



1. Application details

1.1. Permit application details

Permit application No.: 958/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Newmont Yandal Operations Pty Ltd

1.3. Property details

Property: M53/155
Local Government Area: Shire Of Wiluna
Colloquial name: Jundee Operations - Thor Open Pit

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
24		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	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Association 18: Low woodland; Mulga (<i>Acacia aneura</i>)	Clearing of 24 ha is required for expansion of mining operations near the Jundee project, located approximately 40km east of Wiluna. The area cleared will be used for the development of Thor open pit and associated infrastructure (Newmont Australia, 2005)	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The condition of the vegetation to be cleared is described as very good (Jim's Seeds, Weeds and Trees, 2005). Noticeable grazing pressure upon the Poaceae (grass) species within the communities was noted. No invasive weeds were noted during the flora survey, but disturbance was present in the form of historical exploration activities.
(Hopkins et al., 2001; Shepherd et al., 2001)	A flora survey was undertaken within M53/155 between 28 and 30 May 2005 (Jim's Seeds, Weeds and Trees, 2005). The vegetation to be cleared comprises two vegetation communities which are associated with two different landforms present within the area proposed to be cleared: - Mulga creek line. The vegetation recorded in this community was dominated by <i>Acacia aneura</i> (Mulga), with the understorey comprising <i>Acacia tetragonophylla</i> , <i>Eremophila forrestii</i> , <i>E fraseri</i> , <i>Psydrax attenuata</i> , <i>Santalum lanceolatum</i> and <i>Ptilotus obovatus</i> . - Grassy sand plain. The vegetation in this community is represented by hummock grasslands. The dominant species is <i>Triodia basedowii</i> and <i>T melvillei</i> . Other species sparsely present in this community include <i>Eremophila compacta</i> subsp <i>compacta</i> , <i>E forrestii</i> , <i>Acacia aneura</i> , <i>A pruinocarpa</i> , <i>Senna artemisoides</i> subsp <i>artemisoides</i> and <i>Solanum lasiophyllum</i> .		The flora survey was conducted between 28 and 30 May 2005 (Jim's Seeds, Weeds and Trees, 2005). A subsequent survey was conducted during September 2005, specifically targeting significant species during the spring flowering period (Newmont Australia, 2005). The survey in May covered the mining lease M53/155, which has an area of approximately 686 ha, and involved traverse of the site in a vehicle and on foot (Jim's Seeds, Weeds and Trees, 2005). The 65 ha active mining area which is currently actively being mined was excluded from the survey.

3. Assessment of application against clearing principles

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

Comments **Proposal is not likely to be at variance to this Principle**
The area of proposed clearing lies within the IBRA (Interim Biogeographic Regionalisation for Australia) Eastern Murchison subregion (GIS database). This subregion encompasses an area of 7,847,996 ha

(Newmont Australia, 2005; GIS database). The vegetation is widespread in this subregion, with almost 100 % of the pre-European vegetation remaining (Shepherd et al., 2001). The condition of the vegetation to be cleared is described as very good (Jim's Seeds, Weeds and Trees, 2005).

As stated in the Biodiversity Audit of Western Australia's 53 Biogeographical Subregions (CALM 2002 cited in Newmont Australia 2005, p1), the Murchison subregion is rich and diverse in flora and fauna but most species are wide ranging and usually occur in at least one, and often several, adjoining subregions.

The vegetation condition in the application area has been described as very good (Jim's Seeds, Weeds and Trees, 2005). The area is covered by a single pre-European Beard Vegetation Association 18, Low woodland; Mulga (*Acacia aneura*), which covers over 817,000 ha (GIS database). The vegetation units described for the application broadly reflect the association mapped by Beard, and are common and widespread throughout the Eastern Murchison Bioregion (Shepherd et al., 2001; GIS database).

No Priority or Declared Rare Flora, Threatened Ecological Communities or Threatened Fauna were noted across the application area (GIS database; Jim's Seeds, Weeds and Trees, 2005; Biota Environmental Services, 2005). Flora and fauna surveys conducted in 2005 reveal diverse flora and fauna that are not restricted to the project area but occur across the region (Jim's Seeds, Weeds and Trees, 2005; Newmont Australia, 2005).

