Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1378/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Kimberley Diamond Company NL**

1.3. Property details

Property: M4/372
Local Government Area: Shire Of Derby-West Kimberley
Colloquial name: Mining Lease 4/372 (M4/372)

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The purpose permit area is located within Beard Vegetation types 709, 726, 735,746 and 760. Those vegetation types were mapped at a scale of 1: 250 000 and are useful to look at the vegetation types present in an area in a regional context. Their descriptions are as follows: Type 709: Hummock grasslands, shrub steppe; Acacia imprtessa over Triodia intermedia on stony laterite. Type 726: Grassland, tall bunch grass savanna low tree; baobabs, bauhinia and beefwood over Mitchell and Ribbon/blue grass on black soil. Type 735: Hummock Grasslands, sparse medium tree steppe; Adansonia gregorii over open T. wiseana on limestone. Type 746: Hummock Grasslands, low tree steppe; bloodwood over Triodia wiseana. Type 760: Shrublands, Pindan Acacia tumida shrubland with scattered low bloodwood & Eucalyptus setosa over ribbon and curly spinifex.	The permit application is located on part of Ellendale station a large pastoral lease located in the West Kimberley. The Kimberley Diamond Company (KDC) operates the Ellendale 9 mine to the north of the application area and is in the process of constructing the infrastructure for the Ellendale 4 mine within the clearing permit area. This purpose permit application is for the purpose of exploration of a total of up to 60 hectares over a five year period within a larger area of approximately 4436 hectares. Part of the purpose permit area has been the subject of a formal assessment by the Environmental Protection Authority (EPA) for the Ellendale 4 pit and associated infrastructure (EPA 2005). As a result 514 hectares are exempt from a clearing permit requirement under schedule 6 clause 2 of the *Environmental Protection Act 1986*. The type of exploration works carried out by the Kimberley Diamond Company in order of increasing disturbance include Rotary Airblast Drilling (RAB drilling using	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994) To Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	The vegetation condition assessment is based on Mattiske (2005) which described the condition of the vegetation surveyed in the Ellendale area as varying from very degraded to very good. Mattiske (2005) and Ninox (2003) both noted that the vegetation within the Ellendale lease area had been subjected to extensive grazing activities and frequent fires. Mattiske noted that the impacts of the proposed mining operations are relatively minor in a local and regional context. Disturbance from previous mining exploration activity was also noted by Mattiske (2005) and several tracks run through the purpose permit application area. A site visit by the DoIR Native Vegetation Assessor in June 2006 confirmed the above findings.

Mattiske Consulting Pty Ltd was commissioned by the Kimberley Diamond Company to update previous flora and vegetation surveys of the Ellendale Diamond survey area and produced an updated map and report in 2005. This map covers all of the purpose permit application area and provides more precise information than the Beard Vegetation Unit mapping. Vegetation surveys for the 2005 report and map were conducted in April 2001 and December 2002 and have been supplemented by specimens collected by the Kimberley Diamond Company. A total of 15 vegetation communities were defined by Mattiske of which 14 were mapped within the area that is the subject of this permit. These include :

Type A :

Tall Shrubland of *Acacia tumida* and *Acacia platycarpa* with emergent *Corymbia opaca*, *Corymbia cadophora* and occasional *Brachychiton diversifolius* subsp. *diversifolius* over *Sorghum stipoideum* and other Poaceae species on deep red sands of extensive flats.

Type B :

Low Open Woodland of *Corymbia opaca* with pockets of *Terminalia canescens* over *Sorghum stipoideum* and other Poaceae species on pale-red sands in relatively shallow soils on lower and mid slopes. This

Kimberley Diamond Company (KDC) operates the Ellendale 9 mine to the north of the application area and is in the process of constructing the infrastructure for the Ellendale 4 mine within the clearing permit area.

This purpose permit application is for the purpose of exploration of a total of up to 60 hectares over a five year period within a larger area of approximately 4436 hectares. Part of the purpose permit area has been the subject of a formal assessment by the Environmental Protection Authority (EPA) for the Ellendale 4 pit and associated infrastructure (EPA 2005). As a result 514 hectares are exempt from a clearing permit requirement under schedule 6 clause 2 of the *Environmental Protection Act 1986*. The type of exploration works carried out by the Kimberley Diamond Company in order of increasing disturbance include Rotary Airblast Drilling (RAB drilling using a light vehicle), costeans using a backhoe (approximately 3 metre wide clearing, depth to 3 metres the width of the backhoe bucket), Bauer drilling (holes up to 2.5 metres wide, requiring a drill pad of about 25 by 30 metres) and bulk sampling digging small pits 7 to 8 metres deep with cleared areas approximately 50 by 50 metres wide around each pit to allow for a pad for the overburden and a pad for the sample.

