



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 3063/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: **Barrick (Kanowna) Limited**

### 1.3. Property details

Property: Mining Lease 27/37  
Mining Lease 27/53  
Mining Lease 27/127  
Mining Lease 27/128  
Local Government Area: City of Kalgoorlie-Boulder  
Colloquial name: Moonlight Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
117		Mechanical Removal	Mineral Production and Associated Activities

## 2. Site Information

### 2.1. Existing environment and information

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

##### Vegetation Description

Vegetation within the application area has been mapped at a 1:250,000 scale as the following Beard vegetation associations (Shepherd et al., 2001; GIS Database);

- **20:** Low woodland; mulga mixed with *Allocasuarina cristata* & *Eucalyptus* sp;
- **125:** Bare areas; salt lakes; and
- **540:** Succulent steppe with open low woodland; sheoak over saltbush.

Botanica Consulting were commissioned by Barrick (Kanowna) Limited to undertake a flora and vegetation assessment for the application area. The survey comprised a desktop assessment and a field assessment on 20 November 2008

Five vegetation types were recorded within the application area (Botanica Consulting, 2009a)

**1. *Eucalyptus lesouefii* woodland:** Dominant species was *Eucalyptus lesouefii* with an understorey comprised of *Senna artemisioides* ssp *filifolia*, *A. nummularia*, *Maireana brevifolia*, *M. georgei*, *M. sedifolia*, *Acacia kalgoorliensis*, *A. hemiteles*, *Eremophila oldfieldii* ssp *angustifolia*, *E. scoparia*, *Lycium australe* and *Solanum lasiophyllum*.

**2. *Eucalyptus celastroides* woodland:** Dominant species was *Eucalyptus celastroides* with an understorey comprised of *Cratystylis microcephala*, *Tecticornia indica*, *Eremophila pustulata*, *E. scoparia*, *Exocarpos aphyllus* and *Santalum spicatum*.

**3. *Eucalyptus griffithsii* woodland:** Dominant species was *Eucalyptus griffithsii* with an understorey comprised of *Senna artemisioides* ssp *filifolia*, *A. nummularia*, *Maireana brevifolia*, *M. georgei*, *M. sedifolia*, *Acacia kalgoorliensis*, *A. hemiteles*, *Eremophila scoparia*, *Lycium australe* and *Solanum lasiophyllum*.

**4. *Acacia acuminata* rocky breakaway:** Dominant species was *Acacia acuminata*. The understorey comprised of

##### Clearing Description

Barrick (Kanowna) Limited has applied to clear up to 117 hectares for the purpose of mineral production and associated activities. Vegetation will be cleared using mechanised equipment for the development of an open pit, waste rock dump and associated infrastructure.

Vegetation and topsoil will be stockpiled to a height of 2 metres for later use in rehabilitation activities.

##### Vegetation Condition

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

##### Comment

Vegetation condition was provided by Botanica Consulting (2009a). The vegetation had been altered due to disturbances in the form of historic tracks and exploration drilling.

*Ptilotus holosericeus*, *Acacia erinacea*, *Acacia algoorliensis*,  
*Eremophila clarkei*, *E. ionantha*, *E. oldfieldii*, *E. parvifolia*,  
and *Triodia scariosa*.

**5. Chenopod shrubland:** The dominant species was *Atriplex nummularia* with an understorey of *Senna artemisioides* ssp *artemisioides*, *Atriplex vesicaria*, *Maireana brevifolia* *M. sedifolia* *M. triptera*, *M. georgei*, *Eremophila parvifolia* and *Solanum lasiophyllum*.

### 3. Assessment of application against clearing principles

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

##### Comments

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

The application area is located with the Eastern Murchison subregion of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Eastern Murchison subregion comprises of broad plains of red-brown soils and breakaway complexes and red sandplains (Cowan, 2001). Vegetation is dominated by Mulga Woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and Tecticornia shrublands (Cowan, 2001). Cowan (2001) reports that the East Murchison 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 adjoining subregions.

Botanica Consulting recorded a total of 5 vegetation types within the application area (Botanica Consulting, 2009a). None of the vegetation groups represented Threatened Ecological Communities or Priority Ecological Communities (Botanica Consulting, 2009a). The vegetation groups were represented by a total of 54 species from 27 genera and 18 families (Botanica Consulting, 2009a). No Declared Rare Flora or Priority Flora species were recorded within the application area (Botanica Consulting, 2009a). The number of flora species recorded within the application area is unlikely to represent an area of high species richness compared to the surrounding vegetation, given the widespread distribution of similar vegetation communities and landforms throughout the Murchison region (GIS Database; Shepherd et al., 2001). Botanica Consulting (2009a) state that none of the flora taxa identified during the flora survey are restricted to the application area.