The application area is unlikely to show higher diversity than the surrounding bioregion or local area, therefore, the proposed clearing is unlikely to be at variance to this principle.

CALM concurs with the findings set out within the assessment against this clearing principle (2006).

Methodology Biota Environmental Services 2005
CALM 2002
CALM 2006
Jim's Weeds, Seeds and Trees 2005
Newmont Australia 2005
Shepherd et al. 2002

GIS Databases:

- Pre-European Vegetation - DA 01/01
- Declared Rare and Priority Flora List - CALM 01/07/05
- Threatened Ecological Communities - CALM 12/4/05
- Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments Proposal is not likely to be at variance to this Principle

Biota Environmental Sciences conducted a Level 2 survey in accordance with *EPA Position Statement No. 3* (EPA, 2002) between 16 June and 23 June 2005, which included the area for this clearing permit application and a larger area incorporating several tenements surrounding the Jundee gold operations (Biota Environmental Services, 2005; Newmont Australia, 2005). An additional fauna survey was conducted in October 2005. No additional species of conservation significance were found during the October survey.

The fauna survey involved:

- assessment of the extent of the habitats existing within the tenements;
- identifying habitat which might support endangered fauna (primarily the Schedule 1 species, the Mulgara - *Dasyercus cristicauda*);
- assessment of significance of remnant habitat within the mine area for maintenance of native fauna; and
- providing a comprehensive list of species occurring within potential impact areas of the operations (Biota Environmental Services, 2005).

Methodology

Prior to commencement of the fauna survey, Biota Environmental Services conducted a search of CALM's Threatened Fauna database for the Jundee study area inclusive of a 50 km buffer zone (2005). The search returned:

- * *Dasyercus cristicauda* (Mulgara) - Schedule 1 (Vulnerable under the EPBC Act 1999). Caught or trapped on two occasions as the Jundee mine site during 1995. Subsequently caught or trapped on a single occasion at Jundee mine site during 1996; and
- * *Cacatua leadbeateri* (Major Mitchell's Cockatoo) - Schedule 4. A sighting was reported within the search areas in 1967.

A search of the Western Australian Museum Fauna database was also conducted prior to the fauna survey (Biota Environmental Services, 2005). Given the habitats available and known distributions, the following threatened fauna were noted as potentially occurring in the broader Jundee project area:

- * *Leipoa ocellata* (Malleefowl) - Schedule 1 (Vulnerable under the EPBC Act 1999);

- * *Pezeporus occidentalis* (Night Parrot) - Schedule 1 (Endangered under the EPBC Act 1999);
- * *Falco peregrinus* (Peregrine Falcon) - Schedule 4;
- * *Sminthopsis longicaudata* (Long-tailed Dunnart) - Priority 4;
- * *Ardeotis australis* (Australian Bustard) - Priority 4; and
- * *Burhinus grallarius* (Bush Stonecurlew) - Priority 4.

With regard to the fauna survey, habitat assessments were carried out during the site selection, installation and subsequently during the survey period (Biota Environmental Services, 2005; Newmont Australia, 2005). Survey sites were selected to represent a combination of all dominant vegetation types, including overstorey and understorey, substrates and landform features such as rocky outcrops, drainage lines, hills and flats.

Trapping grids were installed at each site, and consisted of six pit-fall traps placed at nine metre intervals over a total of sixty metres (Biota Environmental Services, 2005; Newmont Australia, 2005). Elliott traps were not included in the survey effort as low minimum temperatures may have resulted in the deaths of fauna caught in this manner. The absence of substantial rocky outcrops negated the use of funnel traps. Over the course of the survey period, trapping efforts were supplemented by nonsystematic searching for terrestrial invertebrates and vertebrates. Additionally, three 40-minute avifauna censuses were conducted at each site during the survey. Prior to establishing survey sites, discussions were held with Mr Mark Cowan (Regional Ecologist with CALM Kalgoorlie) as to Biota's proposed sampling design.

During the survey, any habitat encountered which was deemed likely to support Mulgara was searched for signs of this species including burrows, diggings and scats (Biota Environmental Services, 2005; Newmont Australia, 2005).