Type L:

Open woodland of *Corymbia cadophora* and *Corymbia opaca* over *Sorghum stipoideum* and other bunch grasses on red sandy clay soils. Occasional *Adansonia gregorii*, *Bauhinia cunninghamii*, *Terminalia canescens* and *Eucalyptus bigalerita*. The hill tops and small gorges have a mixture of *Ficus opposita*, *Gyrocarpus americanus*, Eucalyptus species and various climbers (including strangler vines) over a mixture of grasses and *Sorghum stipoideum*.

Type M:

Grassland of *Eriachne*

community appears to be a local variant of C with higher numbers of *Terminalia canescens*.

Type C :

Low Open Woodland of *Corymbia opaca*, *Grevillea pyramidalis*, *Bauhinia cunninghamii* over *Sorghum stipoideum*, *Triodia pungens* and *Aristida inaequiglumis* on hard, pale grey clays with some shallow outcropping on small rises and slopes.

Type D:

Low Open Woodland of *Corymbia opaca*, *Corymbia cadophora*, *Eucalyptus bigalerita* with occasional *Eucalyptus tectifica* over scattered *Melaleuca nervosa*, *Sorghum stipoideum*, *Triodia pungens* and Cyperus species on lower lying broad drainage lines on paler red sands with some clays.

Type F:

Low Open Woodland *Lophostemon grandiflorus* subsp. *riparius* and patches of *Melaleuca nervosa* on cracking dark clay loams in small basin areas.

Open Grasslands of *Sorghum stipoideum* and *Triodia pungens* with scattered emergent *Corymbia opaca*, *Adansonia gregorii*, *Bauhinia cunninghamii*, *Brachychiton diversifolius* subsp. *diversifolius*, *Eucalyptus bigalerita* and *Grevillea pyramidalis* on grey-brown sandy soils.

Type G:

Open Grassland of *Sorghum stipoideum*, *Triodia pungens* and *Aristida inaequiglumis* with emergent *Corymbia opaca* and very occasional *Grevillea pyramidalis*, *Bauhinia cunninghamii* and *Lophostemon grandiflorus* subsp. *riparius* on hard, pale grey clays.

Type I :

Emergent scattered *Acacia platycarpa* and *Corymbia cadophora* over *Ventilago viminalis* over dense grasses including *Sorghum stipoideum*, *Brachyachne convergens*, *Urochloa pubigera* and *Heteropogon contortus* on rock slopes of sandstone hills.

Type J:

Low Open Woodland *Eucalyptus tectifica*, *Corymbia opaca*, *Corymbia cadophora*, *Eucalyptus bigalerita* over scattered *Melaleuca nervosa*, *Sorghum stipoideum*, *Triodia pungens* and Cyperus species on lower lying broad drainage lines on paler red sands with some clays. This community appears to be a variant of D.

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 purpose permit area is located within the Fitzroy Trough Interim Biogeographical Regionalisation of Australia (IBRA) subregion (GIS database). The biodiversity values of the Fitzroy Trough IBRA subregion are described by Graham (2001). High species diversity and ecosystem diversity are stated for rainforests patches which are also noted as centres of endemism for the subregion.

No rainforest patches were noted by the vegetation survey and report of Mattiske Consulting (2005) which covered the broader Ellendale project area and included all of the area under this purpose permit application. The plant communities recorded in the Ellendale area were judged by Mattiske Consulting (2005) to be well represented in the regional context and none were considered to be of regional or national significance.