Three introduced flora species (weeds); Maltese Cockspur (*Centaurea melitensis*), Common Sowthistle (*Sonchus oleraceus*) and Ward's Weed (*Carrichtera annua*), were recorded within the application area (Botanica Consulting, 2009a). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. The disturbance of soil may promote weed growth, and there is a risk that the movement of contaminated soil and clearing equipment throughout the project area may cause the spread of weed species. The assessing officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of weed management.

A desktop fauna survey revealed that four species of herpetofauna (one species of frog, one species of skink and two snake species), two invertebrates, one mammal, and 61 species of birds may potentially occur within the application area (Keith Lindbeck and Associates, 2009). The desktop survey suggests that the application area is potentially diverse in bird species. However, it is considered that the application area is unlikely to demonstrate higher faunal diversity than surrounding areas given the widespread distribution of similar vegetation communities and landforms throughout the Murchison region

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

##### Methodology

Botanica Consulting (2009a)  
Cowan (2001)  
Keith Lindbeck and Associates (2009)  
Shepherd et al. (2001)  
GIS Database:  
- Interim Biogeographic Regionalisation of Australia  
- Interim Biogeographic Regionalisation of Australia (subregions)  
- Pre-European Vegetation

#### (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**

Keith Lindbeck and Associates (2009) conducted a level 1 fauna survey of the vegetation within the application area. A desktop survey of the *Environment Protection and Biodiversity Conservation Act 1999* Protected Matters Search Tool, Department of Environment and Conservation's (DEC) Threatened and Priority Fauna Database and the Western Australia Museum Nature Map Database were undertaken to identify fauna species that may potentially occur within the application area. The desktop survey revealed that four species of herpetofauna (one species of frog, one species of skink and two snake species), two invertebrates, one mammal, and 61 species of birds may potentially occur within the application area (Keith Lindbeck and Associates, 2009). Of these, the following species of conservation significance may potentially occur within the

application area:

- Arid Bronze Azure Butterfly (*Ogyris subterrestris petrina*), Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008(2)*;
- *Jalmenus aridus* (Butterfly), listed DEC Priority One
- Chuditch (*Dasyurus geoffroii*), Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008(2)*; listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Malleefowl (*Leipa ocellata*), Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008(2)*; listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Slender-billed Thornbill (*Acanthiza iredalei iredalei*); listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Australian Bustard (*Ardeotis australis*), listed DEC Priority Four;
- Hooded Plover (*Charadrius rubricollis*), listed DEC Priority Four;
- Thick-billed Grass-wren (western ssp) (*Amytornis textilis textilis*), listed DEC Priority Four;
- Shy Heathwren (western ssp) (*Hylacola cauta whitlocki*), listed DEC Priority Four;
- White-browed Babbler (western wheatbelt) (*Pomatostomus superciliosus ashbyi*), listed DEC Priority Four;
- Crested Bellbird (southern) (*Oreoica gutturalis gutturalis*), listed DEC Priority Four;
- Rainbow Bee-eater (*Merops ornatus*), Migratory under the *Environment Protection and Biodiversity Conservation Act 1999*.

A reconnaissance survey of the application area was undertaken on 19 November 2008 (Keith Lindbeck and Associates, 2009): The vegetation communities identified within the application area represent three main fauna habitats (Keith Lindbeck and Associates, 2009). These are:

- Eucalypt woodland;
- Chenopod shrubland; and
- Acacia rocky breakaway.

The reconnaissance survey confirmed that the majority of the application area comprises of the habitat type 'Eucalypt woodland', with a small pocket of 'Chenopod shrubland' in the south of the application area and a small pocket of 'Acacia rocky breakaway' in the north-west of the application area (Keith Lindbeck and Associates, 2009). Keith Lindbeck and Associates (2009) report that there had been several areas within the application area that has been subject to greater disturbance from historic mining, and several access tracks traverse the application area which has further fragmented the vegetation. These disturbances have the potential to reduce the habitat value of the vegetation within the application area.

Keith Lindbeck and Associates (2009) conclude that the application area does not contain habitat of high ecological significance to fauna (Keith Lindbeck and Associates, 2009). The vegetation communities and fauna habitats identified within the application area are considered common and well represented throughout the adjoining areas based on the widespread extent of similar landforms and vegetation communities throughout the Murchison bioregion (GIS Database; Shepherd et al., 2001; Keith Lindbeck and Associates, 2009). Importantly, none of the fauna species that may potentially occur within the application area, including those conservation significant species listed above, are restricted to habitats identified within the application area (Keith Lindbeck and Associates, 2009).