Results

The primary habitat identified in the application area was *Acacia aneura* (Mulga) over combinations of *Eremophila* spp., *Triodia* spp., and tussock grasses (Biota Environmental Services, 2005; Newmont Australia, 2005). Landforms of the habitat comprised low slopes, flats and small drainage lines.

None of the terrestrial habitats identified in the full survey were restricted to the tenements and none contained features representing restricted habitats such as rocky outcrops or breakaways (Biota Environmental Services, 2005; Newmont Australia, 2005). These habitats were typically well represented by extensive habitat outside the operations area.

The total trapping effort during the full survey represented 432 trap nights, and this was supplemented by 33.5 man hours of active searching for fauna at each trap site and several opportunistically selected sites (Biota Environmental Services, 2005).

A tally of 81 vertebrate fauna species recorded during the survey included 53 birds, 17 reptiles, 1 amphibian and 10 mammals (Biota Environmental Services, 2005). One threatened fauna species, the Australian Bustard (*Ardeotis australis*), listed as Priority 4 by CALM, was recorded during the opportunistic survey. Two individuals were seen flying over the Jundee camp at dusk. This species has a distribution which covers much of Western Australia (Johnstone and Storr 1998, cited in Biota Environmental Services 2005, p28), and extends to Eastern Australia and New Guinea. It prefers open or lightly wooded grassland including *Triodia* sandplains. The potential impacts to this species from the clearing are some habitat loss, but the conservation status of this relatively widespread species will not be altered by the proposed clearing (Biota Environmental Services, 2005).

None of the other recorded species are considered endangered (Priority or Schedule Fauna), and all would be expected to occur in habitats outside the tenements (Biota Environmental Services, 2005; Newmont Australia, 2005). The *Triodia* plains were identified as potential habitat suitable for Mulgara (Biota Environmental Services, 2005). However, searches of these areas (16 man hours) revealed no current evidence of Mulgara presence.

CALM have advised that the fauna survey undertaken by Biota Environmental Services 2005 appears acceptable and the findings are relevant to the application area given that five of the trapping/survey sites are relatively close to the Vause minesite (2006). However, Mulgara have been recorded in the project area several times since 1995 (Biota 2005) and the survey identified that the *Triodia* plains were potential habitat suitable for the species, although there was no actual evidence of Mulgara presence. If clearing is permitted then potential habitat for this threatened species (Schedule 1, Vulnerable) will be lost. Therefore the proposal may be at variance to this principle. Biota advised that as Mulgara populations are characteristically variable, repeated investigation is warranted. This survey was subsequently undertaken in October 2005, and no additional species of conservation significance were found (Newmont Australia, 2005).

Further to the applicant's previous clearing application (CPS 147) in 2004, CALM requested that Newmont develop a Mulgara Management plan outlining their management commitments for the Mulgara population/s potentially impacted by the project (CALM, 2006). No reference is made to such a plan within the documentation supporting the current application. CALM therefore advises again that such a plan is developed, and this requirement should be included as a tenement condition. The plan would include further monitoring, disturbance and subsequent relocation protocols if individuals are found. The plan is to be developed in consultation with, and agreed to by CALM, and may include fire management to prevent large summer wildfires which remove habitat over large areas and prevent recolonisation by Mulgaras. Also, if

clearing is permitted an extensive trapping programme of the area should be undertaken by an experienced zoologist immediately prior to clearing.

Conclusions

Despite advice provided by CALM which recommends the contrary, the assessor has determined that this application is not likely to be at variance to this principle.

CALM (2006) have advised that if clearing is permitted then potential habitat for this threatened species (Schedule 1, Vulnerable) will be lost. Therefore the proposal may be at variance to this principle. However, recent communications with Biota regarding the suitability of the *Triodia* plains in the application area indicate that these do not constitute habitat for this species (Runham, 2006). While they were initially identified as potential habitat, the survey conducted during October 2005 confirmed that the *Triodia* plain areas east and south of the Mulga drainage in the application area were not Mulgara habitat. Photographs of holes and discussion with Roy Teale of Biota enabled this confirmation. Mulgara habitat is dominated by *Triodia basedowii* on sand to loamy substrate with moderate to dense distribution (30 to 70 % cover). None of the areas within Gourdis or Vause tenements (M53/156 and M53/155 respectively) had habitat with this type of structure. The *Triodia* plains to the east and south of the Mulga drainage consist of *Triodia* that is not mature enough and therefore not dense enough to constitute Mulgara habitat. The proposal is not likely to be at variance to this principle.