A site visit was conducted by the DoIR Native Vegetation Assessor on the 21 and 22 June 2006. The site visit confirmed that the vegetation proposed to be cleared does not include rainforest or vine thickets.
The clearing permit area does include two vegetation types that are likely to be locally significant. These two vegetation types are: vegetation restricted to rocky outcrops mapped as vegetation type I in Mattiske (2005) and the vegetation associated with seasonally inundated low lying areas (Freshwater mangrove areas) mapped by Mattiske as vegetation type F (Mattiske 2005) and E-F (Mattiske 2001). Those two vegetation types are of local significance because of their limited extent in the area and because they support species (fauna and flora) that occur specifically in such as vegetation types (Mattiske 2005). It is likely that such vegetation types also occur outside the clearing permit area. There is no available evidence to show that vegetation types I, E and E-F (a combination of vegetation types E and F) within the clearing permit area are likely to be significantly different or have a higher diversity than similar vegetation types outside of the clearing permit area. The nearby limestone ramparts of the Devonian reef system are listed as a biologically significant refuge area known to support a large number of endemic camaenid land snail species as well as cave dwelling invertebrates (Morton et al. 1995). The clearing permit area is not located within the areas covered by the massive limestone features of the Devonian Reef system in the area. Based on a site visit conducted by the DoIR Native Vegetation Assessor it appears part of the clearing permit area does include some small outcropping of limestone up to 5 metres high of limited extent. Limestone outcrops are not likely to be exploration targets because they are not associated with the diamond bearing lamproite rocks type that are targeted by the Kimberley Diamond Company.

DEC advice received by the Native Vegetation Assessor indicated that the proposal was unlikely to be at variance to this principle (DEC 2006).

Based on the above the assessor judges that the proposed clearing is unlikely to be at variance to this principle.

Methodology

DEC (2006).
GIS database-IBRA (subregions)-EA 18/10/2000.
Graham (2001).
Mattiske Consulting Pty Ltd (2001).
Mattiske Consulting Pty Ltd (2005).
Morton et al. (1995).

(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

The fauna of the Ellendale area has been the subject of a number of wildlife surveys and reports since 1980

which have been analysed and their findings discussed in reports produced by Ninox Wildlife Consulting (2003, 2005). Surveys in the Ellendale area were conducted in May 1980, May 2001 (sampling some of the 1980 sites), December 2002 and May 2005. Eleven systematic sampling sites are located within the clearing permit area. Of those three were surveyed in 2001, 2002 and 2005 (KD 6, 7, 8) and eight sites (KD 11, 12, 13,14,15,16, 17, 18) were surveyed in 2005. Two sites KD 8 and KD 9 located near the purpose permit boundary within the Oscar Range Conservation Park were surveyed in 2002 only. A further five opportunistic sites located in the vicinity of the Ellendale 4 project within the purpose permit area were surveyed in 2005.

In their 2003 report, Ninox Wildlife Consulting state that twenty species of conservation significance, listed in the schedules of the Wildlife Conservation (Specially Protected Fauna) Notice 2005 or listed on DECýs own priority list, are known or could potentially occur in the habitats of the Ellendale area. These consist of eleven mammals, three reptiles and six bird species.

Of the twenty species listed, one Priority listed mammal, the Lakeland Down Mouse *Leggadina lakedownensis* (Priority 4) was recorded at sites KD09 and KD10 in 2002. Two Priority listed bird species, the Australian Bustard *Ardeotis australis* (P4, sites KD 9 and KD 10) and Pictorella mannikin *Heteromunia pectoralis* (P4, sites KD 6 and KD 7), were recorded at sites within or near the clearing permit area in 2001/2002.

The Lakeland Down Mouse tends to occur in areas with clay-based soils supporting native grasses (Ninox Wildlife Consulting 2003). Ninox Wildlife Consulting (2003) stated in their report that based on the extensive areas of remaining habitat suitable within and outside of the Ellendale project area, the impact of the proposed mining activities is unlikely to be significant to the Lakeland Down Mouse.

Similarly the impact of mining on the Australian Bustard was judged by Ninox Wildlife Consulting (2003) to be minimal and that no specific management measures were required beyond generalised impact reduction measures outlined in their report.

The potential impacts of mining on the Pictorella Mannikin were not discussed in the Ninox Wildlife Consulting (2003) report. The Action Plan for Australian Birds (Garnett and Crowley 2000) lists the threatening processes to that species as changes to fire regimes and stock grazing leading to an increased incidence of air sac mite which is a potential indicator of environmental stress (the same concerns apply to the Gouldian Finch . *Erythrura gouldiae*). Recommended actions under that action plan do not relate to land clearing or specific habitat protection.

A number of specific management measures are listed in Ninox Wildlife Consulting (2003) that relate to Scheduled or Priority listed fauna. Although not recorded within the areas subject to this purpose permit, these fauna are listed as potentially occurring in the Ellendale Project area. Those management measures are listed below.

