



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 1011/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Millennium Minerals Limited

### 1.3. Property details

Property: Mining Leases 46/186 & 46/300, Miscellaneous Licence 46/45  
Local Government Area: Shire of East Pilbara  
Colloquial name: Golden Eagle Project

### 1.4. Application

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

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

**Vegetation Description** The application area has been mapped at a 1:250,000 scale as Beard Vegetation Association 190: Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* & *A. trachycarpa* over hard spinifex, *Triodia wiseana*; Very poor rocky country on gneiss (Shepherd, 2007).

An extensive flora and vegetation survey of the application area was undertaken by Mattiske Consulting Pty Ltd in July 2005. The vegetation within the application area was mapped at a scale of 1:20,000 (Mattiske Consulting Pty Ltd, 2005). The vegetation system of the survey area is dominated by tree- and shrub- steppe communities with *Eucalyptus* trees, *Acacia* shrubs, *Triodia pungens* and *Triodia wiseana*. The valley floors and creek lines are dominated by Mulga communities over local shrubs and a range of grass species (Mattiske Consulting Pty Ltd, 2005).

Eleven plant communities were defined and mapped during the survey of the application area in July 2005 (Mattiske Consulting Pty Ltd 2005):

**A:** Low Open Woodland of *Corymbia opaca* (Bloodwoods) over mixed *Acacia* shrubs (*Acacia trachycarpa*, *A. haloserchia*, *A. sclerosperma* ssp. *sclerosperma*) over *Triodia pungens* and *T. longiceps* on loamy soils in shallow valleys between rocky hills;

**Ad:** Disturbed 'A' community;

**B:** Low Open Woodland of *Eucalyptus leucophloia* ssp. *leucophloia*, *Corymbia hamersleyana*, *C. opaca* over *Grevillea pyramidalis* ssp. *leucadendron*, *G. wickhamii* ssp. *aprica*, *A. pyrifolia*, *Hakea lorea*, *Petalostylis labicheoides*, *Acacia coleii* var. *ileocarpa*, *A. coriacea* ssp. *pendans* and low Chenopod shrubs over *Triodia* species on sandy-clays on broader flow-lines and flats;

**F:** Hummock Grassland of *Triodia wiseana* and *T. longiceps* with emergent *Eucalyptus leucophloia* ssp. *leucophloia*, over *Acacia aphanoclada*, *A. hilliana*, *Fimbristylis dichotoma* on shallow gravelly and rocky slopes;

**G:** Hummock grasslands of *Triodia pungens* and *T. wiseana* with emergent shrubs of *Acacia bivenosa*, *A. inaequilatera* and *Grevillea pyramidalis* on low hills and slopes with quartz and gravel;

**K:** Hummock Grassland of *Triodia* species with emergent *Eucalyptus leucophloia* ssp. *leucophloia*, *Corymbia hamersleyana*, *Grevillea wickhamii*, *Hakea lorea*, *Dodonea viscosa* ssp. *mucronata*, *Acacia arrecta*, *A. inaequilatera* and *A. trachycarpa* on rocky breakaways and gullies;

**M:** Open Woodland of *Eucalyptus victrix*, *E. camaldulensis* var. *obtusa* and *Melaleuca leucadendra* (Cadjeputs) over sedges and reeds, occasional pools on deep sandy creekbed;

**R:** Hummock Grassland of *Triodia wiseana* and *T. longiceps* with emergent shrubs including *Acacia hilliana*,

*Senna* species and *Melaleuca eleuterostachya* on shallow gravelly and rocky hills with exposed outcropping;

**S:** Hummock Grassland of *Triodia pungens* with emergent shrubs of *Acacia inaequilatera* and *Grevillea pyramidalis* on rocky low hills;

**Sd:** Disturbed 'S' community;

**W:** Hummock Grassland of *Triodia wiseana* and *T. pungens* with *Goodenia stobbsianna*, *Tribulus suberosus* and *Eucalyptus leucophloia* on rocky escarpments and plateau;

**X:** Hummock Grassland of *Triodia angusta* with emergent *Acacia trachycarpa*, *A. sclerosperma* ssp. *sclerosperma*, *Hakea lorea* and *Corymbia opaca* on sandy-loam soils; and

**Xd:** Disturbed 'X' community.

<b>Clearing Description</b>	The proposed clearing of 200 hectares is for the development of the Golden Eagle mine. The clearing of native vegetation is required in order to establish the open pits, tailings storage facility, waste rock dumps, haul roads, processing plant, contractor yard, camp, waste water treatment plant and other associated mine infrastructure. The vegetation and topsoil will be cleared by mechanical clearing and track rolling. The vegetation and topsoil will be stored separately in low stockpiles for use in rehabilitation.
<b>Vegetation Condition</b>	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994); to Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).
<b>Comment</b>	The plant communities mapped during the vegetation survey by Mattiske Consulting Pty Ltd (2005) are based on 1:20,000 scale mapping and are a more accurate representation of the vegetation within the application area than the Beard Vegetation Association 190 which is based on 1:250,000 scale mapping.

On a site visit by the assessing officer to the Golden Eagle application area on 24 July 2006 it was evident that the proposed open pit areas have been subject to a high degree of disturbance as a result of historic and current exploration activities. Vegetation condition has also been impacted on by cattle grazing pressures. During the flora and vegetation survey work, groups of cattle were seen on the project lease areas.

Millennium Minerals Limited have excised 191 ha of vegetation from M46/186 as conservation areas both for flora and fauna conservation. This includes an area for conservation of *Ctenotus nigrilineatus* habitat.

Millennium Minerals Limited was previously known as Wedgetail Mining Ltd and Wedgetail Exploration NL.

