



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2000/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Heron Resources

### 1.3. Property details

Property: Mining Lease 31/475  
Mining Lease 31/477  
Mining Lease 31/479  
Local Government Area: Shire Of Menzies  
Colloquial name: Jump-up Dam Nickel Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
15		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
<p>Beard vegetation associations have been mapped at 1:250,000 scale for the whole of WA, and are a useful tool to examine the vegetation extent in a regional context. Two Beard vegetation associations are located within the area proposed to be cleared (GIS Database, 2007).</p> <p>These are: Beard Vegetation Association 18: Low woodland; mulga (<i>Acacia aneura</i>) and Beard Vegetation Association 400: Succulent steppe with open low woodland; mulga over bluebush.</p> <p>A vegetation survey of the project area was completed in November/December 2007 by Mattiske Consulting. As a result of the survey eight different vegetation communities were identified within the project area. These are:</p> <p>Community A1: Low Forest of <i>Acacia aneura</i> var. <i>fuliginea</i> and <i>Acacia aneura</i> var. <i>aneura</i> on sheet wash areas.</p> <p>Community A2: Low Woodland of <i>Acacia aneura</i> var. <i>fuliginea</i> and <i>Acacia aneura</i> var. <i>aneura</i> over <i>Acacia ramulosa</i> subsp. <i>ramulosa</i>, <i>Acacia tetragonophylla</i> over <i>Eremophila forrestii</i> subsp. <i>forrestii</i>, <i>Scaevola spinescens</i>, <i>Eremophila compacta</i>, <i>Ptilotus obovatus</i> and <i>Solanum lasiophyllum</i> on red plains.</p> <p>Community A3: Low woodland of <i>Acacia aneura</i> var. <i>aneura</i>, <i>Acacia quadrimarginea</i> and <i>Acacia minyura</i> over <i>Eremophila glandulifera</i> (ms) and <i>Dodonaea rigida</i> on gravelly hills.</p> <p>Community A4: Scrub of <i>Acacia ramulosa</i> subsp. <i>ramulosa</i> and <i>Acacia burkittii</i> over <i>Ptilotus obovatus</i>, <i>Eremophila serrulata</i> and <i>Scaevola spinescens</i> on rocky hills.</p> <p>Community C1: Low Open Woodland of <i>Casuarina pauper</i> and <i>Acacia aneura</i> var. <i>aneura</i> over <i>Eremophila scoparia</i>, <i>Maireana</i>, <i>Sclerolaena</i> and <i>Halosarcia</i> spp. on valley floors.</p>	<p>Heron Resources have applied to clear 15 hectares of native vegetation within a total application area of approximately 229 hectares to develop the Jump-up Dam Nickel Project (JDNP). The project area is located approximately 180 kilometres north-east of Kalgoorlie, near Yerilla (Sinclair Knight Merz (SKM), 2007). Infrastructure for the project will include two open pits, waste and overburden dumps, a heap leach facility, two pipelines/corridors (approximately 6m wide) and haul and access roads (approximately 10m wide) (SKM, 2007).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)</p>	<p>Two weed species were recorded in the project area. These were <i>Malvastrum americanum</i> and <i>Salvia verbenaca</i> (Mattiske Consulting, 2007).</p>

Community C2: Low Woodland of *Casuarina pauper*, *Acacia sibirica* and *Acacia aneura* var. *aneura* over *Ptilotus obovatus*, *Hybanthus floribundus* subsp. *curvifolius*, *Scaevola spinescens* and *Dodonaea lobulata* on rocky hills.

Community E1: Low Forest of *Eucalyptus eremicola* over *Acacia ramulosa* subsp. *ramulosa*, *Acacia tetragonophylla*, *Ptilotus obovatus* and *Eremophila georgei* on footslopes.

Community E2: Low Open Forest of *Eucalyptus lesouefii*, *Eucalyptus brachycorys*, *Pittosporum angustifolium* and *Exocarpos aphyllus* over *Chenopodiaceae* spp. and other shrubs on valley floors.

Community E2 takes the form of dense groves of trees in or abutting the major paleochannel system that drains northern and eastern parts of the project area.

Community AL1: Open Woodland of *Allocasuarina dielsiana* over *Acacia ramulosa* var. *ramulosa*, *Acacia tetragonophylla*, *Ptilotus obovatus*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia*.