The minimisation of impacts to rocky habitats is listed for the Rock Ringtail Possum *Petropseudes dahli* (P3) and three listed bat species that use rocky areas as roosting habitats (Ghost Bat *Macroderma gigas* (P4), Orange Leaf-nosed Bat *Rhinonycteris aurantius* (Declared Rare Fauna) and Yellow-lipped Bat *Vespedalus douglasorum* (P2). Ninox did state that the rocky outcrops such as those found near site KD6 could contain suitable roosting sites for the three bat species listed above (Ninox 2003). It is unlikely that the limestone outcrops will be disturbed as they do not represent or overlay diamondiferous rock types. The sandstone outcrops associated with the diamondiferous lamproite pipes present in the clearing permit area may be disturbed by the proposed exploration activities, however as cave formation does not occur in sandstone it is unlikely that those outcrops will offer significant roosting sites to the bats listed above. The sandstone outcrops are likely habitat for the Rock Ringtail Possum. Ninox have stated that the probability of occurrence of the Rock Ringtail Possum is relatively high (Ninox 2003) however repeated surveys have failed to locate that species in the rocky outcrops present in the Ellendale area.

Ninox state that the Northern Marsupial Mole *Notoryctes caurinus* (Schedule 1 Fauna that is rare or is likely to become extinct) may potentially occur within the Ellendale area. Based on its known habitat requirements the Northern Marsupial Mole would be expected to occur on the deep red Pindan sands within the clearing permit area. Ninox have stated that the clearing of vegetation on deep red sands should be minimised and access tracks should where possible follow existing roads and tracks.

The Gouldian Finch *Erythrura gouldiae* (Schedule 1) was recorded in the 1980 study of the Ellendale area but not during the more recent 2001 and 2002 surveys. It is seen occasionally by KDC personnel at the Camp near Ellendale 9 mine site to the north of the purpose permit area between November 2004 and March 2005 (Ninox 2005). The decline of this species is linked to changes in fire regimes and native grass seed availability as well as increased mortality from diseases due to lower food supply levels. Ninox Wildlife Consulting (2003) state that the development of the mine is unlikely to significantly impact on that species given the large areas of suitable habitat present in the general area. Ninox Wildlife Consulting (2003) further recommends that clearing be kept to a minimum and where possible access tracks should follow existing access track routes.

The Bilby *Macrotis lagotis* (Schedule 1) is most likely to occur within Acacia shrublands on deep red sands which is a widespread vegetation type in the Ellendale project area (Ninox Wildlife Consulting 2003). A relatively recent but abandoned burrow system was located at site KD05 in December 2002 to the north of this purpose permit area. A one off search for signs of the Bilby in the Ellendale 4 area was carried out as part of

the Ellendale 4 formal assessment by the EPA (EPA 2005). No signs of the Bilby were found within the area subject of the formal assessment. The impact of the mine in the Ellendale project area was judged unlikely to add significantly to the existing impacts of cattle grazing, feral cat predation and changed fire regimes that have contributed to the decline of that species (Ninox Wildlife Consulting 2003). General impact reduction measures were deemed sufficient to address the impact of mining to that species (Ninox Wildlife Consulting 2003).

In his assessment of the Fitzroy Trough IBRA subregion biodiversity Graham (2001) listed Riparian zones as being significant by providing dry season refuges to fauna. The site visit undertaken in June 2006 by the DoIR Native Vegetation Assessor confirmed that low lying areas that are seasonally inundated occur in the purpose permit area. They are located near 81 Mile vent and the Ellendale 6 Lamproite pipe.

The assessor noted in the site visit that the rocky outcrops present within the clearing permit area (81 Mile vent, Ellendale 6) may also be of value by providing a fire refuge during large scale fire events. Ninox have pointed out the relatively high number of reptile species associated with site KD 6 (small limestone outcrops) compared to other sites (Ninox Wildlife Consulting 2005). The result of the 2005 survey also highlight that the rocky outcrops are essential habitat to the Common Rock Rats *Zyzomys argurus* in the local area. Systematic sampling sites (KD 14, 15, 17, 18) as well as opportunistic sites (Sites OP 4-1, 4-2 and 4-3) were established by Ninox over sandstone outcrops as part of the formal assessment of the Ellendale 4 project (Ninox 2005). The survey focussed on vertebrate fauna and the possibility of regional endemic invertebrate species such as snails being present on the isolated sandstone outcrops in the local area was not considered by Ninox.