### 3. Assessment of application against clearing principles

#### (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

<b>Comments</b>	<p><b>Proposal is not likely to be at variance to this Principle</b></p> <p>The proposed clearing area lies within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region which encompasses an area of 17,804,163 hectares (Shepherd, 2007). The vegetation types that have been identified and described for the areas applied to clear are common and widespread throughout this subregion, with approximately 99.9% of the pre-European vegetation remaining (Shepherd, 2007).</p> <p>The assessing officer undertook a site visit to the clearing application area on 24 July 2006, noting significant disturbance as a result of historic and current exploration activities. Plant communities within the application area have also been impacted on by cattle grazing pressures. During the flora and vegetation survey work, groups of cattle were observed within the application area (Mattiske Consulting Pty Ltd, 2005).</p> <p>Five weed species; <i>Cenchrus ciliaris</i>, <i>Cenchrus setigerus</i>, <i>Gomphrena celosoides</i>, <i>Pennisetum pedicellatum</i> and the Declared Plant <i>Argemone ochroleuca</i> were recorded in the project area. The proponent has developed a comprehensive weed management plan which aims to reduce the risk of introducing and spreading weeds within the application area. Weed management procedures include:</p> <ul style="list-style-type: none"><li>ensuring weeds and introduced species are removed or controlled wherever possible using suitable control methods,</li><li>incorporating weed management procedures into the site induction program in order to raise awareness to company personnel,</li><li>progressive rehabilitation of disturbed areas to assist in reducing weed spread and promoting competition from indigenous species, and</li></ul>
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- construction of vehicle wash down areas across the application area to minimise the risk of spreading weeds into uninfested areas (Wedgetail Exploration NL, 2006b).

Although the proponent has committed to adhering to a comprehensive weed management plan, the large amount of clearing required under the proposal is located within an extensive application area which has been infested by five weeds species, therefore, there is the possibility that the clearing activities may result in the spread of weed species into non-weed infested areas.

Whilst it is unlikely that the biodiversity at the site of this proposal will be considered outstanding or of higher diversity than in the surrounding bioregions or local area, the Cajuput Creeklime which intercepts the western side of the application area was identified by Ninox Wildlife Consulting (2005) as likely to be of some local significance to vertebrate fauna and is likely to represent an area of higher biodiversity. It will almost certainly support a greater number of species of birds than the surrounding country, and the larger Eucalypts will provide nesting, roosting and shelter hollows for a range of mammals, reptiles and birds. When flowering, the trees along this creeklime will also provide a significant food resource either by nectar and pollen, or by the invertebrates that the flowers attract. Also, at locations where there are pools of water along the creeklime it would be expected that these areas would be a focal point for a diverse array of fauna species (Ninox Wildlife Consulting, 2005).

An approximate 1.5 kilometre section of Cajuput Creek lies within the application area and the applicant proposes to clear a 10 - 20 metre wide corridor across the creek in order to reinforce and widen an existing creek crossing, and to construct a bore (Wedgetail Exploration NL, 2006a). Cajuput Creek is a large creeklime that drains into the Nullagine River which is located approximately 9 kilometres north of the application area (GIS database). It was observed on the site visit that similar habitat exists along the length of Cajuput Creek, and also along the Nullagine River, therefore, the disturbance to the creeklime habitat under this proposal is not likely to be significant given it is well represented outside of the area proposed to be cleared. To ensure the Cajuput Creek is protected from major disturbance, it is recommended that suitable conditions be imposed to minimise and mitigate adverse environmental impacts.

The Department of Environment and Conservation (DEC) have provided the following comments (DEC, 2006a) in regards to this Principle: 'During a site visit to the proposed minesite in July 2006 it was apparent that the vegetation types identified within the notified area appear to be common and widespread through the subregion. Cajuput Creek was identified as an area of local significance likely to represent an area of higher biodiversity (Ninox Wildlife Consulting, 2005). However, the Creek is proposed to be disturbed for a 10-20 metres wide crossing and construction of a single bore, which is a relatively small area. During the site visit similar habitats were seen to exist along the length of the creek.'

DEC (2006a) further advises that 'there will be some loss of biodiversity values arising directly from the proposed clearing. However these impacts should be minimised by careful management of the proposed clearing and subsequent rehabilitation in strict accordance with the Department of Industry and Resources (DoIR) standard rehabilitation protocols.'

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

**Methodology** DEC (2006a).  
Matiske Consulting Pty Ltd (2005).  
Ninox Wildlife Consulting (2005).  
Shepherd (2007).  
Wedgetail Exploration NL (2006a).  
Wedgetail Exploration NL (2006b).  
GIS Database:  
- Hydrography, linear.

**(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**

According to available databases, no rare or priority fauna species are known to exist within the application area (GIS database).

A level 1 fauna assessment was conducted over the application area by Ninox Wildlife Consulting in September 2005. This involved (1) producing an inventory of vertebrate fauna species that could potentially occur within the application area, (2) assessment of the potential for rare, threatened or vulnerable species to occur, (3) a review of the habitats of the application area and assessment of their possible significance to vertebrate fauna and (4) an assessment of the vegetation community types of the application area and their potential to support habitat-specific vertebrate species (Ninox Wildlife Consulting, 2005). A two day site visit was conducted to ground truth the findings of the desktop analysis. The fauna assessment adequately meets the requirements of Guidance Statement 56 - Guidance for the Assessment of Environmental Factors - Terrestrial Fauna for Environmental Impact Assessment in Western Australia (EPA, 2004).

Ninox Wildlife Consulting (2005) described seven fauna habitats, ranging from creekline habitats to plains and flats to rocky escarpments. It was considered that although none of these habitats were significant in a regional context, the Cajuput Creek habitat was likely to be important on a local scale. The creek retains water for longer than the surrounding environment, and the eucalypts that fringe the creek provide important habitat for roosting, nesting, food and shelter for a range of species (Ninox Wildlife Consulting, 2005). It is recommended that the creek should be protected as much as possible. This has been achieved through the proponent's Fauna Management Plan (Wedgetail Mining Ltd, 2006a).

