



1. Application details

1.1. Permit application details

Permit application No.: 389/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Iluka Resources Limited

1.3. Property details

Property: AM70/267
M70/683
M70/684
M70/685
M70/686
M70/687
M70/688
M70/689
M70/821
M70/870
M70/872
P70/994
M70/879
M70/965
M70/984
M70/1153
E70/953
M70/1039
E70/404

Local Government Area: Shire Of Carnamah & Shire Of Coorow & Shire Of Irwin & Shire Of Three Springs
Colloquial name: Eneabba Operations

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
30		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
Beard vegetation association 378: Shrublands; scrub-heath with scattered Banksia spp., Eucalyptus todtiana and Xylomelum angustifolium on deep sandy flats in the Geraldton Sandplain region.	The vegetation under consideration exists in a coastal plain, elevated on the western side and flattening out into a plain that drains towards the coast. The chief soils represented within the proposal area include sandy acidic yellow mottled soils (containing ironstone gravel and lateritic sandy gravels) and leached sands often with a sandy clay substrate between 3 and 6 feet in depth. The soil types present support kwongan vegetation representative of the western coastal heathlands of south-west Australia. The low open	Pristine: No obvious signs of disturbance (Keighery 1994)	Observed during site visit: the vegetation in some of the areas under application was in pristine condition, some areas were previously mined and rehabilitated and some were completely cleared agricultural or mining land. Special note was taken of vegetation where drill lines were cleared previously. As the photographs indicate (TRIM Ref: GD314), the native vegetation recovers very well from drill lines and the impact of this exploration is minimal compared to other mining activities.
Beard vegetation association 379: Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region.			
Beard vegetation association 392: Shrublands; Melaleuca thyioides thicket.			

Beard vegetation association 49: Shrublands; mixed heath (Hopkins et al. 2001, Shepherd et al. 2001). heath, low closed heath, open shrubland and shrubland consists of Banksia, Conostyliis, Daviesia, Drosera, Dryandra, Grevillea, Hakea, Leucopogon, Stylidium, Thysanotus and Verticordia species.

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 under application covers approximately 30,000ha of the Lesueur Sandplains IBRA subregion, which is known for its particularly high floristic diversity and levels of endemism. CALM advises that there are 19 species of Declared Rare Flora and at least 114 species of Priority Flora within the application area.

Given this high level of diversity the proposal has potential to be at variance to this Principle. However, the proponent proposes to conduct track rolling and drilling of only 30 hectares of native vegetation over 5 years, and with careful management, especially in regards to preventing the spread or introduction of weeds and Phytophthora, the long term impact to Declared Rare and Priority Flora species and the associated floristic communities is unlikely to be significant. The proponent has further agreed to conditions that address the management of weeds and Phytophthora within the area under application. This proposal is therefore unlikely to be at variance to this Principle.

Methodology CALM, 2006.

GIS Databases: Interim Biogeographic Regionalisation of Australia-EA 18/10/00.

Site visit, DoE Officer, 2005.

(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**

The area under application covers approximately 30,000ha. A 10km buffer around the application area extends approximately 70km from north to south and 35km from east to west. CALM advises that within this large buffer area, 8 species of threatened or priority fauna have been recorded (CALM Corporate datasets). Whilst it is likely that significant habitat for fauna would occur within the 30 000ha covered by the application, the proponent is applying to clear 30ha within this area over five years (Iluka 2006).

Bamford Consulting Ecologists (BEC) have listed 2 reptiles, 13 birds, at least 5 migratory birds and 2 invertebrates of conservation significance that have been recorded or are expected in the area. Their report considers the expected impacts of the proposed work on fauna species. Many of these species could suffer from direct mortality except for Carnaby's Cockatoo, which [sic] could be affected by some loss of foraging habitat (Iluka 2006). The Department will recommend that large stands of Banksia attenuata, Banksia menziesii and Banksia hookeriana be avoided in order to protect habitat specific to Calyptorhynchus latirostris (Carnaby's Black-Cockatoo).

BEC advise that the rolling of lines for exploration drilling is likely to have minimal impact upon fauna because the areas to be disturbed are small and regeneration of vegetation is likely to be rapid (Iluka, 2006)

Given the proponents will only be clearing 30ha within the area under application and the method of rolling the vegetation is likely to promote quick regeneration of the vegetation, it is unlikely that this proposal is at variance with this Principle.

Methodology CALM (2006)

Iluka (2006)

CALM's Threatened and Priority Fauna Database [The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing (CALM, 2006)].

Site visit, DoE Officer, 2005.