### 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 clearing permit application is located within the East Murchison IBRA (Interim Biogeographic Regionalisation of Australia) subregion (GIS Database). The subregion is rich and diverse in both its flora and fauna however most species are wide ranging and usually occur in at least one, and often several subregions (Cowan, 2001). Grazing activities are the major land use (84.5%) within this region, while mining in nickel and gold also make up a considerable portion (Cowan, 2001).

According to Cowan (2001), vegetation in the subregion is dominated by Mulga Woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and *Halosarcia* shrublands. The vegetation mentioned above was identified by Matiske Consulting (2007) as common throughout the application area. This vegetation is also well represented in surrounding subregions (Cowan 2001).

A total of 102 flora taxa (species, subspecies and varieties) from 29 families and 51 genera were recorded within the Project Area (Matiske Consulting, 2007). This indicates it is not an area of high species diversity. No Declared Rare Flora (DRF) or Priority Flora species or significant fauna habitats were identified within the project area. The fauna habitats that were present within the project area are widespread and common both regionally and locally (Ecologia, 2007).

The application area is located within the Menangina and Edjudina Pastoral Stations (GIS Database, 2007). Grazing pressure from goats and cattle has degraded land within the project area (Matiske Consulting, 2007). Both cattle and goats were identified during the fauna survey by Ecologia (2007). Two weed species were recorded during the flora survey (*Salvia verbenaca* and *Malvastrum americanum*), Matiske Consulting (2007) have stated that neither of these species are highly aggressive.

The hill located in the northern section of the application area shows signs of exploration disturbance in the form of grid lines and tracks (SKM, 2007). There are also numerous vehicle tracks within and around the project area which have fragmented the landscape (SKM 2007). Such disturbance is likely to have diminished the biodiversity value of the local area. Therefore it is not likely that the area proposed to be cleared represents areas with outstanding biological diversity, or areas that have a higher diversity of fauna or flora than other areas within the region.

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

##### Methodology

Cowan (2001).  
Ecologia (2007).  
Matiske Consulting (2007).  
GIS Database:  
Pastoral Leases -DOLA 10/01

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

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

A Level 1 Fauna Survey of the project area was conducted by Ecologia in February 2007 (Ecologia, 2007). The survey included a desktop review of the recorded fauna of the application area and surrounding areas, and a reconnaissance survey.

The desktop review involved searches of the following databases: Western Australian Fauna Museum FaunaBase, Birds Australia Birddata, Department of Environment and Heritage protected matters database and Department of Environment and Conservation (DEC) Threatened fauna database (Ecologia, 2007). The database search revealed there was 13 species of conservation significance that potentially occur within the project area. These species include: Mulgara (*Dasyercus cristicauda*), Slender-billed Thornbill (western) (*Acanthiza iredalei iredalei*), Malleefowl (*Leipoa ocellata*), Peregrine Falcon (*Falco peregrinus*), Woma (*Aspidites ramsayi*), South-West Carpet Python (*Morelia spilota imbricata*), Bushstone Curlew (*Burhinus grallarius*), Australian Bustard (*Ardeotis australis*), Hooded plover (*Charadrius rubricollis*), Rainbow Bee-eater (*Merops ornatus*), The Fork-tailed Swift (*Apus pacificus*), Great Egret (*Ardea alba*) and the Oriental Plover (*Charadrius veredus*).

Of the thirteen species of conservation significance mentioned the most likely to be found within the Project area based on habitat preferences are the Malleefowl, Australian Bustard, Rainbow Bee-eater and the Fork-tailed Swift.

Malleefowl (Vulnerable - Taxa that are rare or likely to become extinct) are large ground dwelling birds that were once widespread throughout Southern Australia (DEC, 2007). Malleefowl typically inhabit arid-semi arid woodland that is dominated by Mallee *Eucalypts* on sandy soils, but are also found in Mulga associations (DEC, 2007). During the fauna survey Malleefowl mounds were found within the application area in the *Eucalypt*/Mulga Woodland on rocky hill slopes (Ecologia, 2007). The Malleefowl mounds were very old, highly weathered, with a low profile and no defined central depression. Ecologia (2007) have stated that these mounds were not active and as a result it is unlikely that this species is still found within the project area. The habitat that is proposed to be cleared is widespread in adjacent areas (Ecologia, 2007), and therefore the proposed clearing is unlikely to have any significant impact on Malleefowl habitat.