CALM (2006) have advised that if clearing is permitted, an extensive trapping programme of the area should be undertaken by an experienced zoologist immediately prior to clearing. However, recent communications with Biota confirmed that the 16 man-hour non-systematic survey for Mulgara habitat during June 2005 included a search of the area under the application (Runham, 2006). It has since been confirmed that the *Triodia* plains to the east and south of the Mulga drainage consist of *Triodia* that is not mature enough and therefore not dense enough to constitute Mulgara habitat. Furthermore, with regard to survey for Mulgara, Roy Teale of Biota has previously stated that trapping for Mulgara is not an effective means of determining their presence. This is because they tend to be trap shy. They also are often temporally sparse in the landscape. The ideal survey methodology for this species is typically searching for appropriate habitat and signs of the species, and not trapping.

CALM (2006) have reiterated their request that Newmont develop a Mulgara Management plan outlining their management commitments for the Mulgara population/s potentially impacted by the project. The Mulgara has been the subject of a management plan and monitoring programme at Jundee, incorporating an exclusion zone to protect known Mulgara habitat, since 1995 (Biota Environmental Services 2005, p25). The assessor recommends that this plan and programme be discussed with CALM.

Methodology Biota Environmental Services 2005
CALM 2006
EPA 2002
Johnstone and Storr 1998
Philip Runham, Zoologist, Biota Environmental Services (pers comm, 08/03/06)
Newmont Australia 2005
Shepherd et al. 2001

(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**

No Declared Rare Flora or Priority flora are known to occur within the application area (GIS database). Jim's Weeds, Seeds and Trees conducted a search of CALM's Declared Rare and Priority Flora database and the Western Australian Herbarium database for records of species in the area delineated by GDA94 51 J E250000, N7050000 and GDA 94 51 J E290000, N70950000 (2005). This area includes the current application area. A total of 9 taxa of conservation significance are known from this broad area, and are:

- *Baeckea* sp. Sandstone (CA Gardner s.n.) - P1, perennial flowering in October. Habitat - flats;
- *Eremophila congesta* ms - P1, perennial flowering between August and September. Habitat - lateritic outcrops in greenstone hills, stony quartzite slopes;
- *Eremophila flaccida* subsp *attenuata* ms - P1, perennial flowering in May. Habitat - hillslopes and ridges;
- *Euryomyrtus inflata* - P1, perennial flowering between June and July. Habitat - deep red sands on flat plains;
- *Neurachne lanigera* - P1, perennial flowering July to October. Habitat - red sand or laterite on rocky outcrops or plains;
- *Xanthoparmelia nashii* - P1, no information available;
- *Gonocarpus ephemerus* - P2, annual or perennial flowering in August. Habitat - sand along drainage lines;
- *Hemigenia exilis* - P4, perennial flowering between April or September to November. Habitat - laterite on breakaways or slopes; and
- *Eremophila pungens* - P4, perennial flowering between June and August. Habitat - sandy loam or clayey sand over laterite on plains, ridges or breakaways.

The general descriptions of these species were extracted from Florabase (Western Australian Herbarium,

1998-2006).

These significant species were examined on Florabase prior to the survey which was conducted within M53/155 between 27 and 30 May 2005 (Jim's Seeds, Weeds and Trees, 2005). Specimens collected during the survey were identified with the aid of samples housed at the Western Australian Herbarium, and where necessary, specialists were consulted.