(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**

CALM advised that corporate datasets show 168 records of 19 species of DRF occurring within the 10km radius buffer surrounding the 30,00 ha purpose permit application area. Approximately 668 records of at least 114 species of Priority Flora are also listed as occurring within that area. The application area is situated within the Lesueur Sandplain (GS3) IBRA subregion. The area exhibits extremely high floristic endemism, with over 250 species of sandplain flora endemic to the subregion. The area is known Australia-wide and internationally as having particularly high floristic diversity and levels of endemism (CALM 2006).

Given that so many declared rare flora taxa are known to occur within the area under application and the precise location of areas proposed to be cleared is as yet unknown, this proposal has the potential to be at variance to this Principle. Iluka have consulted CALM to obtain data regarding the known occurrences of DRF and Priority Flora within the proposed clearing area, and have committed to undertaking pre-drilling flora surveys (Iluka 2006). Flora in the direct path of the drill lines will be assessed by botanists who have familiarised themselves with the flora of significance likely to occur in the area. If DRF is encountered the plants will be marked in the field to ensure track rolling does not disturb the plants and drill holes or drill lines will be relocated to ensure clearing does not occur within 10m of identified DRF plants. CALM recommends that this procedure also include Priority Flora species and that existing tracks must be used in preference to creating new ones.

The proponent has agreed to conditions that require the proponent to undertake pre-drilling flora surveys to identify DRF and Priority species and if found, manage the identified flora by flagging in the field and no clearing to occur within 10m of the identified flora.

This proposal is therefore unlikely to be at variance with this Principle.

Methodology CALM, 2006.
GIS Databases: Declared Rare and Priority Flora list - CALM 01/07/05.
Site visit, DoE Officer, 2005.
Florabase, 2006.
CALM's Threatened and Priority Flora Database [The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing (CALM, 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**
CALM advised that one State listed TEC is known to occur within the clearing permit application area. Supporting documentation indicates that the proponent has communicated with CALM District staff (Jurien) who requested a buffer of 1000m around the TEC. The proponents have committed to remaining at least 1000m from the TEC (Iluka 2006). Prior to any clearing, the qualified botanist who will be conducting on-ground surveys must become familiar with the Ferricrete floristic community using the references provided. CALM recommends that any vegetation communities associated with seasonally inundated massive ironstone formations are clearly marked in the field, so as to be seen and avoided by machine operators especially during track rolling activities. If it becomes apparent that a community is likely to be impacted by the proposal, the botanist should establish whether a TEC is present using the references provided and the Flora Community list for Ferricrete compiled by CALM's Species and Communities Branch (taxonomy subject to change). If there is evidence to suggest that a TEC is present CALM's Species and Communities Branch should be contacted immediately and clearing should only proceed with agreement from CALM's Ecologists. TEC Type 72 Ferricrete floristic community occurs on red and brown sandy loams over ironstone, drainage is poor and seasonal waterlogging occurs. The plant community within this TEC occurrence comprises tall shrubland dominated by *Dryandra stricta*, *Allocasuarina campestris*, *Labichea lanceolata* and *Acacia biakelyi* on the Eneabba Plain. Species common to all TEC Type 72 sites include *Alyogyne hakeifolia*, *Borya sphaerocephala*, *Isotoma hypocrateriformis*, *Petrophile seminuda*, *Stylidium dichotomum*, *Thysanotus patersonii* and *Waitzia paniculata*. The habitat of seasonally inundated massive ironstone is very rare, and mostly cleared.

The proponent's supporting documentation (2006) also states that 'SPS182A and SPS182B TEC's are at Lake Logue. The proposed activities will have no impact on these areas.' Lake Logue appears to be outside of the proposed clearing area and it is listed as a Nationally Important Wetland. CALM has no records of a Threatened Ecological Community occurring there.

The proponent has agreed to conditions that require the proponent to undertake pre-drilling flora surveys to identify threatened ecological communities. If any communities are found, they are required to manage the identified community by flagging in the field, no clearing to occur within 1000m of the identified community and to report the community to the Department of Environment and Conservation Species and Communities Branch.

This proposal is therefore not likely to be at variance with this Principle.

Methodology CALM (2006)
Iluka (2006)
GIS Databases: Threatened Ecological Communities - CALM 12/04/05.

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

Comments **Proposal is not likely to be at variance to this Principle**
The Geraldton Sandplains Bioregion has 26.8% of its pre-European vegetation remaining and the Shires of Irwin,

Three Springs, Coorow and Carnamah have 47.9%, 19.7%, 38.8% and 38.9% respectively. The Beard vegetation types found in the area being considered - 378, 379, 392 and 49 have 62.0%, 20.2%, 42.6% and 40.4% pre-European vegetation remaining.

The proponent will only be clearing 30ha within the area under application and the method of rolling the vegetation is likely to promote quick regeneration of the vegetation. The proponent has also agreed to conditions that require revegetation and rehabilitation of the rolled tracks where natural regeneration has not produced the same composition structure and density as the original vegetation.