The Australian Bustard (DEC Priority 4) is found in tussock grasslands, *Triodia* hummock grassland, grassy woodland and low shrublands (Garnett & Crowley, 2000). Its habitat is limited to the arid areas of Northern and Central Australia (Garnett & Crowley, 2000). Ecologia (2007) recorded the Australian Bustard once during the fauna survey. However it is unlikely that the Australian Bustard would be significantly impacted from the proposed clearing given that habitats in the project area are well represented both locally and regionally (Ecologia, 2007). Given the above, and the fact that Australian Bustards are nomadic in nature the proposed clearing is unlikely to effect the conservation of this species.

The Rainbow Bee-eater (migratory species) is a medium sized bird, and the only species of bee-eater in Australia (Department of Environment and Water Resources (DEWR), 2007). This species was recorded during the reconnaissance survey (Ecologia, 2007) however, the Rainbow Bee-eater is distributed across much of mainland Australia and on several near shore islands. It occurs in a range of habitats including open forests and woodlands, shrubland areas, grasslands, inland and coastal sand dune systems, mangroves and cleared or semi-cleared habitats (DEWR, 2007). The Rainbow bee-eater is listed as a migratory species under the *EPBC Act 1999*, however the species has a widespread distribution and is not considered to be threatened (DEWR, 2007). Therefore the proposed clearing is unlikely to have any significant impact on the habitat of this species.

The Fork-tailed Swift (Migratory Species) is found throughout Australia, its movements are influenced by weather patterns (Knight & Pizzey, 1997). It is found in a variety of habitats in open country from semi-deserts to the coast. Ecologia (2007) recorded the species during the reconnaissance survey of the project area. However the Fork-tailed Swift is an aerial species and rarely comes to the ground unless nesting. The Fork-tailed Swift breeds and nests in Japan and Siberia (Knight & Pizzey, 1997), and therefore is unlikely to be reliant on the project area for habitat .

A reconnaissance survey of the Jump Up Dam Project Area was conducted from 7-9 of February 2007 (Ecologia, 2007). Three species of conservation significance were identified during the survey, these were the Fork-tailed Swift, Rainbow Bee-eater and the Australian Bustard. As mentioned above, none of these species are likely to rely on the area for significant habitat. Three abandoned burrow systems of the Burrowing Bettong (*Bettongia lesuer*) were observed within the project area. Ecologia (2007) have reported that the burrow systems were very old and all were weathered with some collapsed burrows and chambers and had no sign of recent activity. The Burrowing Bettong is now considered extinct on mainland Australia (Burbidge, 2004). Two old, disused and highly weathered Malleefowl mounds were also discovered in the project area (Ecologia, 2007). There was no sign of any recent use of the project area by this species (Ecologia, 2007).

During the reconnaissance survey eight major habitat types were identified within the project area. These include: Mulga (*Acacia aneura*) Low Woodland; Mulga (*Acacia aneura*) Open Woodland with Saltbush (*Atriplex* sp.) or Bluebush (*Maireana* sp.); Sheoak (*Casuarina cristata*) Low Woodland with Saltbush (*Atriplex* sp.) or

Bluebush (*Maireana sp.*); Eucalypt (*Eucalyptus sp.*) Low Woodland with or without Saltbush (*Atriplex sp.*) or Bluebush (*Maireana sp.*); Mixed Mulga (*Acacia aneura*), Sheoak (*Casuarina cristata*) and *Eucalypt (Eucalyptus sp.)* Low Woodland; *Acacia* Shrublands occasionally with Sheoak (*Casuarina cristata*) Woodland over low rocky hills; Halophytic communities (including Samphire) in low lying saline areas; and Mulga (*Acacia aneura*)/ *Eucalypt* Drainage Depressions. All of the habitats mentioned above are well represented locally and regionally (Ecologia, 2007).

Based on the lack of significant habitat for conservation species identified in the project area and the fact that fauna habitats identified are well represented locally and regionally, it is unlikely the proposed clearing will have any significant impact on any fauna of conservation significance or any significant fauna habitat.

