



1. Application details

1.1. Permit application details

Permit application No.: 716/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Iluka Resources Limited

1.3. Property details

Property: AM70/267
Colloquial name: Iluka Eneabba Operations - Adamson 'A' mining proposal

1.4. Application

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

2. Background

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 Vegetation Association 379, Shrubland: Scrub Heath on lateritic sandplain in the Central Geraldton Sandplain Area (Shepherd et al 2001). Two types of vegetation communities exist within the proposed clearing area: S14: Low Shrubland, with occasional emergent Eucalyptus tottiana and Eucalyptus pleurocarpa on grey sands (Woodman 2005a).

W8: Very open low woodland of Eucalyptus tottiana and Eucalyptus pleurocarpa on grey sands (Woodman 2005a).

Clearing Description

The proposed clearing is for the purposes of mining mineral sands within an old mine path mostly rehabilitated to pasture. A 14.7 hectare section is a remnant of native vegetation that was left when the initial mining took place. The area forms a native vegetation corridor linking large remnants of native vegetation. This area is dissected by a number of tracks and a large topsoil dump is situated in the middle of the area.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)

Comment

Woodman Environmental Consulting described the vegetation condition (based on the Keighery 1994 scale) within the broader Adamson area as being in very good to excellent condition (Woodman Environmental Consulting Pty Ltd 2005a). Some weed invasion due to the proximity of agricultural land was noted near a creek line on the eastern side of the surveyed area. No weed invasion was noted within or on the edges of the area proposed to be cleared.

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

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 at variance to this Principle

The proposed clearing area is within an area called Adamson 'A'. It is situated within the 'kwongan', a known area of high biological diversity (Iluka Resources Ltd 2005). A vegetation survey conducted in the vicinity of the Adamson 'A' area found a total of 206 plant species within an 846 hectares surveyed area (Woodman Environmental Consulting Pty 2005a). Fifteen separate plant communities were mapped within the surveyed area. Two plant communities were found within the area to be cleared; W8 which over the whole surveyed area contained up to 87 plant species and S 14 with a total species number of 72 over the whole surveyed area. Both W8 and S14 recorded a significantly higher number of plant species compared to 8 other communities mapped in the Woodman 2005 survey. The other 5 communities recorded similar numbers of species to W8 and S14.

Methodology

Iluka Resources Ltd (2005)
Woodman Environmental Consulting Pty Ltd (2005a)

(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 schedule 1 (fauna that is rare or likely to become extinct) species, Carnaby's Black Cockatoo (*Calyptrorhynchus latirostris*) has been recorded in the vicinity of the Adamson area (Iluka Environmental Consulting Pty Ltd 2005a, Western Australian Museum 2003). The area would only be used for foraging by that species as it nests in the wheat belt region (Pizzey and Knight 1997).

The Peregrine Falcon (*Falco peregrinus*) a schedule 4 (fauna in need of special protection) species also probably occurs in the area (Woodman Environmental Consulting Pty Ltd 2005a) however that species would only use the area for foraging as it nests on cliffs which are not present in the area. That wide-ranging species is unlikely to be affected by the proposed clearing.

CALM have recorded three Specially Protected and or Priority fauna species within 10 kilometres of the Adamson 'A' area (CALM advice 2005a). 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) and the Rufous Fieldwren (western wheatbelt) *Calamanthus campestris montanellus* (Priority 4, taxa in need of monitoring).

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 advice 2005b).

The Rufous Fieldwren was recorded in 2001 on an Iluka lease (Lisa Sadler pers comm. 2005, HGM 2001). It is likely that Adamson A is a suitable habitat for that species. However considering the extent of the clearing in comparison with the overall project, and the subsequent rehabilitation that the proponent has agreed to undertake post mining, and required by a condition of the permit, the clearing is unlikely to cause a significant additional impact upon the capacity of the Rufous Field Wren populations to disseminate to suitable nearby habitat as clearing progresses (CALM advice 2005c).