This proposal is therefore unlikely to be at variance with this Principle.

Methodology GIS Databases: Interim Biogeographic Regionalisation of Australia - EA 18/10/00, Pre-European Vegetation - DA 01/01, Local Government Authorities - DLI 08/07/04.
Shepherd et al, 2001.
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 likely to be at variance to this Principle

The area under application falls within the Arrowsmith River catchment and contains numerous earth dams, minor non-perennial watercourses (including Eneabba Creek), areas subject to inundation and a major non-perennial watercourse. The area under application falls within an area of average rainfall of 500-600mm.

Given the proponent will only be clearing 30ha within the area under application and the method of rolling the vegetation is likely to promote quick regeneration of the vegetation it is unlikely that any clearing of native vegetation will interfere with the ecological functions of any watercourse.

This proposal is therefore not likely to be at variance with this Principle.

Methodology GIS Databases: Hydrography, linear - DoE 01/02/04, Hydrographic Catchments - Catchments - DoE 23/03/05, Rainfall, Mean Annual - BOM 30/09/01.
Site visit, DoE Officer, 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 likely to be at variance to this Principle

The vegetation under consideration exists in a coastal plain, elevated on the western side and flattening out into a plain that drains towards the coast. The Arrowsmith River, a major non-perennial watercourse to the north is fed by 500-600mm of annual rainfall. The area under application also includes earth dams, minor non-perennial watercourses (eg Eneabba Creek) and areas subject to inundation. The chief soils represented within the proposal area include sandy acidic yellow mottled soils (containing ironstone gravel and lateritic sandy gravels) and leached sands often with a sandy clay substrate between 3 and 6 feet in depth.

Broadscale mapping reveals that small isolated areas within the proponent's mining leases may be subject to water erosion, phosphorous loss, waterlogging and salinity, however the major land degradation risk is wind erosion. Approximately one third of the leases may be at a 10-29% risk; less than 10% may be at a 30-49% risk, approximately 20% may be at a 50-69% risk and a small area in the western leases is at an extreme (70-100%) risk of wind erosion. (DAFWA, 2006)

Given the proponent will only be clearing 30ha within the area under application and the method of rolling the vegetation is likely to promote quick regeneration of the vegetation it is unlikely that this proposal will be at variance with this Principle.

Methodology Department of Agriculture and Food (accessed May 2006) Map Unit Database [While all reasonable care has been taken in the preparation of the material in this document, the Western Australian Government and its officers accept no responsibility for any errors or omissions it may contain, whether caused by negligence, or otherwise, or for any loss, however caused, sustained by the person who relies on it].
Site visit, DoE Officer, 2005.

(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

CALM advised that three nature reserves occur partially within the purpose permit area. South Eneabba and Lake Logue Nature Reserves are both ESA's and the proponent states that some works will be required within ESA boundaries. The proponent also state in their supporting documentation that they have approval to mine and explore within Eneabba South Nature Reserves 27886 and 31030 under the authority of the Mineral Sand (Eneabba) Agreement Act 1975. CALM confirmed that Iuka has limited access to parts of the Conservation

Estate in the Eneabba area under the Mineral Sands (Eneabba) Agreement Act 1975.

DOIR advised that the proponent is also able to apply for exploration licences and mining leases outside of the State Agreement area on other areas of land in the same manner as any other company would. The area under application is covered by either active mining tenements or exploration leases, which are owned by the proponent.

The proponent will only be clearing 30ha within the area under application and the method of rolling the vegetation is likely to promote quick regeneration of the vegetation. The proponent has also agreed to conditions that require revegetation and rehabilitation of the rolled tracks where natural regeneration has not produced the same composition structure and density as the original vegetation.

This proposal is therefore not considered to be at variance to this Principle.

Methodology CALM, 2006.
DOIR, 2006.
GIS Databases - CALM Regional Parks - CALM 12/04/02, CALM Managed Lands & Waters - CALM 01/07/05, Proposed National Parks FMP- CALM 19/03/03, Register of National Estate - EA 28/01/03
Site visit, DoE Officer, 2005.

(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 under application is in the Arrowsmith River catchment and does not contain any PDWSA Protection Zones. The area under application is in close proximity to the Eneabba Water Reserve, however the Reserve has not been assigned a Priority rating. The proponent recognises the need for protecting this water source as their continued operations depend on it. The proposed exploration encompasses minimal disturbance, holes are sealed with a plastic plug immediately after drilling, no drilling fluids are used apart from water and the holes would normally range between 20 and 30m in depth (Iluka, 2006). The proposed land use is consistent with the current level of protection assigned to this Reserve and there have been no potential impacts on groundwater identified (DoW, 2006). This proposal is therefore not likely to be at variance to this Principle.