The survey (Jim's Weeds, Seeds and Trees, 2005) reported the following with regard to the two vegetation communities in the application area:

- Within the Mulga creek line vegetation community:-
 - * The survey area was represented by 9 Families, 9 Genera and 11 species;
 - * No Declared Rare Flora were present within the areas surveyed; and
 - * No Priority species were located during the survey.
- Within the Grassy sand plan vegetation community:-
 - * The survey area was represented by 9 Families, 10 Genera and 20 species;
 - * No Declared Rare Flora were present within the areas surveyed; and
 - * No Priority species were located during the survey.

A spring survey was subsequently conducted in September 2005 (Newmont Australia, 2005). No Declared Rare or Priority flora species were identified in the proposed area of clearing (M53/155).

Three botanical surveys have been previously been undertaken in the general survey area:

- *Jundee Prospect Wiluna* (Wilcox 1990 cited in Jim's Seeds Weeds and Trees 2005, p3);
- *Jundee Gold Project, Environmental Assessment* (Ecologia 1995 cited in Jim's Seeds Weeds and Trees 2005, p3); and
- *Flora and Vegetation Survey: Proposed Henry Ward to Gause/Vause Haul Road, Jundee Operations* (Mattiske 2003 cited in Jim's Seeds Weeds and Trees 2005, p3).

None of these previous surveys revealed Declared Rare or Priority species in the general Jundee area surrounding the application.

The area for the Thor Pit and associated infrastructure lies on M53/155 (Newmont Australia, 2005). A Priority 4 species, *Eremophila pungens*, has been recorded 2 km north of the proposed clearing area in association with vegetation on a rocky outcrop on mining lease M53/156. It will not be impacted as a result of the proposed clearing.

Considering the information gathered from the numerous vegetation surveys that have been carried out in the Jundee area, and within the application area, it is unlikely that the proposal will be at variance to this principle.

CALM concurs with the findings set out within the assessment against this clearing principle (2006).

Methodology CALM 2006
Ecologia 1995
Jim's Seeds, Weeds and Trees 2005
Mattiske 2003
Newmont Australia 2005
Western Australian Herbarium 1998-2006
Wilcox 1990

GIS databases:

- Declared Rare and Priority Flora List - CALM 01/07/05

(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

No known TECs exist in the project area (GIS database; Newmont Australia, 2005). No TECs exist in the Murchison subregion. Only one TEC exists in the Goldfields, and this occurs at Sandstone (Depot Springs Stygofauna), approximately 160 km south south west of the application area (Newmont Australia, 2005; GIS database).

No TEC listed under the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 is found in the project area (Newmont Australia, 2005).

CALM concurs with the findings set out within the assessment against this clearing principle (2006).

Methodology CALM 2006
Newmont Australia 2005

GIS database:

- Threatened Ecological Communities - CALM 12/4/05

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

Comments Proposal is not likely to be at variance to this Principle

The State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-European settlement (Department of Natural Resources and Environment 2002; EPA 2000). Beyond this value, species extinction is believed to occur at an exponential rate and any further clearing may have irreversible consequences for the conservation of biodiversity and is, therefore, not supported.

The Murchison IBRA subregion that the Jundee project lies in has retained approximately 100% of its original vegetation cover (Shepherd et al., 2001). A large proportion of the region has been utilised for grazing on pastoral leases and extensive clearing has not occurred but degradation of the land has and is occurring through overgrazing by pastoral activities.

While the benchmark of 15% representation in conservation reserves (JANIS Forests Criteria, 1997) has not been met for Beard Vegetation Association 18, approximately 99.9% of the pre-European extent remains for this association and it is therefore of 'least concern' for biodiversity conservation (Department of Natural Resources and Environment 2002).

	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation Status**	% in IUCN Class I-IV reserves
IBRA Bioregion - Murchison Shire of Wiluna	28,206,195*	28,206,195*	~100%	Least concern	
Beard vegetation association - 18	24,675,970	24,659,110	~99.9%	Least concern	2.0%

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002). Least concern means that >50 % of the pre-European extent exists and the vegetation is subject to little or no degradation over a majority of this area.

CALM concurs with the findings set out within the assessment against this clearing principle (2006).