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 advice 2005c).

Methodology

Pizzey and Knight (1997)
Western Australian Museum faunabase database (2003)
Wildlife Conservation (Specially Protected Fauna) Notice 2005 (CALM 2005)
HGM (2001)
CALM advice (2005a, 2005b, 2005c)
Iluka Resources Ltd (2005)
Woodman Environmental Consulting Pty Ltd (2005a)

(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

Nine Declared Rare Flora (DRF) populations have been recorded within a 5 kilometre radius of the proposed clearing. The species recorded are *Eucalyptus crispata*, *Paracaleana dixonii*, *Leucopogon objectus* and *Grevillea curviloba* subsp *incurva* (CALM Declared Rare and Priority Flora List, 2005).

No Declared Rare Flora (DRF) species were found within the Adamson area in the April 2005 survey (Woodman Environmental Consulting Pty Ltd 2005a). Of the eleven DRF species known to occur in the Eneabba region *Eucalyptus johnsoniana* and *Leucopogon obtectus* have been previously located within the Eneabba mining area (Iluka 2005, Woodman Environmental Consulting Pty Ltd 2005b). Both species are tall conspicuous ones and given the intensity of the survey carried out in April 2005 it is likely that both species would have been recorded if present within the area (Iluka Resources Ltd 2005).

One DRF orchid (*Paracaleana dixonii*) is associated with vegetation type W8 and could potentially occur in the proposed clearing area (Woodman Environmental Consulting Pty Ltd 2005a). However that species is thought to flower in response to fire and given that the area has not been burnt for many years the likelihood of locating that species is very low (Woodman Environmental Consulting Pty Ltd 2005b).

Two priority flora species were recorded within the proposed cleared area (Woodman Environmental Consulting Pty Ltd 2005a); *Georgeantha hexandra* (P4) and *Calytrix superba* (P3). Both species were recorded at a low density within Adamson 'A'. Based on the vegetation and soil type, a third species *Isopogon tridens* (P3) may also be present as well. All three species have been previously recorded in the Iluka lease area (Woodman Environmental Consulting Pty Ltd 2005a). Both *G.hexandra* and *I.tridens* have returned in rehabilitated sites (Iluka 2005). The proposed cleared area is not necessary for the continued in situ existence of the three priority species listed above, and the proposed clearing is unlikely to affect those species significantly (CALM 2005a).

Based on the above it is unlikely that any DRF species will be affected by the proposed clearing of Adamson 'A' and the proposal is not likely to be at variance with the principle (CALM 2005a).

Methodology CALM Declared Rare and Priority Flora List, 2005
Woodman Environmental Consulting Pty Ltd (2005a)
Woodman Environmental Consulting Pty Ltd (2005b)
Iluka Resources limited (2005)
CALM advice (2005a)

(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

The closest known Threatened Ecological Community (TEC) is found approximately 7 kilometres of the proposed clearing (Threatened Ecological Communities CALM database 2005).

Woodman Consulting Pty Ltd (2005a) states that no current or proposed TECs were observed during their vegetation survey conducted within the Adamson area in April 2005.

Given the above it is unlikely that the clearing will be at variance with this principle (CALM advice 2005a).

Methodology Threatened Ecological Communities CALM 12/4/05
Woodman Environmental Consulting Pty Ltd (2005a)
CALM advice (2005a)

(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 at variance to this Principle

The Adamson A area is situated within the Lesueur Sandplain IBRA Geraldton Sandplains (Interim Biogeographic Regionalisation of Australia) subregion (Shepherd et al, 2001). 40.5% native vegetation cover remains within this subregion and the clearing of Adamson 'A' will not reduce the remaining native vegetation cover to less than 30% within the IBRA subregion.

A similar percentage (38.7 %) of remaining native vegetation is found within the Shire of Carnamah.

