



1. Application details

1.1. Permit application details

Permit application No.: 2192/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Boxcut Mining Pty Ltd

1.3. Property details

Property: E45/2690
E45/2691
Local Government Area: Shire Of East Pilbara
Colloquial name:

1.4. Application

| | | | |
|--------------------|-----------|--------------------|---------------------|
| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
| 21.33 | | 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 |
|--|--|---|---|
| <p>Vegetation within the application area has been mapped at a 1:250,000 scale as the following Beard vegetation associations.</p> <p>- 99: Hummock grasslands, shrub steppe; <i>Acacia coriacea</i> & <i>hakea</i> over hard spinifex, <i>Triodia basedowii</i></p> <p>- 117: Hummock grasslands, grass steppe; soft spinifex (Shepherd et al. 2001).</p> <p>Astron Environmental Services undertook a flora and vegetation assessment of the application area between 10 and 19 July 2007. A total of 17 vegetation units were recorded from 5 major vegetation landform units (Astron Environmental, 2007).</p> <p>1) Vegetation of the Creeklines.</p> <p>1.1) <i>Acacia</i> spp. shrublands and scrubs over <i>Triodia</i> spp. (mainly <i>Triodia epactia</i>) hummock grasslands creeklines. 1.2) <i>Corymbia hamersleyana</i> creeklines. 1.3) <i>Eucalyptus</i></p> | <p>Boxcut Mining Pty Ltd proposes to clear up to 21.33 hectares for the purpose of mineral exploration. The proposed clearing is for an exploration camp, access tracks, drill pads and sumps across a large portion of the Kintyre Rocks area (Boxcut Mining, 2007; GIS Database).</p> <p>Drill pads and sumps will occupy an area of approximately 20m x 20m and 5m x 5m respectively. The applicant has advised that size of the drill pads and sumps is likely to be less than that indicated as there will be little or blade down clearing on the drill pads (Boxcut Mining, 2007). A tracked drill rig will be driven into position and then a support truck will be driven in and parked alongside the drill rig. Two support utilities will be parked near the drill rig (Boxcut Mining, 2007).</p> <p>Clearing for access tracks will be restricted to a width of approximately 3 metres. Boxcut Mining proposes to use raised blade clearing on even ground or where possible and intend to re-clear existing tracks where possible in order to minimise the disturbance to</p> | <p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p> | <p>The flora and vegetation survey area consisted of approximately 60 kilometres of 50 metre wide corridors that were centred on overgrown tracks, proposed new access tracks and gridlines, along with proposed drill pad sites. The survey corridor was widened to approximately 80 metres at proposed drill pad locations (Astron Environmental, 2007). A proposed exploration camp site was also included in the survey area. Vegetation descriptions were given at plant community or vegetation association level (Astron Environmental, 2007).</p> <p>Astron Environmental (2007) described the condition of the vegetation using a vegetation condition scale adapted from Keighery (1994) and Kaesehagen (1995).</p> |

camaldulensis var. obtusa creeklines.

1.4) Eucalyptus leucophloia minor creeklines.

1.5) Eucalyptus victrix creeklines and flowlines.

1.6) Other creekline vegetation - Acacia inaequilatera, Acacia coleii var. coleii scattered tall shrubs over Gossypium australe, Acacia ancistrocarpa high shrubland over scattered low shrubs over hummock grassland.

native vegetation (Boxcut Mining, 2007). Boxcut Mining has advised that blade down clearing will only be utilized in instances where there is a necessity to turn a rock or some kind of sharp hummock.

Topsoil and vegetation will be collected and stockpiled and for use in future rehabilitation (Boxcut Mining, 2007).

2) Vegetation of the Plains.

2.1) Acacia shrublands and scrubs over Triodia spp. (mainly Triodia lanigera and Triodia schinzii) hummock grassland plains.

2.2) Corymbia spp. units of plains.

2.3) Eucalyptus kingsmillii low mallee woodlands.

2.4) Eucalyptus odonotocarpa low mallee woodlands.

2.5) Other Eucalyptus spp. Woodlands ? Eucalyptus leucophloia low open woodland over Acacia eriopoda scattered tall shrubs over Acacia melleodora high open shrubland over Triodia lanigera hummock grassland.

2.6) Other plains vegetation units.

3) Vegetation of the Hill Slopes.