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

**Methodology** Burbidge (2004).  
DEWR (2007).  
Ecologia (2007).  
Garnett & Crowley (2000).  
Knight & Pizzey (1997).

**(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**

There are no Declared Rare Flora (DRF) species recorded within the project area, or within a 20 kilometre radius (GIS Database, 2005). There are three DRF species recorded within the East Murchison Subregion, none of which are located near the project area (Cowan, 2001).

A flora and vegetation survey was conducted by Mattiske Consulting in November and December 2006. The purpose of the survey was to search for rare and priority species, to define and map the plant communities and then to review the conservation status of the species and communities (Mattiske Consulting, 2007).

A total of 102 plant taxa from 29 families and 51 genera were recorded within the project area (Mattiske Consulting, 2007). Representation was greatest among the *Chenopodiaceae* (17 taxa), *Myopeaceae* (12 taxa), *Mimosaceae* (11 taxa) and *Poaceae* (9 taxa). Mattiske Consulting (2007) have stated that the taxa recorded within the Project Area are well represented in the region.

No DRF or Priority Flora species were identified during the flora survey (Mattiske Consulting, 2007). Due to the lack of DRF or Priority species found within the project area, it is unlikely that the proposed clearing will have any significant impact on Rare or Priority flora.

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

**Methodology** Cowan (2001)  
Mattiske Consulting (2007).  
GIS Database:  
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**

There are no known Threatened Ecological Communities (TEC's) within the application area (GIS Database). There are no known TEC's found within the East Murchison IBRA Subregion (Cowan, 2001). None of the vegetation types identified by Mattiske Consulting (2007) in the project area are ecological communities at risk, as described in the assessment of the biodiversity values of the East Murchison IBRA Subregion by Cowan (2001). The flora and fauna assessment of the application area did not identify any significant ecological communities within the area proposed to be cleared (Mattiske Consulting, 2007).

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

**Methodology** Cowan (2001).  
Mattiske Consulting (2007).  
GIS Database:

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

**Comments Proposal is not at variance to this Principle**

The area applied to clear is located within the Murchison Bioregion (Shepherd, 2001). According to Shepherd (2001) there is approximately 100% of Pre-European vegetation remaining within the bioregion. The vegetation

of the application area is classified as Beard Vegetation Association 18 - Low woodland; mulga (*Acacia aneura*) and Beard Vegetation Association 400 - Succulent steppe with open low woodland; mulga over bluebush (GIS Database, 2007). Both of these vegetation associations remain at approximately 100% of pre-European Extent in the state and in the Murchison Bioregion (Shepherd, 2001). The proposed clearing will not reduce the extent of either of the vegetation associations below current recognised threshold levels. The area proposed to clear does not represent a significant remnant of vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Murchison	21,794,202	21,794,202	100	Least Concern	8.5
Local Government Menzies	No information available				
<b>Beard veg assoc. – State</b>					
18	19,891,436	19,891,436	100	Least Concern	5.8
400	190,823	190,823	100	Least Concern	0
<b>Beard veg assoc. – Bioregion</b>					
18	12,403,248	12,403,248	100	Least Concern	4.3
400	190,823	190,823	100	Least Concern	0

\* Shepherd et al. (2001)

\*\* 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 (2001).  
GIS Database:  
Pre-European Vegetation - DA 01/01

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

**Comments Proposal may be at variance to this Principle**

Part of the project area (Pipeline B and Access Track) intersects a minor watercourse in the south east of the application area (GIS Database, 2007). No riparian vegetation was identified during the flora survey conducted by Matisse Consulting (2007).

During analysis of aerial photos of the project area, it was observed that vegetation within the drainage systems is more dense than surrounding areas (GIS Database, 2007). This is likely to be a result of the position of the vegetation in the landscape, where more water is likely to pass than other areas. The vegetation identified within drainage lines was identified as Community C1: "Low Open Woodland of *Casuarina pauper* and *Acacia aneura* var. *aneura* over *Eremophila scoparia*, *Maireana*, *Sclerolaena* and *Halosarcia* spp. on valley floors. This community was found on the poorly drained red loams and clay loams seen in paleochannels in the east and south of the project area (Matisse Consulting, 2007).