No Malleefowl individuals, mounds or tracks were identified within the application area during the reconnaissance survey, however, Keith Lindbeck and Associates (2009) recommended that a targeted Malleefowl survey be undertaken prior to any disturbance due to the potential for this species to occur within the application area. Botanica Consulting were commissioned by Barrick Kanowna Limited to conduct a targeted Malleefowl search within the application area on 3 June 2009 (Botanica Consulting, 2009b). No Malleefowl sightings or nesting areas were recorded within the application area (Botanica Consulting, 2009b). The vegetation within the application area is not considered to represent significant habitat for Malleefowl (Botanica Consulting, 2009b).

The proposed clearing is not likely to impact on vegetation that is considered significant habitat for fauna.

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

#### Methodology

Botanica Consulting (2009b)  
Keith Lindbeck and Associates (2009)  
Shepherd et al. (2001)  
GIS Database:  
- Interim Biogeographic Regionalisation of Australia  
- Interim Biogeographic Regionalisation of Australia (subregions)  
- Pre-European Vegetation

**(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

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

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

A flora and vegetation assessment of the application area was undertaken by botanists from Botanica Consulting on 20 November 2008 (Botanica Consulting, 2009a). No DRF or Priority Flora species were recorded within the application area during the survey (Botanica Consulting, 2009a). The proposed clearing is unlikely to impact on any DRF or Priority flora species.

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

**Methodology** Botanica Consulting (2009a)  
GIS Database:  
- Declared Rare and Priority Flora List

**(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.**

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

There are no known Threatened Ecological Communities (TEC's) within the application area (GIS database; Botanica Consulting, 2009a). The nearest known TEC is located approximately 153 kilometres south-east of the application area (GIS database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is unlikely to impact on the conservation of that TEC.

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

**Methodology** Botanica Consulting (2009a)  
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 clearing application area is located within the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. Approximately 100% of the pre-European vegetation remains (see table) (GIS database; Shepherd et al., 2001).

The vegetation of the clearing application area has been mapped as Beard vegetation associations 20: Low woodland; mulga mixed with *Allocasuarina cristata* & *Eucalyptus* sp., 125: Bare areas; salt lakes, and 540: Succulent steppe with open low woodland; sheoak over saltbush (GIS Database, Shepherd et al., 2001). According to Shepherd et al., (2001) approximately 100% of Beard vegetation associations 20 and 540 remain at both the state and bioregional level. For Beard vegetation association 125, approximately 94.2% and 100% remains at the state and bioregional level respectively (see table).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Murchison IBRA bioregion and Beard Vegetation Associations 20, 125 and 540 is of "Least Concern" (see table) (Department of Natural Resources and Environment, 2002).

Only a small percentage of Beard vegetation associations 20, 125 and 540 are protected within conservation reserves within the Murchison bioregion, however, approximately 100% remains. As a result, the conservation of the Beard vegetation associations 20, 125 and 540 is not likely to be impacted on by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves
IBRA bioregion – Murchison	28,120,558	28,120,558	~100	Least Concern	1.1
<b>Beard veg assoc. – State</b>					
20	1,295,105	1,295,105	~100	Least Concern	13.3
125	3,491,834	3,287,864	~94.2	Least Concern	6.9
540	202,424	202,424	~100	Least Concern	27.8
<b>Beard veg assoc. – Bioregion</b>					
20	1,174,262	1,174,262	~100	Least Concern	8.9
125	711,486	711,486	~100	Least Concern	0.5
540	70,369	70,369	~100	Least Concern	0.0

\* Shepherd et al. (2001)

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

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

**Methodology** Department of Natural Resources and Environment (2002)  
Shepherd et al. (2001)  
GIS Database:  
- Interim Biogeographic Regionalisation of Australia  
- 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 is at variance to this Principle**

There are no permanent wetlands or watercourses within the application area (GIS Database). Botanica Consulting (2009a) confirm that none of the vegetation within the application is growing in association with a watercourse or wetland.

Geographic Information System (GIS) hydrography data indicates that three minor, non-perennial watercourses occur within the application area (GIS Database).

As there are non-perennial watercourses within the application area, the proposed clearing is at variance to this Principle. However, these watercourses are minor, natural drainage channels that are widespread across the Murchison region (GIS database). The vegetation communities growing in association with these watercourses are not unique and are considered common and widespread throughout the Murchison bioregion (Shepherd et al., 2001; GIS Database).