3.1) Acacia spp. scattered shrubs to open shrublands over Triodia spp. Hummock grasslands.

3.2) Eucalyptus leucophloia slopes.

3.3) Eucalyptus odontocarpa on lower hill slopes.

4) Vegetation of the Clay Pans.

4.1) Acacia synchronicia open shrubland over Triodia epactia and hummock grassland; Eremophila forrestii scattered shrubs over Eriachne obtuse grassland; Senna artemisioides subsp. helmsii scattered shrubs over Solanum lasiophyllum scattered low shrubs over

Aristida contorta, *Eriachne flaccida* open grassland.

5) Vegetation of the Sand dunes.

5.1) *Aluta maisonneuvei* subsp. *maisonneuvei* open shrubland to shrubland over *Otione simplicifolium* low open shrubland over *Triodia schinzii* hummock grassland.

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (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 not likely to be at variance to this Principle

The application area is located within the Rudall subregion of the Little Sandy Desert Interim Biogeographic Regionalisation for Australia (IBRA) bioregion which encompasses an area of 11,089,900 hectares (GIS database; Shepherd et al. 2001). The Rudall subregion is characterised by sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities and bunch grasslands on alluvial deposits and associated ranges (Kendrick, 2001). The vegetation of the application area consists of two vegetation associations (Beard Vegetation Associations 99 and 117), both of which are common and widespread throughout this region, with approximately 100% of the pre-European vegetation remaining (Shepherd et al., 2001). Dominant land uses in the region include conservation, unallocated crown land, mining leases and urban (aboriginal communities) (Kendrick, 2001).

The Rudall subregion is known to support a diversity of arid zone reptiles, particularly skink lizards from the genera *Lerista* and *Ctenotus* (Kendrick, 2001). The upper Rudall River is listed as a rare feature of the subregion given that it is one of only two arid zone rivers with near permanent wetlands along its course (Kendrick, 2001). These wetlands support a biologically diverse assemblage of waterbirds, and support riparian woodland communities that are not well represented elsewhere (Australian Heritage Database, 2007).

One native fern species and 317 native flowering plant species from 49 families were recorded within the application area (Astron Environmental, 2007). One Priority two listed species; *Thysanotus* sp. Desert East of Newman (R.P. Hart 964), was recorded in the survey area (Astron Environmental, 2007). Astron Environmental (2007) stated that the floristic diversity represents moderate species richness in what was equivalent to a 300 hectare survey area that crossed a good range of habitats and geologies. No Declared Rare Flora or Threatened Ecological Communities were identified within the application area (Astron Environmental, 2007). The vegetation over most of the survey area was in 'Excellent' condition, with little sign of disturbance other than old overgrown vehicle tracks in the eastern part of the survey area (Astron Environmental, 2007).

Three weed species, Buffel Grass (*Cenchrus ciliaris*), Pie Melon (*Citrullus lanatus*) and Whorled Pigeon Grass (*Setaria verticillata*), were recorded within the application area (Astron Environmental, 2007). Astron Environmental (2007) recorded grasslands of Buffel Grass in most of the larger creeks and creek flood banks. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Given the close proximity of the application area to the Rudall River National Park, the Assessing Officer recommends should the permit be granted, that conditions be imposed on the permit for the purposes of weed management.

A number of introduced exotic fauna species that occur in the bioregion have been identified by Environment Australia (2002) (Outback Ecology, 2008). These include the House Mouse (*Mus domesticus*), Red Fox (*Vulpes vulpes*), Feral Cat (*Felis catus*), European Rabbit (*Oryctolagus cuniculus*), Donkey (*Equus asinus*), Dromedary Camel (*Camelus dromedarius*), European Cattle (*Bos taurus*) and the Goat (*Capra hircus*). Donkeys, goats and camels are all likely to be very common over the project area, whilst foxes, cats and rabbits are likely to decline and increase according to seasonal fluctuations (Outback Ecology, 2008). The presence of introduced animals can cause adverse impacts to natural ecosystem communities. Impacts include predation of native fauna, competition with native fauna for food and habitats, overgrazing and trampling of native vegetation and soil compaction. All of these impacts can contribute to a decline in the biological diversity.