Given all of the above, the proposed clearing activity is unlikely to be significant to fauna species of conservation significance. The low lying areas that support freshwater mangroves and rocky outcrops are both likely to be significant to the local fauna in general by providing refuges in the dry season and fire events respectively. The rocky outcrops are essential habitat to species specifically adapted to that environment such as the Common Rock Rat and may support higher reptile diversity than other areas locally. Given the above the assessor judges that the proposal may be at variance to principle (b) if the proposed exploration activities result in the permanent removal of those features and their associated vegetation types.

DEC advice received by the Assessor indicated that the proposal may be at variance to this principle (DEC 2006). DEC further recommended that a condition be placed on the permit to avoid raised sandstone and limestone outcrops and low lying seasonally inundated areas.

A permit condition has been set to avoid the clearing of rocky outcrops.
Some of the low lying areas within the permit application area are likely to be prospective diamondiferous ground. The rehabilitation of such features following exploration activities is unlikely to be problematic based on the success of previous rehabilitation carried out by KDC and Blina (to the north of the purpose permit area) in similar landscape in the area. The assessor has set a condition requiring the reinstatement of the original levels and shape of any low lying seasonally inundated areas that will be disturbed by the proposed clearing activities.

Methodology

DEC (2006).
EPA (2005).
Garnett S.T. & Crowley G.M. (2000).
Graham (2001).
Mattiske Consulting Pty Ltd (2005).
Ninox Wildlife Consulting (2003).
Ninox Wildlife Consulting (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

The closest known Declared Rare Flora (DRF) or species listed on CALM's own priority list in the region is the DRF Eucalyptus mooreana located approximately 65 kilometres to the east of the areas applied to clear (GIS database).

Previous botanical surveys have been undertaken in the Ellendale area by Dames and Moore in 1981 for the CRA exploration Ashton Joint Venture. More recent surveys in the area have been carried out by Mattiske Consulting for the Kimberley Diamond Company in April 2001 (wet season survey) and December 2002 (dry season survey). The information collected has been further updated with botanical records from the Kimberley Diamond Company. A new updated vegetation map and report for the Ellendale Diamond Project was produced in May 2005 by Mattiske Consulting Pty Ltd (2005). The map covers all of the proposed clearing area applied as well as large areas to the North of the purpose permit boundary.

No DRF or Priority Flora was located by Mattiske Consulting Pty Ltd in those surveys.

DEC advice received by the Assessor indicated that the proposal was unlikely to be at variance to this principle (DEC 2006).

Based on the extensive vegetation surveys that have been carried out in the Ellendale project area, it is unlikely

that DRF or Priority Flora occur in the proposed clearing area and the proposal is judged not likely to be at variance to this principle.

Methodology (DEC 2006).
GIS Database-Declared Rare and Priority Flora List-CALM (01/07/2005).
Mattiske Consulting Pty Ltd (2005).

(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 may be at variance to this Principle

No known Threatened Ecological Community (TEC) occurs within the areas proposed to be cleared (GIS Database 2005). The closest known TEC is the Assemblages of Big Springs organic mound springs located more than 100 kilometres from the proposed clearing areas (GIS Database). No plant communities within the Ellendale Diamond Project Area were found to be of national or regional significance by Mattiske Consulting Pty Ltd (2005).

None of the ecosystems found within the purpose permit area are listed as ecosystems at risk in the assessment of the Fitzroy Trough IBRA subregion biodiversity values by Graham (2001).

A site visit was conducted by the DoIR Native Vegetation Assessor on 21 and 22 June 2006. Following that visit it is apparent that the vegetation community types that are locally significant in the Ellendale area are associated with rocky outcrops (vegetation on sandstone, Devonian Reef outcrop vegetation) and low lying seasonally inundated areas. The clearing permit application area does include seasonally inundated areas and vegetation located on rocky outcrops. Because of the potential loss of those vegetation types due to exploration the proposal may be at variance to principle d.

DEC advice received by the Assessor indicated that the proposal may be at variance to this principle (DEC 2006). DEC further recommended that a condition be placed on the permit to avoid raised sandstone and limestone outcrops and low lying seasonally inundated areas.