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

**Methodology** Botanica Consulting (2009a)  
GIS Database:  
- Hydrography, linear\_1

**(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**

Analysis of aerial imagery, topographic information, land system information by Payne et al. (1998) and photographs submitted within the application indicate the vegetation to be characterised by the following landform units (Payne et al., 1998):

- Hillslopes - gently to moderately inclined slopes with mantles of abundant greenstone pebbles on soils

- of shallow red earths on greenstone or stony soils;
- Footslopes - very gently inclined slopes with mantles of few to many greenstone pebbles on soils of shallow calcereous loams or deep duplex on greenstone;
- Stony plains - level to gently undulating plains with mantles of common to abundant mixed pebbles on soils of shallow stony red earths; and
- Saline plains - level to gently undulating highly saline lower plains and drainage zones on soils of deep clays.

The majority of the application area is characterised by the landform units 'Hillslopes', 'Footslopes' and 'Stony plains' (GIS Database; Payne et al., 1998). Topographic information indicates that the application area is characterised by an average gradient of approximately 1.5% (GIS Database). For these landform units there is likely to be a reduced risk of water erosion due to the low topographic gradient. Assessment of aerial imagery indicates that there are no significant erosional issues associated with any nearby open pits, waste dumps or other mining infrastructure (GIS Database). The removal of the vegetative material and disturbance of the surface mantles may increase the risk of wind and water erosion in areas characterised by 'Footslopes' due to the reduced abundance of greenstone pebbles in these areas. The areas of chenopod shrubland which are characterised by 'Saline plains' may be susceptible to wind erosion should the vegetative material be removed.

The Assessing Officer recommends should a permit be granted, that conditions are placed on the permit for the purpose of progressive clearing and for retaining topsoil and vegetation. A progressive clearing approach will reduce the duration that cleared areas are left exposed, un-vegetated or un-utilised which would thereby minimise the risk of wind or water erosion.

Groundwater salinities within the application area are considered saline to hyper-saline and have been recorded in the range of 14,000 - 35,000 milligrams per litre Total Dissolved Solids in the southern half of the application area and in excess of 35,000 milligrams per litre Total Dissolved Solids in the northern half of the application area (GIS Database). Kanowna, which is situated approximately 3 kilometres south of the application area, experiences mean annual rainfall of 232.4 millimetres and mean annual evaporation of approximately 2800 millimetres (Bureau of Meteorology, 2009; GIS Database). The application area is located in a bioregion that remains largely uncleared (Shepherd et al., 2001). The proposed clearing is not likely to significantly increase groundwater recharge which could otherwise lead to rises in groundwater levels and increases in sub-soil or surface salinity.

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

**Methodology** Bureau of Meteorology (2009)  
Payne et al. (1998)  
Shepherd et al. (2001)  
GIS Database:  
- Evaporation Isopleths  
- Groundwater Salinity, Statewide  
- Rangeland Land System Mapping  
- Topographic Contours, 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 likely to be at variance to this Principle**

There are no permanent wetlands or watercourses within or adjacent to the application area (GIS Database). Kanowna, which is situated approximately 3 kilometres south of the application area, experiences mean annual rainfall of 232.4 millimetres and mean annual evaporation of approximately 2,800 millimetres (Bureau of Meteorology, 2009). Given the low rainfall to high evaporation rate, the application area and surrounding areas are only likely to experience surface water runoff following significant rainfall events as the majority of rainfall is likely to infiltrate or evaporate. As there are no permanent or semi-permanent surface water features within close proximity to the application area, the proposed clearing activities are not likely to cause deterioration in the quality of surface water.

The application area is not located within a Public Drinking Water Source Area (GIS Database). The nearest PDWSA is Broad Arrow Dam Catchment Area which is located approximately 30 kilometres north-west of the application area. Given the distance separating the application area and the Broad Arrow Dam Catchment Area, the proposed clearing is unlikely to impact on the water quality of the Broad Arrow Dam Catchment Area.

Several non-perennial salt lakes are located approximately 3 kilometres north-east of the application (GIS Database). Groundwater salinities within the application area have been recorded in excess of 35,000 milligrams per litre Total Dissolved Solids and is considered saline to hyper-saline (GIS Database).

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

**Methodology** Bureau of Meteorology (2009)  
GIS Database:

- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrographic Catchments - Catchments
- Hydrography, linear\_1
- Hydrography, linear (hierarchy)
- Public Drinking Water Source Areas (PDWSAs)
- Rainfall, Mean Annual

**(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 wetlands or watercourses within or adjacent to the application area (GIS Database). Kanowna, which is situated approximately 3 kilometres south of the application area, experiences mean annual rainfall of 232.4 millimetres and mean annual evaporation of approximately 2800 millimetres (Bureau of Meteorology, 2009). Given the low rainfall to high evaporation rate, the application area and surrounding areas are only likely to experience surface water runoff following significant rainfall events as the majority of rainfall is likely to infiltrate or evaporate. As there are no permanent or semi-permanent surface water features within close proximity to the application area, the proposed clearing activities are not likely to cause deterioration in the quality of surface water.