The entry point for the application area is located immediately adjacent to the boundary of the Rudall River National Park (GIS Database). The Rudall River National Park is listed on the Register of the National Estate as an Environmentally Sensitive Area for its significance in maintaining on-going geomorphic and ecological

processes within a tropical desert environment (Australian Heritage Database, 2007). The Rudall River National Park follows the course of the Rudall River which rises in rugged hills then flows north east through sand-dune country into Lake Dora on the edge of the Great Sandy Desert. It is a vast wilderness area and has a number of different environments ranging from Throssel and Broadhurst Ranges to the huge expanses of the Lake Dora and Lake Blanche salt lakes. The park is dissected longitudinally by the Rudall river which contains a system of permanent water holes along with ephemeral and semi-ephemeral water courses. The presence of these means that the park has an unusually rich and diverse range of flora and fauna, including frogs, birds, mammals and a great array of reptiles (SEA US, 1999). The Rudall River National Park has a large number of habitats resulting in a diverse flora of over 400 species (Australian Heritage Database, 2007).

Although the application area is high in floral diversity and is likely to be high in faunal diversity, it is unlikely that the application area contains a higher level of biological diversity than the surrounding areas or adjoining Rudall River National Park. None of the significant landform features such as permanent water holes and watercourses, salt lakes or ranges appear to exist within the application area (Astron Environmental, 2007; GIS Database). All of the habitats present within the survey corridor are likely to exist over vast areas in the local or regional area.

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

Methodology Astron Environmental (2007)
Australian Heritage Database (2007)
Boxcut Mining (2007)
Environment Australia (2002)
Kendrick (2001)
Outback Ecology (2008)
SEA US (1999)
Shepherd et al. (2001)
Uranium Institute (1997)
GIS Database:
- CALM Managed Lands and Waters
- Hydrography, linear_1
- Interim Biogeographic Regionalisation of Australia
- Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00
- Pre-European Vegetation - DA 01/01

(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 may be at variance to this Principle

Boxcut Mining Pty Ltd commissioned Outback Ecology Services in January 2008 to undertake a desktop literature study to identify terrestrial fauna and significant habitat which may potentially occur within the project area (Outback Ecology, 2008). The aims of the study were to:

- Undertake a literature review and compile background information;
- Identify the potential for significant fauna habitat that may be present within the application area; and
- Identify vertebrate fauna and fauna of conservation significance that may be present within the application area, and;

A flora and vegetation survey of the application area was undertaken by Astron Environmental in July 2007. The survey provided a detailed description of the vegetation communities that were present within the clearing application area. Outback Ecology (2008) undertook an assessment of the Astron Environmental (2007) Flora and Vegetation survey in order to identify fauna habitats, and to determine the likelihood of conservation significant fauna species being found within the application area.

Fauna habitats that are likely to occur within the application area include:

- Mulga woodlands;
- Drainage lines;
- Plains, clay and sandy Spinifex plains;
- Mulga groves and woodlands;
- Hill slopes and sand dunes; and
- Rocky outcrops.

The habitat types present within the application area are likely to be represented elsewhere in the Little Sandy Desert bioregion (Outback Ecology, 2008). Vegetation in the application area has been mapped at a broad scale as Beard Vegetation Associations 99 and 117 (GIS Database). Approximately 100% of each of these vegetation associations remains in the Little Sandy Desert bioregion, and approximately 27% and 36.2% is represented in conservation reserves respectively (Shepherd et al. 2001). Many of the habitats within the application area are likely to be well represented within the nearby Rudall River National Park and surrounding areas.

Outback Ecology (2008) undertook a comprehensive database search to identify vertebrate fauna of conservation significance and significant fauna habitats that may occur within the application area. The following databases were searched:

- The Western Australian Museum (WAM) Faunabase;
- The Environment Reporting Tool of the Australian Government Department of the Environment and Heritage (DEH);
- The Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act Protected Matters Database;
- The Australian Natural Resources Atlas;
- Birds Australia (BA) Atlas Database, and
- The Australian Wetlands Database of the Australian Government Department of Environment and Water Resources.

