adamson Mining Area, July 2005. Unpublished report prepared for Iluka Resources Limited Eneabba Operations.

Woodman Environmental Consulting Pty Ltd (2006) Declared Rare and Priority Flora Survey and establishment of permanent plots in the Adamson area. Unpublished report prepared for Iluka Resources Limited Eneabba Operations dated 21/9/2006.

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.