The vegetation association present within this area is classified as number 379 (Pre European Vegetation DA 01/01), of which about 20.2 % remains of its pre European extent (Shepherd et al 2001). Of this 20.3% is protected within reserves.

Woodman Environmental have recorded two vegetation communities types (W8 and S 14) in the area proposed to be cleared. S14 type is the predominant type in this area (Woodman Environmental Consulting Pty Ltd, 2005a). Woodman Environmental Consulting has stated that both community types are likely to be present within the South Eneabba and other Nature Reserves (Woodman Environmental Consulting Pty Ltd 2002, 2005a & 2005b).

Based on the national Objective Targets for Biodiversity Conservation 2001-2005, the extent of vegetation type 379 left within the Lesueur Sandplain IBRA Subregion is classified as vulnerable.

The proposal is considered at variance with principle (e).

Methodology Shepherd et al (2001).
Woodman Environmental Consulting Pty Ltd (2005).
Hopkins et al. (2001).
CALM advice (2005a)
Department of Natural Resources and Environment (2002).

(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 at variance to this Principle

The nearest watercourse or wetland to the proposed clearing area is a non perennial minor watercourse located approximately 400 metres to the north east (DOE Hydrography 2004). None of the vegetation types occurring in Adamson 'A' is growing in or are associated with wetlands or watercourses. The groundwater is situated below the level of the mining operation and dewatering is not required (Iluka Resources Ltd 2005). Drainage mechanisms are put in place during operations and rehabilitation to control water flows (Iluka Resources Ltd 2005). The Adamson 'A' proposal is unlikely to affect any wetland or watercourse communities and as such the clearing is not at variance with this principle.

Methodology DoE Hydrography (2004).
Iluka Resources Limited (2005).

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

Comments Proposal is not at variance to this Principle

The area to be cleared rises gently from west to east with a maximum gradient of about 2.5 % (DOLA, Statewide Topographic Contours 2002). The soils are grey sands and the area is subject to strong seabreezes in the summer time (Phil Scott pers comm.). Guidelines developed by the Department of Agriculture (Wells and King 1989) with regards to soil erosion caused by water indicate that the Adamson 'A' area has a capability class of II or high capability and that with careful planning soil erosion can be successfully managed.

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.

Iluka Resources Limited already implements a number of measures to manage water and wind erosion as part of their operations (Iluka triennial report 2003-2007) and compliance under the Mineral Sands (Eneabba) Agreement Act 1975 (MSAA). Drainage mechanisms are put in place during operations and rehabilitation to control water flows (Iluka 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 (Lisa Sadler pers comm. 9/8/2005).

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

The area to be cleared rehabilitation will be specifically included in an independent rehabilitation monitoring report once rehabilitation commences (Phil Scott pers comm).

Given the above and provided that such measures are followed the clearing of Adamson 'A' will not create further land degradation.

Methodology DOLA , Statewide Topographic Contours 2002
Iluka triennial report 2003-2007
Wells, M.R. and King, P.D. (1989). Land Capability Assessment methodology. Land Resources Series No 1, Department of Agriculture.

(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 3.2 kilometres to the south west of the area proposed to be cleared (CALM Managed Lands and Waters – CALM 1/06/04). The proposed clearing area does not form a buffer nor does it contribute an ecological linkage to that reserve.

The proposal is not likely to be at variance with this principle (CALM advice 2005a, 2005c).

Methodology CALM Managed Lands and Waters - CALM 1/06/04
CALM advice (2005a & 2005c)
Eneabba 1.2m Orthomosaic - DOLA 98

(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 areas under application fall within a proclaimed water resource area (Anne Finlay DoE).

The whole of the Eneabba operations are subject to Licence 5646/7 under part V of the Environmental Protection Act. 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 surrounding vegetation).

Groundwater at Eneabba is situated below the ore bodies and is not impacted by mining operations (Iluka 2005).