Based on the desktop fauna survey, the following significant fauna species may potentially occur within the application area:

Northern Quoll (*Dasyurus hallucatus*), Mulgara (*Dasyurus cristicauda*), Greater Bilby (*Macrotis lagotis*), Northern Marsupial Mole (*Notoryctes caurinus*), Black-Flanked Rock Wallaby (*Petrogale lateralis lateralis*), Ghost Bat (*Macroderma gigas*), Orange Leaf-nosed Bat (*Rhinonictis aurantius*), Long-tailed Dunnart (*Smiththopsis longicaudata*), Western Pebble-mound Mouse (*Pseudomys chapmani*), Night Parrot (*Pezoporus occidentalis*), Princess Parrot (*Polytelis alexandrae*), Australian Bustard (*Ardeotis australis*), Bush Stone-curlew (*Burhinus grallarius*), Grey Falcon (*Falco hypoleucos*), Star Finch (western) (*Neochima ruficauda subclarescens*), Rainbow Bee-eater (*Merops ornatus*), Fork-tailed Swift (*Apus pacificus*) and the Great Desert Skink (*Egernia kintorei*) (Astron Environmental, 2007).

The proposed clearing of 21.33 hectares will cover a large portion of the Kintyre Rocks area (Boxcut Mining, 2007). Boxcut Mining (2007) has submitted a detailed clearing application area which clearly outlines the location of the proposed access tracks, drill pads, sumps and temporary camp. The clearing application area consists of a 50 metre buffer in order to select an access pathway which minimises the impact to native vegetation (Boxcut Mining, 2007). Boxcut Mining (2007) advises that clearing for the proposed access tracks will be restricted to a track width of approximately 3 metres, and clearing for the drill pad and sumps will be restricted to an area of approximately 25 square metres (Boxcut Mining, 2007). Clearing for the access tracks and drill pads will be raised blade and the applicant has advised that existing tracks will be re-cleared and utilised where possible (Boxcut Mining, 2007). Blade down clearing will only be carried out in areas where rocks or dense vegetation prevent access (Boxcut Mining, 2007).

The proposed clearing activities are likely to have localised impacts on fauna species that are present within the application area. If present, burrowing species such as the Greater Bilby, Mulgara, Northern Marsupial Mole and Great Desert Skink are most at risk of being impacted on by the proposed clearing activities (Outback Ecology, 2008). The Assessing Officer recommends should the permit be granted, that conditions be imposed on the permit for the purposes fauna management. It is recommended that a qualified zoologist should inspect the proposed clearing areas for evidence of such species, prior to clearing. Should evidence of these species be identified, it is recommended that these areas be flagged and avoided during the clearing process. Many of the bird, bat and larger mammal species that may potentially be present within the application area are mobile and will be able to move to adjacent habitat with the onset of any disturbance.

Given the low impact and localised nature of the proposed clearing activities, the proposed clearing is unlikely to significantly impact on fauna habitats in the area, or cause significant habitat fragmentation in the local area.

Based on the above, the proposal may be at variance to this Principle.

Methodology Astron Environmental (2007)
Boxcut Mining (2007)
Outback Ecology (2008)
Shepherd et al. (2001)
GIS Database:
- Pre-European Vegetation - DA 01/01

(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

According to available datasets there are no known records of Declared Rare Flora (DRF) or Priority Flora species within the application area (GIS database).

Astron Environmental Services carried out a flora and vegetation survey of the application area between 10 and 19 July 2007 (Astron Environmental, 2007). Boxcut Mining has provided a detailed clearing application area, as a result, the survey area involved approximately 60 kilometres of 50 metre wide corridors that were centred on overgrown tracks, proposed new access tracks and gridlines and proposed drill pad sites (Astron

Environmental, 2007). At drill pad locations, the corridor was widened to 80 metres. The Assessing Officer notes that the entire application area was searched during the flora and vegetation survey (Astron Environmental, 2007). The survey included:

- a search of the DEC Threatened (Declared Rare) Flora database and DEC's Declared Rare and Priority Flora list;
- a delineation and characterisation of the flora and vegetation types within the application area;
- a search for Declared Rare Flora (DRF) and Priority Flora species, and
- a description and map of the vegetation associations present.

One Priority 2 listed species; *Thysanotus* sp. Desert East of Newman (R.P. Hart 964), was recorded in the survey area. *Thysanotus* sp. Desert East of Newman (R.P. Hart 964) is a perennial herb with tuberous roots. The species flowers between August and October and is reported to grow on red-brown loamy sand or red sand on sand plains. Florabase indicates that *Thysanotus* sp. Desert East of Newman (R.P. Hart 964) is restricted to the Rudall River region (Florabase, 2008; Astron Environmental, 2007).