Ninox Wildlife Consulting (2005) identified the following conservation significant fauna species that may potentially occur within the application area: Mulgara (*Dasycercus cristicauda*), Northern Quoll (*Dasyurus hallucatus*), Bilby (*Macrotis lagotis*), Orange Leaf-nosed Bat (*Rhinonycteris aurantius*), Pilbara Olive Python (*Liasis olivaceous barroni*), Night Parrot (*Pezoporus occidentalis*), Peregrine Falcon (*Falco peregrinus*), Fork-tailed Swift (*Apus pacificus*), Common Greenshank (*Tringa nebularia*), Wood Sandpiper (*Tringa glareola*), Common Sandpiper (*Actitis hypoleucos*), Rainbow Bee-eater (*Merops ornatus*), Great Egret (*Egretta alba*), Spectacled Hare-wallaby (*Lagorchestes conspicillatus leichardti*), Ghost Bat (*Macroderma gigas*), Lakeland Downs Mouse (*Leggadina lakedownensis*), Western Pebble Mound Mouse (*Pseudomys chapmani*), Grey Falcon (*Falco hypoleucos*), Australian Bustard (*Ardeotis australis*), Bush Stone-curlew (*Burhinus grallarius*) and Grey Honeyeater (*Leacustroica whitei*). Of these, Ninox Wildlife Consulting (2005) considered that the Northern Quoll, Pilbara Olive Python, Peregrine Falcon, Rainbow Bee-eater, Lakelands Downs Mouse and Australian Bustard were likely to occur within the application area. Many of these species would be concentrated around Cajuput Creek. The Fork-tailed Swift, Common Greenshank, Wood Sandpiper, Common Sandpiper and Great Egret may be attracted to standing water bodies such as Tailings Storage Facilities and dams (Ninox Wildlife Consulting, 2005).

A level 2 fauna assessment was conducted by Rapallo Consulting and Contracting Engineers (hereafter referred to as Rapallo) over the application area between 30 August and 18 September 2006 (Rapallo, 2006). This involved systematic fauna sampling of landscape types present, search for species that are rare, threatened or vulnerable and discussion of the conservation value of fauna species and their habitats within the application area. The survey and subsequent report adequately meets the requirements of Guidance Statement 56 - Guidance for the Assessment of Environmental Factors - terrestrial fauna for Environmental Impact Assessment in Western Australia. (EPA, 2004).

The fauna sampling was conducted over 13 sites using a combination of pitfall, Elliot, funnel and cage traps. Bird observations were undertaken at all sites. Transects were also walked to identify signs of conservation significant species. A total of 3,846 trap nights were conducted over the 13 sites (Rapallo, 2006).

Rapallo (2006) reported that native mammal results were low. Most mammals caught were small rodents. Rapallo did not find any evidence of Bilby, Northern Quoll, Mulgara, Spectacle Hare-wallaby, Pepple Mound Mouse, Short-tailed Mouse, Ghost Bat or Orange Leaf-nosed Bat activity within the application area.

Rapallo (2006) reported 43 species of reptiles and amphibians within the application area, which compares favourably with the Pilbara Biological Survey of 2004-2005.

The survey identified one reptile of conservation significance, *Ctenotus nigrilineatus* (P1 - Taxa with few, poorly known populations on threatened lands). This skink is known from only two locations according to the Western Australian Museum records (Rapallo, 2006). The DEC have seven records from their own fauna database (DEC, 2006b). Within the application area, *C. nigrilineatus* was recorded from habitats defined by or close to small drainage lines supporting thickets of *Acacia trachycarpa*. It is hypothesised that *C. nigrilineatus* is a shade-loving species that favours these areas for the cooler environment (Rapallo, 2006).

*C. nigrilineatus* was caught at five trap sites within the application area. Three of these sites will be subject to disturbance due to the clearing of native vegetation. Rapallo (2006), has inferred further habitat for the species based on Mattiske Consulting Pty Ltd (2005) vegetation types, ground truthing of *A. trachycarpa* dominated drainage areas and aerial photography. If *C. nigrilineatus* is found to occupy this inferred habitat then the impact of the clearing of native vegetation to this species will be minor. Rapallo (2006) recommended that the inferred *C. nigrilineatus* habitat be ground-truthed to determine to what extent it is utilised. This will be achieved by the implementation of the proponent's fauna management plan (Wedgetail Mining Ltd, 2006).

Rapallo (2006) observed 38 species of avian fauna within the application area, of which, the Rainbow Bee-eater (Migratory species) is the only species of conservation significance observed. Rainbow Bee-eaters require sandy substrate in which to build their nesting burrows. The species was recorded only at Site 3, which will be impacted by the construction of a tailings storage facility. However, the Rainbow Bee-eater is a common widespread species and is not restricted to the application area. Therefore, the loss of this nesting habitat is not likely to significantly impact the conservation of this species.

Rapallo (2006) identified a small dune at Site 3 as being a significant habitat for fauna but suggested that at 6 hectares in size, may be too small to be significant on a regional scale, although the dune was host to *C. nigrilineatus* and the Rainbow Bee-eater. The dune is within an area planned for a tailings storage facility and is likely to be lost upon construction. As discussed above, the Rainbow Bee-eater is a wide ranging species able to nest where suitable soil type exists, and *C. nigrilineatus* occurs elsewhere within the application area not

subject to development and may, upon further inspection, utilise suitable habitat not subject to development.

The proponent has developed a fauna management plan in which commitments are made to limit the clearing of vegetation to that which is necessary for mining operations, to continue threatened and priority fauna searches, to conduct workforce awareness campaigns, to rehabilitate disturbed areas with a view to creating habitat for fauna, for dust mitigation, to exclude the riparian vegetation in Cajuput Creek from degradation from mining activities, to prevent scavenging by feral predators, to provide fauna egress mats on standing water bodies and the transport of injured fauna to wildlife rehabilitation centres (Wedgetail Mining Ltd, 2006).

In regards to *C. nigrilineatus*, the proponent has committed to creating a conservation area to the south east of the camp for the protection of this species. Fauna surveys will be conducted within inferred habitat as per Rapallo's recommendation to confirm its preferred habitat. Staff will receive site inductions regarding the protection of the conservation area and the identification of *C. nigrilineatus* (Wedgetail Mining Ltd, 2006).