As the area is located high in the landscape acid sulphate soils are unlikely to be present within the area

(DOLA 2002).

The area is not classified as being in a Salinity risk area (Salinity Risk LM 25m DOLA 2000), the proposed clearing is unlikely to increase land salinisation in the area.

The area does not lie within an area where potential Groundwater Dependant Ecosystems may occur (DoE 2004).

Given the above the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

Methodology DoE Potential Groundwater Dependant Ecosystems DoE 2004
DOLA, Statewide Topographic Contours 2002.
DOLA Salinity Risk LM 25m DOLA 2000
Iluka Resources Ltd 2005

(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 nearest watercourse to the area is a minor non perennial watercourse located approximately 400 metres to the North East (DoE Hydrography 2004). At 120 metres above sea level (DOLA 2002) the proposed clearing area does not fall within a designated floodway or flood fringe area (DoE 2003).

Given its location in the landscape and the fact that the local area has not been extensively cleared the proposed clearing is unlikely to lead to an increase in peak flood height or duration.

Methodology DoE FMD ARI Floodway and Floodfringe Areas 2003.
DoE Hydrography 2004
DOLA Statewide Topographic Contours 2002
Woodman Environmental Consulting Pty Ltd 2005a
Iluka Resources Ltd 2005

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

Comments A submission was received which raised a number of concerns regarding biodiversity issues. These issues have been addressed in the above clearing principles and by the conditions set in the clearing permit.

There is a Native Title Claim over the area under application (Native Title Claims-DLI 19/12/04). However, the mining lease has been granted, and the clearing is for a purpose consistent with the lease, therefore the granting of a clearing permit is not a future act under the Native Title Act 1993.

Methodology Native Title Claims-DLI 19/12/04

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	14.7	Grant	<p>The proposal is at variance with principles (a) and (e).</p> <p>The kwongan area has a high level of biological diversity. The biodiversity of the vegetation proposed to be cleared is not as high as the surrounding vegetation. The consultants reports states that only 2 local vegetation types occur within the area proposed to be cleared with the surrounding area containing 15 local vegetation types.</p> <p>More than 20% of the pre-European vegetation type to be cleared is protected in conservation reserves.</p> <p>The area to be cleared is relatively small and is dissected by numerous tracks and a soil dump. Post mining these areas will be rehabilitated to locally native vegetation as set under the Permit Conditions and the Mineral Sands (Eneabba) Agreement Act 1975. The assessing officer therefore recommends that the clearing permit be granted.</p>

5. References

- CALM (2005a). Land Clearing proposal advice. Advice to Director General, Department of Industry and Resources (DoIR). Department of Conservation and Land Management, Western Australia (3/8/05).
- CALM (2005b). Land Clearing proposal advice. Advice to Director General, Department of Industry and Resources (DoIR). Department of Conservation and Land Management, Western Australia (9/8/05).
- CALM (2005c). 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).
- CALM Land clearing proposal advice. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE TRIM ref XXXXX.
- 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.
- EPA (2004) Guidance for the Assessment of Environmental Factors - terrestrial flora and vegetation surveys for Environmental Impact Assessment in Western Australia. Report by the EPA under the Environmental Protection Act 1986. No 51 WA.
- HGM Maunsell (November 2001). Iluka Resources Limited Baseline Fauna Survey for IPL Central and IPL North.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- 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.
- Keighery, BJ (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Pizzey G & Knight F (1997) The Field Guide to the Birds of Australia. Angus and Robertson, Sydney, 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.
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- 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 (2002) Flora and Vegetation Survey of the Depot Hill/ Brandy Flats, IPL North and IPL South areas at Eneabba. Unpublished report prepared for Iluka Resources Limited Eneabba Operations.
- 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.

6. Glossary

Term	Meaning
CALM	Department of Conservation and Land Management
DAWA	Department of Agriculture
DEP	Department of Environmental Protection (now DoE)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DoE)