During the survey, two specimens of *Thysanotus* sp. Desert East of Newman (R.P. Hart 964) were recorded on sand plains within the application area. One individual was recorded in the southern portion of the application area and one in the west (Astron Environmental, 2007). The two individuals were located approximately 4 kilometres apart (Astron Environmental, 2007). Astron Environmental (2007) has reported that the species was well known to the aboriginal traditional owner representatives present during the survey. Given the distance separating the two recorded individuals of *Thysanotus* sp. Desert East of Newman (R.P. Hart 964), it is considered that the species is probably sparsely scattered, but not uncommon on the plains in the locality (Astron Environmental, 2007).

No DRF were recorded during the flora and vegetation survey (Astron Environmental, 2007).

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

Methodology Astron Environmental (2007)
Florabase (2008)
GIS Database:
- Declared Rare and Priority Flora List

(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) within, or in close proximity to the clearing application area (GIS Database). The nearest known TEC is located approximately 245 kilometres south-west of the application area (GIS Database). The proposed clearing is unlikely to impact on any known TEC's.

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

Methodology GIS Database:
- Threatened Ecological Communities

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

Comments **Proposal is not at variance to this Principle**
The area applied to clear is within the Interim Biogeographic Regionalisation for Australia (IBRA) Rudall subregion of the Little Sandy Desert bioregion (GIS Database). According to Shepherd et al (2001) there is approximately 100% of the pre-European vegetation remaining in the Rudall subregion. The vegetation of the application area is classified as Beard Vegetation Association 99: Hummock grasslands, shrub steppe; *Acacia coriacea* & *Hakea* over hard *Spinifex*, *Triodia basedowii*; and Beard Vegetation Association 117: Hummock grasslands, grass steppe; soft *Spinifex* (GIS Database).

Both Beard Vegetation Associations 99 and 117 are well represented within conservation reserves in the Little Sandy Desert bioregion with approximately 27% and 36.2% of these vegetation types represented in reserves respectively (Shepherd et al. 2001). The area proposed to clear does not represent a significant remnant of vegetation in the wider regional area.

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and Beard vegetation associations 99 and 117 is of ?Least Concern? (Department of Natural Resources and Environment, 2002).

| | Pre-European area (ha)* | Current extent (ha)* | Remaining %* |
|--------------------------------------|---|----------------------|--------------|
| IBRA Bioregion ? Little Sandy Desert | 11,089,900 | 11,089,900 | ~100.0 |
| | Conservation Status**Pre-european % in IUCN Class I-IV Reserves | | |
| | | | Least |

| | | | | | | |
|------------------------------|---------|---------|---------|---------------|------|-------|
| Concern | 4.6 | | | | | |
| Beard veg assoc. ? State | | | | | | |
| 99 | 528,692 | 528,692 | ~100 | Least Concern | 27 | |
| 117 | | | | | | |
| | 919,750 | 886,791 | ~96.4 | Least Concern | 13.2 | |
| Beard veg assoc. ? Bioregion | | | | | | |
| 99 | 526,655 | | 526,655 | | ~100 | Least |
| Concern | 27 | | | | | |
| 117 | | | | | | |
| | 287,251 | | 287,251 | | ~100 | Least |
| Concern | 36.2 | | | | | |

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
 Shepherd et al. (2001)
 GIS Database:
 - Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
 - Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00.
 - Pre-European Vegetation - DA 01/01.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments Proposal is at variance to this Principle

There are no permanent wetlands or watercourses within the application area (GIS Database). The application area intercepts two tributaries of the seasonally flowing Yandagooge Creek - west and south branch (GIS Database). Aerial imagery indicates that the proposed access track crosses both the west and south tributaries of Yandagooge Creek at one location (Boxcut Mining, 2007; GIS Database). Boxcut Mining (2007) has advised that an existing track will be re-cleared for the creek crossing at the western tributary, whilst a new track is to be cleared for the creek crossing at the southern tributary. The proposed access track also intercepts several ephemeral drainage lines that flow into the two Yandagooge Creek tributaries (Boxcut Mining, 2007). Astron Environmental (2007) has identified a total of six vegetation units within the application area which are indicative of riparian vegetation. These include:

- | | |
|----|--|
| 1) | Acacia spp. shrublands and scrubs over Triodia spp. (mainly Triodia epactia) hummock grasslands creeklines. |
| 2) | Corymbia hamersleyana creeklines. |
| 3) | Eucalyptus camaldulensis var. obtusa creeklines. |
| 4) | Eucalyptus leucophloia minor creeklines. |
| 5) | Eucalyptus victrix creeklines and flowlines. |
| 6) | Other creekline vegetation - Acacia inaequilatera, Acacia colei var. colei scattered tall shrubs over Gossypium australe, Acacia ancistrocarpa high shrubland over scattered low shrubs over hummock grassland (Astron Environmental, 2007). |

Boxcut Mining has submitted a detailed clearing application area for their proposed exploration programme (Boxcut Mining, 2007). Boxcut Mining (2007) has indicated that the exploration access track will be restricted to a width of approximately 3 metres. The application area consists of a 50 metre buffer in order to select an access pathway which minimises the impact to native vegetation (Boxcut Mining, 2007). Boxcut Mining (2007) has advised that there will be no clearing for drill pads within 50 metres of the edge of banks of watercourses or creek lines. The applicant has indicated that some sandy creek line or watercourse crossings with gently sloping banks can be crossed with the only disturbance being the vehicle tracks in the sand. In areas where a creek line or watercourse has a steep bank then some material will be required to be pushed outwards from the creek bed in order to obtain a gradient that the exploration equipment can traverse (Boxcut Mining, 2007). It is the proponent's responsibility to liaise with the Department of Water to determine whether Bed and Banks Permit is required for the proposed works.

Given that the proposed access track will be restricted to a width of approximately 3 metres and that the application area has incorporated a 50 metre buffer in order to select an access pathway which minimises the impact to native vegetation, the proposed clearing is likely to have a minimal impact on native vegetation growing association with a creek line or watercourse. The Assessing Officer recommends should the permit be granted, that a condition be imposed on the permit for the purpose of restricting clearing for drill pads near watercourses or creek lines.

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

Methodology Astron Environmental (2007)
Boxcut Mining (2007)
GIS Database:
- Hydrography, linear_1
- NATMAP 250K Series Mapping - GA 08/03

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

Comments Proposal may be at variance to this Principle

The application area is located on the northern side of the Rudall River National Park, in ranges that lie between the Great Sandy Desert and the Little Sandy Desert (Astron Environmental, 2007). The eastern part of the Kintyre Rocks area is predominately quaternary alluvial and eolian sand plain (Geological Survey of Western Australia, 1993; Astron Environmental, 2007). Some small areas of playa and clay pan deposits occur on the plains, particularly near the base of ridge slopes. The western part of the Kintyre Rocks area includes hills dissected by broad valleys of alluvial and eolian sand plain. Most of the application area across the Kintyre Rocks area is located on the plains in the valleys between the hills, but some sections of the application area crosses hill slopes (Astron Environmental, 2007). The hills in the Kintyre Rocks area consist of quartzite ridges and slopes, orthogneisses derived from granite and prophyritic biotite and Yandagooge Formation metasedimentary rocks (Geological Survey of Western Australia, 1993; Astron Environmental, 2007).

Astron Environmental (2007) recorded soil types at sampling points during the flora and vegetation survey. The soils of the application area appear to consist of red-brown sand and red-brown loamy sand on the plains with coarse sand and shallow stony to rocky mantles in creek lines and minor drainage lines (Astron Environmental, 2007). Isolated areas of ironstone and quartz outcrops were recorded in locations where the application area crosses slopes of rocky hills and low rises (Astron Environmental, 2007). There is likely to be a moderate risk of soil erosion occurring on the sandy plains and for the coarse sandy creek lines following high intensity rainfall events, however, this risk can be managed by the use of appropriate management measures.

Boxcut Mining (2007) has advised that a tracked drill rig will be used during exploration works and as a result, there will be little or no blade assisted clearing on drill pads. The tracked drill rig will be driven into position and then a support truck will be driven in and parked alongside the drill rig, with two support utilities parked nearby (Boxcut Mining, 2007). New and existing access tracks will be restricted to a width of approximately 3 metres and Boxcut Mining has advised that all clearing will be raised blade unless there is a need to turn a rock or a sharp hummock (Boxcut Mining, 2007). Topsoil and vegetation will be collected and stockpiled and for use in future rehabilitation (Boxcut Mining, 2007). The clearing management techniques to be utilised by Boxcut Mining are likely to minimise the disturbance to native vegetation and subsequently minimise the risk of soil erosion occurring within the application area and local area. The Assessing Officer recommends should the permit be granted, that conditions be imposed on the permit for the purpose of rehabilitation in order to minimise the risk of soil erosion and land degradation.