Methodology CALM 2006
 Department of Natural Resources and Environment 2002
 EPA 2000
 JANIS Forests Criteria 1997
 Newmont Australia 2005
 Shepherd et al. 2001

(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 area of clearing for the proposed Thor Pit is found within what is described as a Mulga creek line vegetation community (Newmont Australia, 2005). The hydrological dataset for the area defines this creek line as a minor non perennial watercourse (GIS database). Of the 11 species recorded in the community, only 2 were restricted to the creekline (Newmont Australia, 2005; Jim's Seeds, Weeds and Trees, 2005). These were *Eucalyptus lucasii* and *Hakea kippistiana*. The habitat of *E lucasii* is described as sandy soils on plains or hills, while that of *H kippistiana* is red sand or laterite (Western Australian Herbarium, 1998-2006). These habitat descriptions indicate that these two species are not distinctive or specially adapted to conditions associated with the watercourse.

The DoE have advised that the vegetation associated with this broad ephemeral drainage line is not riparian vegetation as defined in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Newmont Australia, 2005).

The minor non perennial watercourse flows in a southerly direction through the area under the application (Newmont Australia, 2005; GIS database). It becomes ill-defined prior to leaving the mining tenement. This watercourse is a broad ephemeral and ill-defined drainage line. With respect to the potential for erosion, the area has an average annual rainfall of 200mm and annual evaporation of 3,800 mm, and there is little surface flow during normal seasonal rains (Newmont Australia, 2005). Significant surface flows are only experienced in the general area following major rainfall events. The Department of Agriculture have advised that the Bullimore Land System is not recognised as being susceptible to erosion under pastoral use (DAWA, 2006). However, where vegetation has been cleared and uncontrolled surface water flows occur during significant rainfall events, gully and rill erosion can occur.

While the Mulga vegetation that provides a buffer to the minor non-perennial watercourse is well represented in the region, the proposal may be at variance to this principle because of issues associated with water erosion

along the watercourse if a major rainfall event were to occur at the time of clearing.

Methodology DAWA 2006
Jim's Seeds, Weeds and Trees 2005
Newmont Australia 2005
Western Australian Herbarium 1998-2006

GIS database:
Hydrography, linear - DOE 1/2/04

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

Comments Proposal may be at variance to this Principle

The proposed clearing is in an area where there is little surface flow during the normal season, making waterlogging and erosion unlikely (Newmont Australia, 2005). The area of proposed clearing will not remain bare as rehabilitation of disturbed areas (except open pits) will be undertaken. The Thor open pit and associated infrastructure will be constructed on the remaining cleared areas.

DAWA (2006) have advised that the Geological Map of Western Australia maps the geology of the area in the vicinity of the mine as Archaean acid volcanic and sedimentary rock. The area to be cleared has not been surveyed by the Department of Agriculture. The survey undertaken by Jim's Seeds, Weeds and Trees Pty Ltd and available aerial photography suggests that two units of the Bullimore Land System are proposed to be cleared. This land system is not recognised as being susceptible to erosion under pastoral use. However, where vegetation has been cleared and uncontrolled surface water flows occur during significant rainfall events, gully and rill erosion can occur. Therefore, the proposed clearing may be at variance with principle (g) with respect to soil erosion at the time of clearing.

Methodology DAWA 2006
Newmont Australia 2005

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

Comments Proposal is not at variance to this Principle

No conservation areas exist in or adjacent to the application area (Newmont Australia, 2005; GIS database).

CALM concurs with the findings set out within the assessment against this clearing principle (2006).

Methodology CALM 2006
Newmont Australia 2005

GIS database:
CALM Managed Lands and Waters - CALM 1/07/05

(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 may be at variance to this Principle

With an average annual rainfall of 200mm, and annual evaporation of 3,800 mm, there is little surface flow during normal seasonal rains (Newmont Australia, 2005). Significant surface flows are only experienced in the general area following major rainfall events. DAWA (2006) advise that the Bullimore Land System is not recognised as being susceptible to erosion under pastoral use (DAWA, 2006). However, where vegetation has been cleared and uncontrolled surface water flows occur during significant rainfall events, gully and rill erosion can occur.

There are no known water conservation values attached to the application area (Newmont Australia, 2005).