The construction of Pipeline B and Access Track for the Jump Up Dam Project will result in the removal of native vegetation that is growing in a drainage system. Although this vegetation is not riparian in nature, the area is still classed as a watercourse and therefore the clearing may be at variance to this Principle. The Department of Water (DOW) have stated that clearing of fringing vegetation should be minimised in ephemeral creek systems (DOW, 2007). The area that is to be cleared in this drainage system is fairly narrow, about six metres wide. As a result, impacts to vegetation associated with the watercourse are likely to be minimal.

**Methodology** DOW (2007)  
Matisse Consulting (2007).  
GIS Database:  
Geodata, Lakes - GA 28/06/02  
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 majority of the project area lies within the Rainbow land system, while the south east pit and haul road B lie within the Laverton land system, and the eastern portion of Access Road and Pipeline B lie within the Gundockerta Land System (GIS Database, 2007).

The Rainbow land system is described by Pringle et al., (1994) as hardpan plains supporting mulga shrublands. Two landforms, namely the stony plains and the hardpan plains make up the Rainbow land system. The majority of the proposed clearing area including the Access road and Pipeline B is made up of hardpan plains. This area has level to very gently inclined plains subject to sheet flow, often with mantles of fine ironstone gravel, with scattered to very scattered *Acacia aneura* (Pringle et al., 1994). It is possible that as a result of clearing for infrastructure (such as the access road and pipeline), sheetflows may be interrupted causing some erosion and starvation of vegetation down stream (Pringle et al., 1994). The proponent has committed to designing the Access Road and Pipeline B so there is little change in elevation compared to adjacent land surfaces, this is likely to ensure sheetflows are maintained (SKM, 2007). The heap leach facility and part of haul road B are located within the stony plains landform, which is described as very gently inclined plains with mantles of ironstone pebbles with scattered to very scattered *Acacia aneura* (Pringle et al., 1994). This area is unlikely to experience soil erosion.

The Laverton land system is described by Pringle et al. (1994), as Greenstone hills and banded ironstone ridges, up to 60 metres with *Acacia* shrublands. This area is higher in the landscape than the Rainbow land system, and is composed of a stone mantle (GIS Database). As a result the area is unlikely to experience soil erosion problems.

The section of the Gundockerta Land System where the Access Road and Pipeline B are located is classed as alluvial plains to level plains with mantles of few pebbles and occasional gilgai micro-relief (Pringle et al., 1994). This area lacks the stony mantle which provides protection in other areas of the land system, as a result it is susceptible to water erosion. The proponent has committed to designing the Access Road and Pipeline B so there is little change in elevation with adjacent land surfaces thus ensuring surface water flows are maintained (SKM, 2007).

It is likely that as a result of this proposal there will be land degradation in the form of soil erosion and loss of native vegetation downstream from disturbed areas (DOW, 2007).

Based on the above, the proposed clearing may be at variance to this principle. However, provided surface water control measures are implemented in areas such as the section of Pipeline B along station track, then potential land degradation can be managed.

**Methodology** DOW (2007).  
Pringle et al. (1994).  
SKM (2007).  
GIS Database:  
Rangeland Land System Mapping - DA

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

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

The closest conservation area to the proposal is the Goongarrie National Park, which is located approximately 35 kilometres to the south west (GIS Database). Although there is unbroken vegetation linkage between the application area and the national park, at this distance, there is little likelihood that there will be fauna movement between the two areas. As a result the environmental values of the national park mentioned above are unlikely to be impacted by the proposed clearing.

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

**Methodology** 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**

The proposal is not located within a Public Drinking Water Supply Area (GIS Database).

Surface water is likely to be in the form of sheet flow in the majority of the project area and it is likely that

following heavy rainfall events runoff will be heavy in sediments (SKM, 2007). Given that surface water from rainfall events is already of a poor quality it is unlikely that the clearing will significantly reduce water quality in these areas. However in areas to the east such as Pipeline B and the associated access track, ephemeral creeks will be intersected. It is likely that surface water quality will be reduced in the form of sedimentation from clearing activities (DOW, 2007).