The Department of Environment and Conservation (DEC) have provided the following advice in regards to this principle (DEC, 2006a) "A Level 2 fauna survey conducted by Rapallo Consulting and Contracting Engineers identified *Ctenotus nigrilineatus*, a Priority 1 reptile of conservation significance. The species was found to favour drainage lines supporting thickets of *Acacia trachycarpa* and a proportion of this habitat will be disturbed due to clearing. The Rainbow Bee-Eater (*Merops ornatus*), protected under the JAMBA Treaty and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was seen to be using nesting burrows within a dune due to be impacted by the tailings storage facility. The final results of a stygofauna study have not been completed but initial indications are that 40% of the bores yielded stygofauna. In view of these factors the proposal may be at variance to this Principle."

DEC (2006a) state further that "Wedgetail has developed a fauna management plan and has committed to creating a conservation area for protection of *Ctenotus nigrilineatus*. Further surveys will be undertaken to confirm its preferred habitat. DEC supports these commitments and advises that the dune at Site 3, approximately 6 hectares in size (Rapallo page 32) identified as habitat for *Ctenotus nigrilineatus* and *Merops ornatus* should be protected from disturbance if at all possible. While mining associated impacts are outside the scope of a clearing permit assessment, the proponent has also committed to stygofauna monitoring and management plans and if mining impacts are found to have a detrimental impact on the conservation status of a significant species they will reevaluate the mine dewatering program".

Based on the above, the proposed clearing may be at variance to this Principle. Should a clearing permit be granted, it is recommended that conditions be imposed which prohibit clearing within 100 metres of Cajuput Creek except to widen an existing creek crossing and to construct a single bore. This would ensure that impacts to the significant fauna habitat in this location are minimised.

To offset the loss of fauna habitat through clearing for mine development, the proponent excised 191 hectares from the original area applied to clear as conservation areas, which include areas that are considered to be significant fauna habitat including Cajuput Creek and *C. nigrilineatus* habitat.

**Methodology** DEC (2006a).  
DEC (2006b).  
EPA (2004).  
Mattiske Consulting Pty Ltd (2005).  
Ninox Wildlife Consulting (2005).  
Rapallo (2006).  
Wedgetail Mining Ltd (2006).  
GIS Database:  
-Threatened Fauna.

**(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 databases there are no records of any populations of Declared Rare Flora (DRF) or Priority Flora within the application area. The nearest known flora species of conservation significance is a population of *Lepidium catapycnon* (DRF) which is located approximately 112 kilometres south-west of the application area (GIS Database).

A flora and vegetation survey of the Golden Eagle application area was undertaken by Mattiske Consulting during July 2005. An extensive search was carried out to define the plant communities and to search for DRF and Priority Flora species. No DRF was identified within the proposed clearing area. A total of four Priority Flora species and one range extension species were identified and recorded within the application area (Mattiske Consulting Pty Ltd, 2005). In order to quantify the local impact of the proposed clearing activities on Priority Flora species identified within the Golden Eagle application area, a Priority Flora field survey was undertaken from 15 - 18 July 2006 (Wedgetail Exploration NL, 2006c).

The Priority 1 species *Acacia aphanoclada* is known locally as the Nullagine Ghost Wattle, and is a tall slender

shrub to 5 metres in height, bearing yellow flowers from August to October (Wedgetail Exploration NL, 2006c). This species was found across the application area in plant communities **R** and **S** (Mattiske Consulting Pty Ltd, 2005), and abundantly across many of Millennium Minerals Ltd's nearby leases (Wedgetail Exploration NL, 2006c). Of the plants counted; 330 plants are located within the proposed clearing impact area while 850 are located outside of the proposed clearing areas. Further surveys by Mattiske Consulting Pty Ltd and the proponent's Environmental Officer have identified large quantities in the thousands growing across the Mosquito Creek Formation (Wedgetail Exploration NL, 2006c). Given the widespread distribution of *Acacia aphanoclada* the proposed clearing activities are not likely to impact on the conservation status of the species.

The Priority 3 species *Acacia ?glaucocaesia* was recorded in plant community **S** by Mattiske in July 2005, however, this species was not recorded during the Priority flora survey in July 2006 (Wedgetail Exploration NL, 2006c). This species forms a dense shrub or tree to 6 metres in height, and is usually found on sandy loam or clay floodplains. It produces yellow flowers from July to September. There is some doubt as to whether the initial identification was confirmed and the DEC Regional Botanist suggested during a site visit to the application area on 17 August 2006, that this species was unlikely to grow in the habitat occurring within the application area (Wedgetail Exploration NL 2006c). Considering that *Acacia glaucocaesia* does not appear to be present within the proposed area of clearing, the species is not likely to be impacted on by the proposal.

The Priority 3 species *Themeda* sp. Hamersley Station was recorded in plant community **A** (Mattiske Consulting Pty Ltd, 2005). *Themeda* sp. Hamersley Station was noted growing most commonly in disturbed areas, particularly along the edge of tracks and amongst rehabilitated drill sites. It did not appear to grow in any undisturbed areas. During the Priority flora survey 1304 plants were identified within the application area, of which 700 are outside of the impact areas and will not be affected by the proposed clearing activities (Wedgetail Exploration NL, 2006c). The impact on *Themeda* sp. Hamersley Station within the application area is substantial, however, it has been identified by a Wedgetail Mining Ltd Environmental Officer to grow following tracks and disturbed areas for up to 35 kilometres away from the application area. It is expected that mining disturbances will actively promote and aid in the rapid replacement of individuals lost as a result of the initial clearing (Wedgetail Exploration NL, 2006c). The proposed clearing activities are likely to have minimal impact on the conservation status of this species considering the extent of the population in the local area and its ability to thrive following disturbance.

The Priority 4 species *Ptilotus mollis* was located growing on steeply inclined scree covered slopes within plant communities **K** and **W** (Mattiske Consulting Pty Ltd, 2005; Wedgetail Exploration NL, 2006c). The majority of individuals are located within the heritage exclusion zones known as the North and South Dromedary and as a result will not be impacted on by the proposed clearing activities (Wedgetail Exploration NL, 2006b). Several small populations were located growing on the steep inclines of Castle Hill. Castle Hill is planned to be used as a natural wall for the Tailings Storage Facility (TSF) and as a result one population of five *P. mollis* individuals is likely to be impacted on by the TSF (Wedgetail Exploration NL, 2006c). *P. mollis* is mainly found close to the crest of steep landforms, therefore, the proposed clearing activities are not likely to significantly impact on this species.