The natural groundwater of the region is considered brackish (Newmont Australia, 2005). Given the low annual rainfall and high evaporation rates, there would be expected to be little recharge to the groundwater table.

The proposal may be at variance to this principle with respect to impacts on surface water quality, and this will be managed through a condition on the clearing permit which prevents clearing prior to, or during heavy rainfall events.

Methodology DAWA 2006
Newmont Australia 2005

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments Proposal is not likely to be at variance to this Principle

A minor non perennial watercourse flows in a southerly direction through the area under the application (Newmont Australia, 2005; GIS database). It becomes ill-defined prior to leaving the mining tenement. This watercourse is a broad ephemeral and ill-defined drainage line. With respect to the potential for flooding, the area has an average annual rainfall of 200mm and annual evaporation of 3,800 mm, and there is little surface flow during normal seasonal rains (Newmont Australia, 2005). Significant surface flows are only experienced in the general area following major rainfall events.

During significant rainfall events, the area may be subject to flooding associated with increased flows in the broad ill-defined watercourse. The broad valleys and lake systems of the region function to compensate and sustain floodwaters (Newmont Australia, 2005). However, the area to be cleared is small relative to the extent of the surrounding vegetation, and is therefore unlikely to form a catchment area sufficiently large enough to cause or increase the incidence of flooding. Consequently, it is unlikely that the proposal is at variance to this principle.

Methodology Newmont Australia 2005

GIS database:
Hydrography, linear - DOE 1/2/04

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

Comments

There is a current native title claim over the area under application; WC99/024. This claim has been registered with the National Native Title Tribunal on behalf of the Wiluna claimant group (GIS database). 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 (ie. 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 known sites of Aboriginal significance within the application area (GIS database).

The area of the application (Gaudis-Vause) is a satellite pit area of the Jundee operation (DoIR, 2006). The mine waste in this zone is typical of arid paleochannel material with thin soil, caprock or duricrust layer, then a deep weathered zone of saprolite clays down to bedrock. This paleochannel material has proven to be very unstable if waste dumps are not correctly constructed. Rather than constructing wastedumps with this material, Jundee has been using the material for backfilling pits. Waste dumps comprised of this material have also been pushed into pits in the area. Both methods are viewed as more appropriate management of waste paleochannel material.

CALM (2006) advised that the proposed clearing intersects a drainage line and soil erosion where clearly an issue here, such that clearing may be at variance to principles f, g and i. The NOI document should include adequate management strategies that will be employed to control erosion and should also detail rehabilitation plans for the mine site.

Methodology CALM 2006
DoIR 2006

GIS databases:
- Aboriginal Sites of Significance - DIA 04/07/02
- Native Title Claims - DLI 19/12/04

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	24	Grant	<p>The clearing principles have been addressed and the proposed clearing is either not or not likely to be at variance with principles a, b, c, d, e, h and j.</p> <p>The clearing may be at variance with principle (f), (g) and (i) with respect to soil erosion if the site is exposed to a heavy rainfall event at the time of clearing.</p> <p>The assessing officer advises that the permit be granted.</p> <p>The following conditions apply to the permit.</p> <p>1) The Permit Holder shall not clear native vegetation within the area cross hatched red on Plan 958/1 whilst it is raining.</p>

5. References

- Biota Environmental Services (2005). *Jundee Native Vegetation Clearing Fauna Survey: Fauna Habitats and Assemblages Survey*. Report prepared for Keith Lindbeck and Associates, and Newmont Australia (Project No 318). Biota Environmental Services, North Perth.
- CALM (2002). *Biodiversity Audit of Western Australia's 53 Biogeographical Subregions*. Department of Conservation and Land Management, Perth.
- CALM (2006). *Purpose Permit Application 958/1 Newmont Yandal Operations Pty Ltd*. Advice to Native Vegetation Assessor, Native Vegetation Assessment Branch, Department of Industry and Resources. Department of Conservation and Land Management, Western Australia. (ref 668.KF)
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6. Acronyms:

CALM	Department of Conservation and Land Management, Western Australia.
DAWA	Department of Agriculture, Western Australia.
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment 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.
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
TECs	Threatened Ecological Communities.

7. 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.