Based on the above, the proposal may be at variance to this Principle.

Methodology Astron Environmental (2007)
Boxcut Mining (2007)
Geological Survey of Western Australia (1993)

(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 Kintyre area was formally part of the Rudall River National Park which was proclaimed in 1977 (SEA US, 1999). However, in 1993 the boundary of the Rudall River National Park was altered to excise the Yandagooge Creek System (Uranium Information Centre, 2008). The area excised from the Rudall River National Park included the Kintyre area and also the application area (GIS Database; SEA US, 1999; Boxcut Mining, 2007). Despite being excised from the Rudall River National Park, the Kintyre area remains listed on the Register of National Estate (GIS Database). The Rudall River National Park was placed on the Register when it was initially proclaimed in 1977, however the excised portion of the National Park has never been removed from the Register (SEA US, 1999; GIS Database).

At 1,283,706 hectares, the Rudall River National Park is the largest national park in Western Australia (Naturebase, 2008). The national park is significant for maintaining on-going geomorphic and ecological processes within a tropical desert environment (Australian Heritage Database, 2007). It contains an entire landscape system which includes dunefields, tablelands, river system, alluvial formations, saline lakes and palaeodrainage lines (Australian Heritage Database, 2007). The National Park is rich in biodiversity, containing more than 400 flora species, including significant communities of Eucalyptus camaldulensis and Melaleuca leucodendra riparian woodlands which are not well represented extensively in other sites in the Great Sandy desert (Australian Heritage Database, 2007). The area acts as refugium habitat for numerous rare species for flora and fauna of the Great Sandy Desert, containing approximately 90% of the total bird fauna of the Great Sandy Desert. The area contains Lake Dora which periodically acts as an important waterbird habitat, and also

contains an important population of the rare greater Bilby (*Macrotis lagotis*) on the eastern side of Lake Dora (Australian Heritage Database, 2007). In addition to this, Rudall River National Park contains 6 of the 9 frog species found in the Great Sandy Desert, and has a diverse and varied reptile fauna (Australian Heritage Database, 2007).

Under the clearing application, Boxcut Mining has clearly indicated the location of the proposed access tracks and drill pad locations (Boxcut Mining, 2007). The application area for the proposed access track consists of a 50 metre buffer in order to select an access pathway which minimises the impact to native vegetation. The proposed clearing for the exploration access track will be predominately raised blade where possible and restricted to approximately 3 metres in width (Boxcut Mining, 2007). The applicant has advised that existing tracks will be reclaimed and utilised where possible (Boxcut Mining, 2007). Aerial imagery and Geographic Information System (GIS) mapping indicates that Boxcut Mining propose to enter the application area via an existing track which is located in the eastern portion of the application area (Boxcut Mining, 2007). The existing track is located within the Rudall River National Park and intersects with a road which runs through the park. (GIS Database; Boxcut Mining, 2007). GIS mapping indicates that the access track in the western portion of the application area is located approximately 15 metres outside the boundary of the Rudall River National Park (GIS Database). All clearing under the proposal is to occur outside of the Rudall River National Park.

Three weed species; Buffel Grass (*Cenchrus ciliaris*), Pie Melon (*Citrullus lanatus*) and Whorled Pigeon Grass (*Setaria verticillata*), were recorded within the application area (Astron Environmental, 2007). As vehicles will be accessing the application area through the Rudall River National Park, the Assessing Officer recommends should the permit be granted, that conditions be imposed on the permit for the purposes of weed management.

The application area and surrounding Kintyre Rocks area contains vegetation types and habitats which are well represented within the 1,283,706 hectare Rudall River National Park (Naturebase, 2008; Uranium Information Centre, 2008; GIS Database). The small area of proposed clearing (21.33 hectares) is to be distributed across a large portion of the Kintyre Rocks area (GIS Database). As the proposed clearing is for exploration purposes which involve access tracks, drill pads, sumps and an exploration camp, the vegetation proposed to be cleared is unlikely to be regarded as a significant buffer for, or ecological linkage to Rudall River National Park. Furthermore, the Kintyre Rocks area which surrounds Rudall River National Park is largely uncleared (GIS Database). The proposed clearing is unlikely to significantly impact on the environmental values of Rudall River National Park.