The application is not located within a Public Drinking Water Source Area (GIS Database). The nearest PDWSA is Broad Arrow Dam Catchment Area which is located approximately 30 kilometres north-west of the application area. Given the distance separating the application area and the Broad Arrow Dam Catchment Area, the proposed clearing is unlikely to impact on the water quality of the Broad Arrow Dam Catchment Area.

Several non-perennial salt lakes are located approximately 3 kilometres north-east of the application (GIS Database). Groundwater salinities within the application area have been recorded in excess of 35,000 milligrams per litre Total Dissolved Solids and is considered saline to hyper-saline (GIS Database).

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

- Methodology** Bureau of Meteorology (2009)  
GIS Database:
- Evaporation Isopleths
  - Groundwater Salinity, Statewide
  - Hydrographic Catchments - Catchments
  - Hydrography, linear\_1
  - Hydrography, linear (hierarchy)
  - Public Drinking Water Source Areas (PDWSAs)
  - Rainfall, Mean Annual

**(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**

Kanowna, which is located approximately 3 kilometres south of the application area, experiences mean annual rainfall of 232.4 millimetres and mean annual evaporation of approximately 2,800 millimetres (Bureau of Meteorology, 2009; GIS Database). Given the low rainfall to high evaporation rate, the application area and surrounding areas are only likely to experience surface water flows after significant rainfall events.

Assessment of topographic information indicates that the application area is located on a relatively flat and broad plain with a topographic gradient of approximately 1.5%. This area drains north-east into a non-perennial salt lake (GIS Database). There is no evidence of any extensive hills or range systems which could otherwise cause increased runoff which may increase the risk of local flooding in lower lying, downstream or adjacent areas (GIS Database). The proposed clearing of 117 hectares of native vegetation is unlikely to cause or exacerbate flooding during normal rainfall events. The flat and broad topography that characterises the application area and surrounding landscape may assist to evenly disperse any surface water that may result following significant rainfall events.

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

- Methodology** Bureau of Meteorology (2009)  
GIS Database
- Evaporation Isopleths
  - Hydrographic Catchments - Catchments
  - Hydrography, linear\_1

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

### Comments

There are no registered Sites of Aboriginal Significance within the area applied to clear (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.

There are two native title claims over the area under application; (WC98/027 and WC99/029) (GIS Database). These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups (GIS Database). However, the 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*.

No public submissions were received in relation to the proposal.

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

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

## 4. Assessor's comments

### Comment

The clearing principles have been addressed and the proposed clearing is at variance to Principle (f), may be at variance to Principle (g), is not likely to be at variance to Principle (a), (b), (c), (d), (h), (i) and (j), and is not at variance to Principle (e).

Should a clearing permit be granted, it is recommended that conditions be imposed on the permit for the purposes weed management, retaining vegetative material and topsoil, staged clearing, record keeping and permit reporting.

## 5. References

- Botanica Consulting (2009a). Flora and Vegetation Survey of the Moonlight Area - Tenements: M27/37, M27/53, M27/127, M27/128 and L27/60, prepared for Barrick (Kanowna) Limited, Prepared by Botanica Consulting, January 2009.
- Botanica Consulting (2009b). Targeted Malleefowl Search - Letter Report, prepared for Barrick (Kanowna) Limited, Prepared by Botanica Consulting, June 2009.
- Bureau of Meteorology (2009). Climate Statistics for Australian Locations. A Search for Climate Statistics for Kanowna, Australian Government Bureau of Meteorology, viewed 6 May 2009.  
<[http://www.bom.gov.au/climate/averages/tables/cw\\_012040.shtml](http://www.bom.gov.au/climate/averages/tables/cw_012040.shtml)>
- Cowan, M. (2001). Murchison 1 (MUR1- East Murchison Subregion). In a Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, pp 466-479.
- Department of Natural Resources and Environment (2002). Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Keith Lindbeck and Associates (2009). Barrick (Kanowna) Limited Moonlight Project Level 1 Fauna Survey, Prepared for Barrick (Kanowna) Limited, Prepared by Keith Lindbeck and Associates, January 2009.
- Payne A. L., Mitchell A. A., Holman W. F. (1988). Technical Bulletin - An inventory and condition survey of rangelands in the Ashburton River Catchment, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

## 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>DMP</b>	Department of Mines and Petroleum
<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.