One species, *Acacia holosericea*, was found to be a range extension from its previously recorded range in the Kimberley (Mattiske Consulting Pty Ltd, 2005). During the Priority flora survey *A. holosericea* was found to grow abundantly in the middle and along the sides of Cajuput Creek. Over 50 plants were found near the lease boundary within the creek and only a few singular plants were located outside of the creek. No plants were found within the proposed impact area of the mining activities (Wedgetail Exploration NL, 2006c). Millennium Minerals Limited propose to construct a floodway across Cajuput Creek in order to gain access to the site, and there is the possibility that the clearing required for the floodway may impact on a small number of individuals, however, the clearing is unlikely to have a significant impact on this extension species.

The proponent committed to preparing and adhering to a Rare and Priority Flora management plan in order to protect the conservation and botanical values of the Golden Eagle Project area. Proposed management procedures include (Wedgetail Exploration NL, 2006c):

- Ensuring all Priority flora species are mapped on GIS;
- Continuing searches for Rare and Priority flora during the mine development phase and throughout the mine life;
- Avoiding and limiting all impacts on Rare and Priority flora species where possible;
- Eradication or control of weeds and introduced species where possible using suitable control methods following Wedgetail's detailed Weed Management Plan, and;
- Ensuring that all Priority species that are suitable for rehabilitation of the mine site are included in the rehabilitation seed mix.

The assessing officer is satisfied that the proponent's commitment to develop and adhere to a Rare and Priority Flora Management Plan will assist in protecting the Priority flora species found within the application area.

The Department of Environment and Conservation (DEC) has provided the following advice in regards to this principle (DEC, 2006a) "A flora and vegetation survey was undertaken by Matiske Consulting Pty Ltd in July 2005. Four priority species and one range extension species were recorded within the application area. DRF are not known to be present, the nearest record is 112 kilometres away. The proponent also undertook a priority flora field survey in July 2006 producing maps of the distribution of each priority species and assessing the local impact of the mining operations on them. Results showed that the proposed clearing is likely to have a minimal impact on the conservation status of the priority species considering the extent of the populations in the local area. The proponent has developed a Rare and Priority Management Plan to protect the botanical values of the project area. DEC reiterate that adequate weed control is crucial to prevent a decline in biodiversity values. The proponent's Weed Management Plan should be strictly adhered to".

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

**Methodology** DEC (2006a).  
Matiske Consulting Pty Ltd (2005).  
Wedgetail Exploration NL (2006c).  
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 records of Threatened Ecological Communities (TEC) within the area subject to be cleared (GIS database; Cowan 2001). The nearest known TEC is located approximately 150 kilometres south-west of the clearing application area (GIS database). Based on the distance between the proposal and the TEC, the proposed clearing activities are not likely to impact on the TEC.

The DEC has provided the following advice in regards to this principle (DEC, 2006a) 'No known Threatened Ecological Community (TEC) occurs within the area proposed to be cleared.'

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

**Methodology** Cowan (2001).  
DEC (2006a).  
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 application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion within which approximately 99.9% of the pre-European vegetation remains (Shepherd; 2007; GIS Database).

The vegetation type within the application has been mapped as Beard Vegetation Association 190: Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* & *A. trachycarpa* over hard spinifex, *Triodia wiseana*, very poor rocky country on gneiss (Shepherd, 2007; GIS Database). According to Shepherd (2007), approximately 100% of the vegetation association remains within the Pilbara IBRA region.

In consideration to the current extent of pre-European vegetation remaining within the Pilbara IBRA region and for Beard Vegetation Association 190, the area proposed to be cleared does not appear to represent a significant remnant of native vegetation.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,187	17,794,646	~99.9	Least concern	6.3
Beard veg assoc. – State					
190	169,200	169,200	~100	Least concern	No information available
Beard veg assoc. Pilbara Bioregion					
190	169,200	169,200	~100	Least concern	No information available

\* Shepherd (2007)

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** Department of Natural Resources and Environment (2002).  
Shepherd (2007).  
GIS Databases:  
- Interim Biogeographic Regionalisation of Australia.  
- Pre-European Vegetation.

**(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**

There are no permanent wetlands or watercourses within the proposed area to be cleared, however, there is one major creekline, one minor creekline and several minor drainage tracts located within the application area (GIS database; Wedgetail Exploration NL, 2006a; Ninnox Wildlife Consulting, 2005). All of the creeklines and drainage tracts that are located within the application area are ephemeral and generally only flow after significant rainfall events that are associated with degenerating cyclonic systems as they travel inland after crossing the north west coast.

The major creekline, Cajuput Creek, intercepts the western side of the application area and the vegetation has been described by Mattiske Consulting Pty Ltd (2005) as open woodland of *Eucalyptus victrix*, *Eucalyptus camaldulensis* var. *obtusa* and *Melaleuca leucadendra* (Cadjeputs) over sedges and reeds, and occasional pools on a deep sandy creek bed. Ninnox Wildlife Consulting (2005) has identified Cajuput Creek as one habitat that is likely to be of some local environmental significance. The proponent has advised that the only clearing required in the vicinity of Cajuput Creek is for the purpose of widening and reinforcing of the existing creek crossing, and for construction of a bore. During a site visit by the assessing officer to the application area on 24 July 2006, it was evident that only a small number of trees are likely to be removed under the proposed clearing. It was observed that this habitat occurred along the length of Cajuput Creek and also within the adjoining Nullagine River. Given the small scale of the proposed works the clearing is unlikely to have a significant impact to the vegetation growing in association with the creekline. To ensure that there is minimal disturbance to the creekline, it is recommended that a condition be placed on any permit issued, restricting clearing within 100 metres of Cajuput Creek to that which is necessary.