Methodology DEC (2006).
GIS Database-Threatened Ecological Communities-CALM (12/04/2005).
Graham (2001).
Mattiske Consulting Pty Ltd (2005).

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

Comments

Proposal may be at variance to this Principle

The vegetation of the site is classified into five Beard Vegetation Associations: 709, 726, 735, 746 and 760 (Shepherd et al. 2001) all of which have 100 % of the pre-European extent remaining (Shepherd et al. 2001, 2001a).

Approximately 0.4 % of Beard Vegetation Type 726, 0.9 % of Beard Vegetation Type 709, 13.3 % of Vegetation Type 746 and 49.7% of Beard Vegetation Type 735 are protected in IUCN class I-IV reserves (Shepherd et al. 2001a).

The benchmark of 15% representation in conservation reserves (JANIS Forests Criteria, 1997) has been met for Beard vegetation association 735 but not for the other vegetation types.

Because Beard vegetation types were mapped at a large scale they are not representative of more localised vegetation types which may be of significance at a local level. The components of the Beard vegetation types proposed to be cleared do not appear to represent significant remnants of native vegetation on a regional scale due to the widespread nature of this vegetation type. However the proposed clearing may impact localised vegetation types which have been identified as being locally significant by Mattiske (2005) and the EPA (2005).

The EPA in its bulletin issued in relation to the Ellendale 4 proposal did state: ' While none of the associated mapped plant communities is unique several are confined to localised habitats. In future proposals for the mining of the lamproite pipes the management of these restricted communities and the cumulative impact of mining should be addressed. Detailed plant community mapping in the region is very limited and places some uncertainty on the ability to define the regional significance of plant communities, especially on surfaces with restricted distribution such as those associated with diamond pipes' (EPA 2005).

The EPA further stated that: ' Future proposals to mine the lamproite pipes in this area should include consideration of the number of remaining pipes and the number that will be preserved as representative of a unique landform' (EPA 2005).

The proposal may be at variance if clearing reduces extent of locally significant veg types to less than 30% of their original extent in the local area.

Methodology EPA (2000)
EPA (2005)
JANIS (1997).
Shepherd et al. (2001)
Shepherd et al. (2001a)

(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 may be at variance to this Principle**
The low lying seasonally inundated areas mapped as type F and E-F by Mattiske (2001, 2005) have been recognised as being significant at a local level because they support plant species such as freshwater mangroves that are limited to such features. Those areas are also likely to act as refuges in the dry season to fauna species.

Given the above, the proposal may be at variance to this proposal if it results in the permanent removal of those features and associated vegetation types. The rehabilitation of such features is unlikely to be problematic based on the success of previous rehabilitation carried out by KDC and Blina (to the north of the purpose permit area) in similar landscape in the area. The assessor has set a condition requiring the reinstatement of the original levels and shape of any low lying seasonally inundated areas that will be disturbed by the proposed clearing activities.

Methodology GIS database - Hydrography, linear - DOE (01/02/2004).
Mattiske Consulting Pty Ltd (2001).
Mattiske Consulting Pty Ltd (2005).
Ninox Wildlife Consulting (2003).

(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**
Advice received from DAFWA in relation to the assessment of this principle stated:

The area to be cleared comprises (mainly) of Yeeda and Neilabublica land systems. The Yeeda land system is described as deep red or yellow sand plain supporting pindan vegetation. Low open woodland vegetation is associated with low rises and broad drainage lines. The soil erosion risk on the flat pindan soils is generally low unless surface run off is concentrated. There is some risk if the low rises and broad drainage lines are cleared. The Neibublica land system soils are dark brown grey loams and clayey calcareous soils that support low open woodland. There is some risk of soil erosion if natural drainage regime is disturbed or slopes are cleared and exposed to high intensity rainfall. A similar land degradation risk is expected if clearing occurs on the lamproite pipes. It is concluded that these soils are not particularly prone to soil erosion and that the vegetation they support is quite resilient in terms of recovery after disturbance. Therefore, it is unlikely that the proposed clearing will be at variance with principle (g) for soil erosion (DAFWA 2006).

A site visit was conducted by the DoIR Native Vegetation Assessor on the 21 and 22 June 2006. The visit included an inspection of previous large exploration costeans and the rehabilitation conducted by Blina to the north of the area proposed to be cleared. That inspection reinforced the advice given by DAFWA as no obvious erosion issues were apparent.