The proponent has stated that surface water management will involve constructing roads in the project area so there is little change in elevation compared to adjacent land surfaces (SKM, 2007). Culverts will also be installed where necessary to ensure surface water flows are maintained (SKM, 2007).

The test mining pits, heap leach facility and other infrastructure will be above the water table, and will have no impact on groundwater except possibly enhancing recharge from rainfall infiltration locally (SKM, 2007). Therefore it is unlikely groundwater will be effected as a result of the proposed clearing. SKM (2007) have stated that a groundwater monitoring bore will be developed to the south of the heap leach facility. This will be monitored during the mining process to determine if there are any effects on groundwater (SKM, 2007).

The proposed clearing may be at variance to this principle, however provided surface water controls are implemented, the potential impacts on surface or underground water quality can be managed.

**Methodology** DOW (2007).  
SKM (2007).  
GIS Database:  
Public Drinking Water Source Areas (PDWSAs) - DOW

**(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 climate of the region is hot dry summers and cool winters, with an average rainfall of 260mm, though there may be considerable variation from year to year (BoM, 2007). The most reliable rains occur in winter from cold fronts arriving from the west, and cloud bands from the northwest. Although rare, decaying tropical cyclones, originating off the northwest coast can also move through the Goldfields, producing heavy rains and sometimes localised flooding (BoM, 2007).

The project area covers several areas of the landscape. The northwest pit and the south east pit are located on breakaways to the north which are higher in the landscape (SKM, 2007), while the Heap Leach Facility is located down gradient to the south, and both pipelines are located lower in the landscape (SKM, 2007). During heavy rainfall periods water is unlikely to collect, as it will either be moving down gradient towards Lake Rebecca (located approximately seven kilometres to the south of the application area) in sheetflows or in minor seasonal creeklines located on the western and eastern sides of the project area.

Evaporation in the region is very high. Leonora the closest pastoral centre has an annual evaporation rate of 3473 mm/yr (Luke et al., 2003). This is 13 times the annual rainfall, therefore during rainfall periods water is unlikely to collect as it will be evaporated very quickly.

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

**Methodology** BoM (2007).  
Luke et al. (2003).  
SKM (2007).

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

**Comments**

There are no native title claims in the area under application (GIS Database, 2007). The mining tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There is one registered Site of Aboriginal Significance located approximately two kilometres to the south of the area applied to clear (Lake Rebecca, Site ID 19142) (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water (DOW) to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

**Methodology** GIS Database:  
Aboriginal Sites of Significance - DIA

#### 4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Mineral Production	Mechanical Removal	15	<p>The proposal has been assessed against the Clearing Principles and the proposal has been found not at variance to Principle e, not likely to be at variance to Principles a, b, c, d, h and j, and may be at variance to Principles f, g and i.</p> <p>It is concluded that potential impacts to the environment can be mitigated by conditions imposed on the permit. Therefore it is recommended that the permit be granted subject to the following conditions:</p> <ol style="list-style-type: none"> <li>The Permit Holder must record the following for each instance of clearing: <ul style="list-style-type: none"> <li>(a) the location where clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system;</li> <li>(b) the area cleared in hectares;</li> <li>(c) the dates cleared;</li> <li>(d) the method of clearing;</li> <li>(e) the purpose of clearing; and</li> <li>(f) the area rehabilitated in hectares.</li> </ul> </li> <li>The Permit Holder shall implement appropriate erosion control measures to minimise potential erosion within the Clearing Permit Areas and adjacent areas.</li> <li>The Permit Holder shall provide a report to the Director, Environment Division, Department of Industry and Resources by 1 July each year, setting out the records required under condition 1 of this permit in relation to clearing carried out between 1 July and 30 June of the previous financial year. This report can be included as part of the Annual Environmental Report submitted to DoIR.</li> </ol>

#### 5. References

- Burbidge, A (2004) Threatened animals of Western Australia. Department of Conservation and Land Management. Kensington, Western Australia.
- Bureau of Meteorology (2007) Kalgoorlie-Boulder Area Climate and History. URL: [http://www.bom.gov.au/weather/wa/kalgoorlie/climate\\_and\\_history.shtml](http://www.bom.gov.au/weather/wa/kalgoorlie/climate_and_history.shtml)
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## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<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>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>DoW</b>	Department of Water
<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:  
(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.