The minor creekline within the application area emanates from a series of low rocky hills in the south of the application area, and drains in a north-westerly direction through the middle of the application area towards Cajuput Creek. The vegetation associated with the minor creekline has been described by Mattiske Consulting Pty Ltd (2005) as vegetation type **B**: low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana*, *C. opaca* over *Grevillea pyramidalis* subsp. *leucadendron*, *G. wickhamii* subsp. *aprica*, *Acacia pyrifolia*, *Hakea lorea*, *Petalostylis labicheoides*, *Acacia coleii* var. *ileocarpa*, *A. coriacea* subsp. *pendans* and low chenopod shrubs over *Triodia* species on sandy-clays on broader flow lines and flats. As the creekline reaches the middle of the application area it pans out onto a flat/flood plain which is characterised by vegetation type **A**: low open woodland of *Corymbia opaca* over mixed *Acacia* shrubs (*Acacia trachycarpa*, *A. holosericea*, *A. sclerosperma* subsp. *sclerosperma*) over *Triodia pungens* and *T. longiceps* on loamy soils in shallow valleys between rocky hills, and vegetation type **X**: hummock grassland of *Triodia angusta* with emergent *Acacia trachycarpa*, *A. sclerosperma* subsp. *sclerosperma*, *Hakea lorea* and *Corymbia opaca* on sandy-loam soils (Mattiske Consulting Pty Ltd, 2005).

Clearing for the proposed open pit and waste dump is likely to have a direct impact on a small section of the minor creekline and a small area of approximately 10 hectares of vegetation types **A**, **B** and **X**. The vegetation types that are likely to be impacted on by the clearing for the open pit and waste dump occur downstream along the same creekline for approximately 500 metres from the proposed clearing area, and have also been located in an area growing in association with a drainage tract which passes through the eastern side of the application area (Mattiske Consulting Pty Ltd, 2005). Under the proposal, the vegetation in the east of the application area will remain largely intact and undisturbed apart from minor clearing associated with the construction of a haul road. Given the occurrence of the same vegetation types in other areas within the application area and most likely throughout the Pilbara, the clearing for the open pit and waste dump is unlikely to impact on vegetation which would cause significant environmental concern.

In order to reduce the likelihood of erosion and flooding occurring within the open pit, Millennium Minerals Ltd has proposed to divert the minor creekline around the open pit and to reinstate the creek diversion approximately 400 metres downstream into the existing drainage pathway. The diversion is necessary to reduce the risk of erosion and flooding occurring within the open pit. Water flow will be reinstated downstream of the open pit, however there is the possibility that approximately 4 hectares of vegetation type **A** north of the open pit may be subject to water starvation in the long-term. This possibility arises due to the reduced water-supply the vegetation will receive as a result of the proposed diversion to the existing creekline. However, given that this area is located in the middle of the flat plain which is characterised by a topographic gradient of less than 2% (GIS database), and contains no defined drainage channel, it is likely that the vegetation may be rainfall dependent, and as a result may not be impacted on by the diversion of the minor creekline.



A second creek diversion is required to divert water to the east of a small open pit. The diversion links up with the existing drainage line to the north of the open pit. It is possible that this diversion will cause vegetation occurring downstream of the open pit to be subject to water starvation in the long-term. However, given that this area is located in the middle of the flat plain which is characterised by a topographic gradient of less than 2% (GIS database), and contains no defined drainage channel, it is likely that the vegetation may be rainfall dependent, and as a result may not be impacted on by the diversion of the minor creekline. It should be noted that this vegetation has been inferred as possible habitat for the priority species *Ctenotus nigrilineatus*, although this has not been confirmed.

It was also evident from the site visit in July 2006 that several minor drainage tracts are scattered across the clearing application area, all of which drain into Cajuput Creek. The drainage tracts were observed to occur in low lying areas between low rocky hills, consisting of undefined drainage channels. These minor drainage tracts are widespread across the landscape in the Nullagine and Newman region, and assist in dispersing localised floodwaters generated after significant rainfall events. Under the proposed Golden Eagle site plan, one of the minor drainage tracts will be impacted on by clearing for a small open pit. The proposed clearing area is located approximately 1 kilometre east of Cajuput Creek. Considering that the drainage tract and vegetation between the proposed open pit area and Cajuput Creek will remain intact, the proposed area to be cleared is unlikely to act as a significant buffer to Cajuput Creek. Given the widespread distribution of minor drainage tracts with similar vegetation types throughout the application area and surrounding areas, the proposed clearing of this vegetation is not likely to be of significant environmental concern.

Millennium Minerals Ltd has recognised the importance of maintaining the integrity of the existing creekline and drainage tract vegetation and has committed to establishing a 10 metre buffer around the banks of significant drainage lines where practical. This will ensure that a degree of riparian vegetation is maintained which will assist in protecting the stability of the drainage channels and reduce the risk of erosion occurring (Wedgetail Exploration NL, 2006a).

Based on the above, the proposed clearing may be at variance to this Principle. Should a clearing permit be granted, it is recommended that a condition could be imposed ensuring that drainage diversions are constructed to reinstate water flows downstream into existing drainage channels.

**Methodology** Ninox Wildlife Consulting (2005).  
Matiske Consulting Pty Ltd (2005).  
Wedgetail Exploration NL (2006a).  
GIS Database:  
- Hydrography, linear.  
- Topographic Contours, Statewide.

**(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**

According to information supplied by Wedgetail Exploration NL (2006a), the Golden Eagle project area occurs in two major land systems:

1. Mosquito Land System - stony plains and prominent ridges of schist and other metamorphic rocks supporting hard spinifex grasslands, and;
2. River Land System - Active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands.

For the Mosquito Land System, past and present mining activity has resulted in localised disturbance and degradation (Van Vreeswyk et al. 2004). This was evident on the Golden Eagle lease during a site visit in July 2006 where the proposed clearing area for the open pit was fairly degraded as a result of Wedgetail Exploration NL's intensive exploration program. Numerous access tracks have also been established throughout the lease area. Most of the system has low susceptibility to erosion except for some drainage floors which are moderately susceptible if vegetative cover is lost (Wedgetail Exploration NL, 2006a). Millennium Minerals Limited propose to clear near and within several minor drainage lines located within the application area (Wedgetail Exploration NL, 2006a). Clearing for the proposed open pit and waste rock dump will impact on a non-perennial minor creekline which flows in a north-westerly direction through the middle of the application area, and also on an additional minor drainage line (Wedgetail Exploration NL, 2006a). In order to minimise the risk of erosion occurring within the drainage land units, it is recommended that a condition be placed on any permit issued, restricting clearing of watercourses during periods of surface water flow.