Given the above DAFWA advice, lack of obvious erosion issues arising from previous Blina exploration operations conducted nearby, and good rehabilitation progress shown, it is considered unlikely that the proposal will cause appreciable land degradation and be at variance to this principle.

Methodology DAFWA (2006).

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments **Proposal is not likely to be at variance to this Principle**
The Devonian Reef Conservation Park is located 200 metres to the East of the clearing permit boundary (GIS Database). Windjana Gorge National Park is situated approximately 16km to the North-East (GIS database). The proposed clearing activities are unlikely to significantly affect the environmental values of the Devonian Reef Conservation Park because of the nature of the activities (mineral exploration not requiring dewatering), the buffer zone 200 metres wide between the Devonian Reef and clearing permit area and the environmental management and rehabilitation measures that are currently imposed under the *Mining Act 1978*.

DEC advice received by the Assessor indicated that the proposal was unlikely to be at variance to this principle (DEC 2006).

Since the clearing is unlikely to impact on The Devonian Reef Conservation Park, or Windjana Gorge National Park is it judged unlikely that the proposed clearing will be at variance to this principle.

Methodology DEC (2006).
GIS database-Clearing Regulations Schedule 1 Areas-DoE (10/03/2005).
GIS database-CALM Managed Land and Waters-CALM (01/07/2005).

(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 proposed clearing area is not located in a Public Drinking Water Source Area or in a proclaimed *Rights in Waters and Irrigation 1914 Act* area (GIS database) or in proximity to any mangroves, tidal flats or acid sulphate soil areas.

No dewatering is planned for the proposed exploration activities because of the risk of damage to the machinery used. Exploration activities are not conducted in the wet season because of the difficulties in accessing the area. As a result impacts on surface and groundwater are unlikely.
Given the small scale and progressive nature of the clearing proposed over five years changes to the watertable levels or surface water quality are unlikely.

The proposal is unlikely to be at variance to this principle.

Methodology GIS database-Public Drinking Water Supply Areas-DoE 2005.
GIS database-RIWI Act Areas-WRC 05/05/02.

(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 region has highly seasonal rain with large rainfall events that can periodically inundate areas of poor drainage. The area proposed for clearing is located at the top of the Lennard River sub-catchment and comprises less than 0.1% of the local catchment (GIS Database) so there is unlikely to be exacerbated local flooding from the proposed clearing of 60 hectares over five years within an area of more than 4000 hectares .
The proposal is unlikely to be at variance to this principle

Methodology GIS database 2003 - Hydrogrpahic Catchments - Subcatchments - 01/07/03

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

Comments

There are eight Registered Indigenous Heritage Sites (Ellendale, Feature 4/1 CRA, Feature 4/2 CRA, Feature 6/2 CRA, Kilerinya Rockhole, Killirinyi, Kungkaryinya Hill & Mt Percy Creek) located within the area under application (GIS database).). It is the proponent's responsibility to comply with the *Aboriginal Act 1972* and ensure that no site of Aboriginal Significance is damaged through the clearing process.

There is a registered Native Title Claim over part of the area under application (GIS database). 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*.

The proposal for the Ellendale 4 Pit and adjoining infrastructure has been assessed by the EPA at the level of EPS and a bulletin released (EPA 2005). As a result the area and amount of clearing allowed under that EPS statement (area of disturbance approved 514 hectares) are exempt from a clearing permit requirement under schedule 6 of the *Environmental Protection Act 1986*.

The following ministerial condition was part of the conditions agreed to by KDC to get approval for the Ellendale 4 project.

8-1 Within three years following the formal authority issued to the decision making authority under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Geological Features Management Plan to the requirement of the minister for the Environment on advice of the Environmental protection Authority.

This plan shall include:

1 investigations into the location and number of diamond pipe features on mining leases held by the proponent;

2 identification of features to be protected from future mining operations; and

3 recording and reporting of the abovementionned features.

8-2 The proponent shall implement the geological Features Management plan required by condition 8-1.
8-3 The proponent shall make the Geological Features Management plan required by condition 8-1 publicly available.

Any Kimberley Diamond Company exploration proposals are subject to a number of standard tenement conditions under the *Mining Act 1978*. Those standard conditions request that the tenement holders cap drill holes, stockpile topsoil separately and backfill and rehabilitate cleared areas within 6 months of excavation.

Advice provided by the DEC in relation to EP Licensing stated that the licenced throughoutput of the plant should not be exceeded if ore is required to be processed.