Methodology DoW (2006)
Iluka (2006).
GIS Databases - Current WIN data sets, PDWSA Protection Zones - DOE 07/01/04, Public Drinking Water Sources (PDWSAs) - DOE 09/08/05, Hydrographic Catchments - Catchments - DOE 23/03/05.

(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 at variance to this Principle

The vegetation under application lies in the Arrowsmith River catchment in an area that experiences between 500-600mm of rainfall. The general area was subject to flooding in 2000 (WRC, 2000), however it is unlikely that the minimal impact drill lines will increase peak flood height or duration. This proposal is therefore not at variance to this Principle.

Methodology GIS Databases - Rainfall, Mean Annual - BOM 30/09/01, Interim Biogeographic Regionalisation of Australia - EA 18/10/00, Pre-European Vegetation - DA 01/01, Local Government Authorities - DLI 08/07/04.
Waters and Rivers Commission, 2000.

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

Comments

This application was presented at a DoE regional team meeting to seek advice on any Environmental Protection or water licensing issues. In this case, there were no additional licences or permits required.

The Shires of Irwin, Three Springs and Coorow have not indicated that there are any planning requirements/approvals that would affect the clearing. The Shire of Carnamah has raised no objections to the clearing proposal, provided that the area is revegetated at the completion of mining activities. The proponent will only be clearing 30ha within the area under application and the method of rolling the vegetation is likely to promote quick regeneration of the vegetation. The proponent has also agreed to conditions that require revegetation and rehabilitation of the rolled tracks where natural regeneration has not produced the same composition structure and density as the original vegetation.

A number of Environmental Impact Assessments have been carried out in the area. Of the 12 recorded, 5 may impact on this proposal. 185626 - the EPA advised that advice was provided recommending a vegetation assessment and a DRF search prior to any development taking place. 130453 - proponents were advised to improve the standard of vegetation rehabilitation previously undertaken. In addition, DRF were to be managed in conjunction with CALM. 24839 - area within the Nature Reserve 31030 was to be assessed in accordance with government policy on mining access to conservation reserves. The remaining area, including EPA system

5.1 was to be assessed at NOI Red Book EPA system rec 5.11, Nature Reserve 31030. 108023 - there was a medium risk to EPP wetlands and were to be subject to DME requirements for risk. Most of this proposal ran parallel to the Alinta Gas pipeline. 138997 - the potential impacts of this proposal were to be managed under DME/CALM legislation. Dieback quarantine measures were to be taken and the seismic lines were to be closed off after survey (to control access), with the timing to avoid wildflower collection time.

The area under application is covered by either active mining tenements or exploration leases, which are owned by the proponent. It is the CEO of the Department's view that the grant of a clearing permit constitutes a secondary approval that removes the Environmental Protection Act's prohibition on the applicant exercising its mining and exploration rights. Accordingly, the CEO is not required to comply with future act procedures under the Native Title Act 1993.

The Mineral Sands (Eneabba) Agreement Act 1975, Clause 15 Item 8 allows mining on Reserve No. 31030: 'Subject to the provisions of the mineral lease and such other terms and conditions as the Minister may require pursuant to approved proposals hereunder the Company shall have the right to mine such part of the land the subject of Reserve No. 31030 and any other land reserved under the Land Act as is included in the mineral lease.'

The proponent is still able to apply for exploration licences and mining leases outside of the State Agreement area on other areas of land, of which the area under application is covered by either active mining tenements or exploration leases, which are owned by the proponent.

Methodology

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Exploration	Mechanical Removal	30	Grant	<p>The assessable criteria have been addressed and no objections were raised. The assessing officer therefore recommends that the clearing permit be granted with conditions:</p> <ul style="list-style-type: none"> * to reduce the likelihood of impacts on Threatened Ecological Communities * prevent the spread or introduction of weeds and Phytophthora * to revegetate and rehabilitate rolled tracks * to reduce the likelihood of impacts on Declared Rare or Priority Flora

5. References

- CALM (2006) Land Clearing Proposal Advice. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE TRIM ref GD1387.
- DAFWA (2006) Broadscale Mapping - Map Unit Database. Department of Agriculture and Food, Western Australia.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DOIR (2006) Mineral Sands (Eneabba) Agreement Act advice, Department of Industry and Resources, Western Australia. DEC TRIM Ref DOC2665.
- DoW (2006) Eneabba Water Reserve Water Source Protection Assessment. Department of Water, Western Australia.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.
- 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 (2006) Guidelines and Environmental Procedures for Exploration Activities. Eneabba. Additional information received to accompany the application for a Clearing Permit (purpose permit). DoE TRIM ref GI541.
- 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.

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)