Furthermore, in order to prevent flooding and erosion within the drainage land units and cleared open pit and waste dump areas, the applicant proposes to divert the Golden Eagle Creek and minor drainage line around the open pit and waste rock dump, as well as reinstate the creek diversion downstream into the existing drainage pathway. A second diversion will be constructed to divert a minor drainage line around a small open pit and reinstate the creek to the north of the pit. These diversions will ensure that there is no overland flow across

cleared areas which would thereby reduce the risk of erosion and sedimentation occurring (Wedgetail Exploration NL, 2006a). The construction of the drainage diversion and any associated erosion control structures are associated with the land use activity and not the clearing and will be managed under the Mining Proposal process in accordance with the *Mining Act 1978*.

For the River Land System, the flood plains and river terraces are subject to fairly regular overbank flooding from major channels and watercourses, sandy banks, poorly defined levees and cobble plains. The system is largely stabilised by buffel and spinifex, and accelerated erosion is uncommon. However, susceptibility to erosion is high or very high if the vegetative cover is removed (Wedgetail Exploration NL, 2006a). Wedgetail propose to clear within Cajuput Creek for the widening and reinforcing of the existing creek crossing (Wedgetail 2006). It was evident during the site visit that minimal vegetation will be cleared in order to construct the creek crossing, therefore, the clearing is not likely to cause appreciable land degradation risks. To ensure that there is minimal disturbance to the creekline, it is recommended that a condition be placed on any permit issued, restricting clearing within 100 metres of Cajuput Creek to that which is necessary.

Groundwater salinity within the application area ranges between 180 – 1600 milligrams per litre Total Dissolved Solids (Wedgetail Exploration NL, 2006a; GIS database), and pump testing indicates standing water levels range in depth from 4 to 11 metres below the natural surface (Wedgetail Exploration NL, 2006a). The average annual rainfall for Nullagine is 327.5 millimetres per year and the average annual evaporation rate of the project area is approximately 3800 millimetres per year (BoM 2006; GIS database). The majority of the rainfall occurs in the months from December to June (Mattiske Consulting Pty Ltd, 2005). Given the low rainfall/ high evaporation rate it is unlikely that salinisation and water logging will be increased either on-site or off-site as a result of the clearing.

Advice has been received from the Department of Agriculture and Food Western Australia (DAFWA) with regards to this principle. DAFWA (2006) advise that "With the exception of the drainage line land unit, the areas to be cleared are expected to comprise red shallow loam and non cracking clay soils. In the natural state, these soils are protected from erosion by stony mantles. Unless measures are taken to manage surface water run off, it is likely that clearing will cause appreciable soil erosion. Similar impacts are likely if the drainage line land unit is cleared." DAFWA (2006) states further "It is concluded that the proposed clearing may be at variance with principle (g) for soil erosion".

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

**Methodology** BoM (2006).  
DAFWA (2006).  
Mattiske Consulting Pty Ltd (2005).  
Van Vreeswyk et al (2004).  
Wedgetail Exploration NL (2006a).  
GIS Database:  
- Groundwater Salinity, Statewide.

**(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 at variance to this Principle**

There are no DEC managed conservation areas within the proposed clearing area. (GIS Database). The nearest conservation area is Karijini National Park which is situated approximately 146 kilometres south-west of the clearing application area (GIS database).

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

**Methodology** GIS Database:  
- DEC Tenure.

**(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 permanent watercourses or water bodies within the application area, however, there is one major creekline, one minor creekline and several minor drainage tracts within the area of proposed clearing (GIS database; Wedgetail Exploration NL, 2006a). All the minor creeklines and drainage tracts within the application area flow into Cajuput Creek, which in turn flows into the Nullagine River (GIS database). These creeklines remain dry for the majority of the year, only flowing for short periods to disperse floodwaters after significant rainfall events.

Most of the areas proposed to be cleared have low susceptibility to erosion except for some drainage floors which are moderately susceptible if vegetative cover is lost (Wedgetail Exploration NL, 2006a). Within the clearing application area a small section of a minor creekline and a minor drainage tract will be cleared to establish two open pits and a waste rock dump. Whilst these areas remain cleared there is the risk that erosion

and sedimentation may be accelerated as a result of the clearing, especially if the clearing were to occur during heavy rainfall events or whilst there are surface water flows. However, as the purpose of the clearing is to establish various minesite infrastructures (open pit, waste dump, tailing storage facility) the erosion risk is likely to become negligible once the infrastructure is established and any erosion or sedimentation issues resulting from the land use activity will be managed under the *Mining Act 1978*. In order to minimise the risk of erosion and sedimentation occurring at the time of clearing, it is recommended that a condition be placed on any permit issued, restricting clearing of watercourses during periods of surface water flow.

The proposed disturbance area along the minor creekline is located approximately two kilometres along the drainage pathway from Cajuput Creek, whilst the proposed disturbance area along the minor drainage tract is located approximately one kilometre from the Creek. The buffer between the proposed clearing areas and Cajuput Creek means that any sedimentation resulting from the clearing is likely to be deposited within the low energy drainage tracts or floodplains before reaching Cajuput Creek. The deposition of erosional sediments is likely to reduce the risk of sedimentation impacting on the water quality within the Cajuput Creek system.

In order to reduce the risk of flooding and erosion of the proposed open pit, Millennium Minerals Limited has committed to diverting two minor creeklines around pit areas, and reinstating the creekline downstream. The creek diversion is likely to prevent any overland-flows across the areas which have been cleared for the open pit and waste dump which would thereby reduce the erosion risk. There is the possibility that erosion and sedimentation may be accelerated within the drainage diversion tract due to the initial absence of any riparian vegetation which would assist with maintaining the integrity of the diversion tract. The risk of erosion and sedimentation resulting from the construction of the drainage diversion or other mine site infrastructure (open pit, waste dump, tailing storage facility) is associated with the land use activity and not the clearing activities and will be managed under the Mining Proposal which has been lodged in accordance with the *Mining Act 1978* requirements.