Advice provided by the DoE in relation to Water Licensing stated that KDC have a current inforce groundwater license for the purpose of mineral processing and dust supression compliance (DoE 2006). KDC have indicated that drilling does not occur below the water table because of the risk to the machinery involved and as a result that dewatering is not necessary (KDC Advice 2006).

Eighty One Mile Vent listed as an indicative place on the Register of the National Estate for its Natural Values is located within the clearing permit area (DEH 2006). Information provided by the DEH states that: indicative data provided to or obtained by the Australian Heritage Council or the former Australian Heritage Commission has been entered into the database and the place is at some stage in the assessment process. A decision on whether the place should be entered in the Register has not been made (DEH 2006). Unlike places that are registered on the Register of the National Estate for their Natural Values Indicative places are not declared Environmentally Sensitive Areas under the *Environmental Protection Act 1986*. Under Section 30 of the *Australian Heritage Commission Act 1975*, the Commonwealth Government is prohibited from taking any action which would adversely affect a place in the Register, unless there are no feasible and prudent alternatives to the action.

The 81 Mile Vent is an unusual geological feature and will be investigated in the course of the Geological Features Management Plan required under condition 8-1 of ministerial statement 684 (see conditions above) produced as a result of the Ellendale 4 EPA formal assessment process (KDC 21/08/2006).

This proposal is currently exempt from a clearing permit requirement under the exemption that applies under Regulation 5 Item 25 (Clearing under the *Mining Act 1978*) of the *Environmental Protection (Clearing of native Vegetation) Regulations 2004* which expires on the 8 April 2007.

Methodology DoE (2006) Advice received by Email from DoE Kunnunura office in relation to water and EP licensing.
EPA (2005)
GIS Database-Aboriginal Sites of Significance-DIA (28/02/2003).
GIS Database-Native Title Claims-DLI (7/11/2005).

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Exploration	Mechanical Removal	60	**Grant**	The proposal has been assessed as not likely to be at variance to principle a,c,f,g,h,i and j. The proposal maybe at variance to principles b, d, e and f because it may result in the clearing of rocky outcrops and low lying areas which are of limited occurence in the local area and may have significant environmental values. The rocky outcrops of concern within the permit area are the subject of a permit condition stating that no clearing is to occur within those areas. Some of the low lying areas are target areas for the exploration work carried out by the Kimberley Diamond Company. The extent and significance of such low lying areas is not known within the broader Ellendale area although it is likely that other similar low lying areas occur outside of the clearing permit area. Given the temporary nature of the exploration activities, tenement conditions requiring rehabilitation following exploration activities and success achieved in past rehabilitation noted by the assessor during a site visit the assessor is satisfied that the proposed exploration activities are unlikely to result in the permanent loss of the vegetation communities associated with low lying areas. A permit condition requires that the pre existing levels be reinstated as part of the rehabilitation of all areas disturbed as a result of this clearing permit. The permit conditions are as follows: 1) The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources by the 31st of May each year setting out the records

required under condition 2 of this permit in relation to clearing carried out within the areas cross hatched yellow marked on plan 1378/1.

2) The Permit Holder shall record the following for each instance of clearing: a) the location where the clearing occured, expressed as grid coordinates using the geocentric Datum of Australia 1994 coordinate system; b) the area cleared in square metres, c) the method of clearing, d) the purpose of clearing and e) the areas rehabilitated in square metres.

3) The permit holder shall not clear within the cross hatched red areas shown on plan 1378/1.

4) The permit holder shall reinstate pre-existing ground levels and shape of any low lying seasonally inundated areas that are disturbed by the proposed clearing activities.

5. References

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Graham G (2001) Dampierland 1 (DL1-Fitzroy Trough subregion) pp 170-178 in A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002. Report published by the Department of Conservation and Land Management, Western Australia.

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6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-

P1 **Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P2 **Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P3 **Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.

P4 **Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

R **Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

X **Declared Rare Flora - Presumed Extinct taxa**: taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

Schedule 1 **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

Schedule 2 **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

Schedule 3 **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

Schedule 4 **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

P1 **Priority One: Taxa with few, poorly known populations on threatened lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g.

agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P2 **Priority Two: Taxa with few, poorly known populations on conservation lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P3 **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P4 **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

P5 **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999)*

EX **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.

EX(W) **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.