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

Methodology Astron Environmental (2007)
Australian Heritage Database (2007)
Boxcut Mining (2007)
Naturebase (2008)
SEA US (1999)
Shepherd et al. (2001)
Uranium Information Centre (2008)
GIS Database:
- CALM Managed Lands and Waters
- Clearing Instruments
- Clearing Regulations - Environmentally Sensitive Areas
- Register of National Estate
- Pre-European Vegetation

(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**
There are no Public Drinking Water Source Areas in close proximity to the application area (GIS Database). Groundwater salinities of the application area have been recorded in the range 1,000 - 3,000 milligrams/Litre Total Dissolved Solids (GIS Database). The proposal involves clearing for access tracks and drill pads using raised blade clearing techniques where possible. Boxcut Mining (2007) has advised that blade down clearing will only be utilized in instances where there is a necessity to turn a rock or some kind of sharp hummock. The proposed clearing activities will be distributed across a large portion of the Kintyre Rocks area (Boxcut Mining, 2007). Given the relatively minor and widespread nature of the proposed clearing, the proposal is unlikely to cause an increase in groundwater recharge or significantly impact on groundwater quality in the Kintyre Rocks area.

There are no permanent wetlands or watercourses within the clearing application area (GIS Database). The proposed clearing for the exploration access track occurs in the Rudall River Catchment and intercepts two tributaries of the seasonally flowing Yandagooge Creek - west and south branch as well as several ephemeral drainage lines (GIS Database; DoW, 2008). These watercourses are likely to remain dry for the majority of the year and only hold surface water for short periods following significant rainfall events. The proposed clearing is unlikely to impact on surface water quality.

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

Methodology Boxcut Mining (2007)
DoW (2008)
GIS Database:
- Groundwater Salinity, Statewide
- Hydrography, linear_1
- Public Drinking Water Source Areas (PDWSAs)

(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 Rudall subregion is characterised by an arid climate with summer rainfall (Kendrick, 2001). The application area experiences mean annual rainfall of approximately 250 millimetres and mean annual evaporation of 3,800 millimetres (Beard and Webb, 1968; Astron Environmental, 2007; GIS Database). As a result, it would be expected that there would be little surface flows during normal season rains. The proposal involves minor clearing for exploration access tracks and drill pads across a large portion of the Kintyre Rocks area (Boxcut Mining, 2007; GIS Database). Access tracks will be restricted to a width of approximately 3 metres and raised blade clearing will be used on even ground or where possible, and drill pads and sumps will be restricted to a size of approximately 20 square metres and 5 square metres respectively (Boxcut Mining, 2007). The proposed clearing is unlikely to cause, or exacerbate the incidence of flooding.

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

Methodology Astron Environmental, (2007)
Beard and Webb, (1968)
Boxcut Mining, (2007)
Kendrick, (2001)
GIS Database:
- Rainfall, Mean Annual
- Evaporation Isopleths
- Clearing Instruments

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

Comments

There is one Native Title claim over the area under application (WC96/078). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenement has been granted in accordance with the future act regime of the Native Title Act 1993 and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the Native Title Act 1993.

There are two Aboriginal Sites of Significance that intercept the application area (GIS Database). It is the proponent's responsibility to comply with the Aboriginal Heritage Act 1972 and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the DEC and the DoW to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licence or approvals are required for the proposed works.

Methodology GIS Database:
- Native Title Claims - DLI 7/11/05
- Sites of Aboriginal Significance DIA

4. Assessor's comments

| Purpose | Method | Applied area (ha)/ trees | Comment |
|---------------------|--------------------|--------------------------|---|
| Mineral Exploration | Mechanical Removal | 21.33 | The clearing principles have been addressed and the proposed clearing is at variance to Principle (f), may be at variance to Principle (b) and (g), is not likely to be at variance to Principle (a), (c), (d), (h), (i) and (j) and is not at variance to Principle (e). Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of native fauna management, weed management, rehabilitation and reporting areas cleared. |

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6. Glossary

| Term | Meaning |
|-------|--|
| BCS | Biodiversity Coordination Section of DEC |
| CALM | Department of Conservation and Land Management (now BCS) |
| DAFWA | Department of Agriculture and Food |
| DEC | Department of Environment and Conservation |
| DEP | Department of Environmental Protection (now DEC) |
| 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 DEC) |