The application area falls within the southern portion of the Nullagine Water Reserve (GIS database). Groundwater salinities within the application area range between 180 – 1600 milligrams per litre Total Dissolved Solids, and pH ranges between 8.2 and 8.6 (Wedgetail Exploration NL, 2006a). Clearing under the proposal will be spread across the application area and not concentrated to a single 200 hectare area. Considering the low average annual rainfall (327.5 millimetres per year) and high evaporation rate (approximately 3800 millimetres per year) of the Nullagine area (Mattiske Consulting Pty Ltd 2005; GIS database), the proposed clearing is unlikely to result in an increase in groundwater recharge and as a result, water quality of the Nullagine Water Reserve is unlikely to be impacted on by the proposed clearing.

Detailed work conducted by Global Groundwater (2005) has demonstrated that due to the ephemeral nature of the Cajuput Creek alluvial aquifer and the poor connection of this aquifer with the Mosquito Creek Formation, which is a discontinuous, fractured aquifer of limited extent, there is effectively no connection between the aquifers at the proposed Golden Eagle mine and those supplying the town water supply (Global Groundwater 2005; Wedgetail Exploration NL, 2006a). As a result, the Department of Water have downgraded the aquifers at the proposed Golden Eagle mine from a Priority 1 to a Priority 3 water supply area (Wedgetail Exploration NL, 2006a). The proposed clearing activities are not likely to result in deterioration to the quality of the town water supply.

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

**Methodology** Global Groundwater (2005).  
Mattiske Consulting Pty Ltd (2005).  
Wedgetail Exploration NL (2006a).  
GIS Database:  
- Evaporation Isopleths.  
- Hydrography, linear .  
- Public Drinking Water Source Areas.

**(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 project area is located approximately 7 kilometres south of the Nullagine township. Average annual rainfall for Nullagine is 327.5 millimetres per year, with the majority of the rainfall occurring in the months from December to June. The average annual evaporation rate of the project area is approximately 3800 millimetres per year (BoM 2006; GIS database).

The proponent has applied to clear up to 200 hectares within mining tenements M46/186, M46/300 and L46/45. The Golden Eagle site plan shows that clearing for the required mine site infrastructure is spread across the application area and not concentrated within a single area (Wedgetail Exploration NL, 2006a), thereby, reducing the risk that the clearing will create a catchment area which could potentially increase the incidence of flooding.

The main infrastructure of the proposed project area (open pits, waste dumps, processing plant and contractor yard) is located in foot slopes and sheet-wash terrain units that are traversed by the Golden Eagle Creek and several small drainage lines emanating from the ridge and valley area located south of the proposed main pit

(Wedgetail Exploration NL, 2006a; Mattiske Consulting Pty Ltd, 2005). It was evident from the site visit to the project area by the assessing officer in July 2006 that these small drainage lines disperse on the flat plains, and continue to flow in a northerly direction towards Cajuput Creek which is located approximately 800 metres from the point of dispersal. The landscape of the application area is characterised by a low topographic gradient (< 2%) which would assist in dispersing floodwaters, thereby, reducing peak flood heights and risk of flooding (GIS database).

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

**Methodology** BoM (2006).  
Mattiske Consulting Pty Ltd (2005).  
Wedgetail Exploration NL (2006a).  
GIS Database:  
- Evaporation Isoleths.  
- Topographic Contours, Statewide.

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

##### Comments

There are two native title claims over the area under application; WC99/008 and WC99/016 (GIS database). These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. However, the mining tenements have 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 no registered Sites of Aboriginal Significance within the proposed area to be cleared (GIS database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The proposal was referred to the EPA by the proponent in April 2006. The level of assessment was set by the EPA as 'not assessed, managed under Part V of the *Environmental Protection Act, 1986*. This decision was subject to appeal, but was subsequently dismissed by the Appeals Convenor.

**Methodology** GIS Database:  
- Aboriginal Sites of Significance.  
- Native Title Claims.

#### 4. Assessor's comments

##### Comment

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

Should a clearing permit be granted, it is recommended that conditions be imposed on the permit for the purposes of watercourse management, weed control, record keeping and permit reporting.

#### 5. References

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- DAFWA (2006) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia.
- DEC (2006a) Biodiversity Coordination Section's (BCS) biodiversity advice for land clearing application. Advice to Assessing Officer, Department of Industry and Resources (DoIR), received 29/11/06. Department of Environment and Conservation (DEC), Western Australia.
- DEC (2006b) Biodiversity Coordination Section's (BCS) Priority species – *Ctenotus nigrilineatus*. Advice to Assessing Officer, Department of Industry and Resources (DoIR) received 22/11/06. Department of Environment and Conservation (DEC), Western Australia.
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- Van Vreeswyk, A.M, Payne, A.L, Leighton, K.A & Hennig, P (2004) Technical Bulletin No. 92: An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, South Perth, Western Australia.
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- Wedgetail Exploration NL (2006b) Preliminary Weed Management Plan for Construction Activities on M46/186, M46/300 & L46/45. Golden Eagle Project. Prepared by Wedgetail Exploration NL, October 2006.
- Wedgetail Exploration NL (2006c) Golden Eagle Operations - Golden Eagle Priority Flora Management Methodology M46/186, M46/300 & L46/45. Prepared for Wedgetail Exploration NL, August 2006.
- Wedgetail Mining Ltd (2006) Nullagine Gold Project, Golden Eagle Operations, Fauna Management Plan M46/186, M46/300 & L46/45. November 2006. Prepared by Wedgetail Mining Ltd, November 2006.

## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>BCS</b>	Biodiversity Coordination Section
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DMP</b>	Department of Mines and Petroleum, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>EP Act</b>	Environment Protection Act 1986, Western Australia.
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System.
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia.
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI</b>	Rights in Water and Irrigation Act 1914, Western Australia.
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia.
<b>TECs</b>	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:
- is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
  - 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:
- is not critically endangered; and
  - 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:
- is not critically endangered or endangered; and
  - 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.