



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2790/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Pty Ltd

1.3. Property details

Property: Mineral Lease 248SA (AML 70/248)
Iron Ore (Cleveland-Cliffs) Agreement Act 1964
Local Government Area: Shire of Ashburton
Colloquial name: Mesa G Evaluation Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

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

- **82:** Hummock grasslands, shrub steppe; *Grevillea refracta* & *hakea* over soft spinifex.
- **605:** Hummock grasslands, shrub steppe; *Acacia pachycarpa* & waterwood over soft spinifex; and
- **620:** Hummock grasslands, shrub steppe; snakewood over soft spinifex.

Biota Environmental Sciences were commissioned by Robe River Pty Ltd in May 2004 to undertake a flora and vegetation assessment for the Mesa G project area, which included the vegetation within the application area. The vegetation communities recorded within the application area have been described by Biota Environmental Sciences (2005).

1. Vegetation of Stony Hills and Plains:

- H7:** *Acacia xiphophylla* low woodland to tall shrubland over *Triodia wiseana* hummock grassland;
- H10:** *Acacia atkinsiana* (*A. bivenosa*) open shrubland over *Triodia epactia*, *T. wiseana* mid-dense hummock grassland;
- H12:** *Acacia atkinsiana*, *A. inaequilatera*, *Petalostylis labicheoides* tall shrubland over *Tephrosia uniovulata* open shrubland over *Triodia wiseana* mid-dense hummock grassland;
- H13:** *Acacia acradenia* open heath over *Triodia wiseana* hummock grassland;
- H14:** *Grevillea wickhamii* tall shrubland over *Acacia acradenia* open heath over *Triodia wiseana* hummock grassland;
- H15:** *Acacia acradenia* scattered shrubs over *Triodia wiseana* mid-dense hummock grassland; and
- H16:** *Acacia tumida* var. *pilbarensis* (*Petalostylis labicheoides*) tall closed scrub over *Acacia acradenia* low open shrubland over *Triodia wiseana* (*Triodia* sp. nov) very open hummock grassland.

2. Vegetation of Creeklines and Floodplains:

Clearing Description

Robe River Pty Ltd has applied to clear up to 20 hectares of native vegetation within an application area of 248 hectares for the purpose of infill drilling at Mesa G.

Vegetation will be cleared by a bulldozer with its blade down. Clearing will be kept to a minimum, with historic tracks and gridlines being followed wherever possible. The vegetation and topsoil will be collected and stockpiled for use in future rehabilitation (Robe River Pty Ltd, 2008).

Vegetation Condition

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994)
to
Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994)

Comment

Aerial imagery indicates that there has already been a considerable degree of disturbance within the application area. The disturbance comprises of exploration access tracks and drill pads, particularly on the mesa crests and this has been confirmed by Biota Environmental Sciences (2005).

C5: *Eucalyptus leucophloia*, *Corymbia hamersleyana* scattered low trees to low open woodland over *Petalostylis labicheoides*, *Grevillea wickhamii* subsp. *hispidula* tall open shrubland over *Acacia acradenia* open heath over *Triodia wiseana* mid-dense hummock grassland; and

C6: *Corymbia hamersleyana*, *Eucalyptus leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis*, *Petalostylis labicheoides* tall open scrub over *Triodia wiseana* open hummock grassland.

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 within the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion which encompasses an area of 17,804,164 hectares (GIS database; Shepherd et al., 2001). The Hamersley subregion is characterised by sedimentary ranges and plateaux, dissected gorges, low Mulga woodlands over bunch grasses in valley floors and *Eucalyptus* woodlands over *Triodia* spp. on skeletal soils of the ranges (Kendrick, 2001). The mountain tops, gorges and upper slopes throughout the subregion provide refuge from fire for a large number of restricted flora species and native fauna species and the extensive ranges comprise of a high diversity of *Acacia*, *Triodia*, *Ptilotus*, *Corymbia* and *Sida* species (Kendrick, 2001).

The application area is located on the top and upper slopes of Mesa G which is situated approximately 20 kilometres south-west of Pannawonica (GIS Database). Mesa land formations are abundant in the Pannawonica locality, and the Hamersley Ranges form an extensive landform feature throughout much of the western Pilbara. Although the application area is located on a landform feature that is suitable to provide refuge for restricted flora species and native fauna species, there is an extensive distribution of similar landform features throughout the Pilbara region.

The vegetation within the application area consists of Beard Vegetation Associations 82, 605 and 620 which are common and widespread throughout the Pilbara region, with approximately 100% of the pre-European vegetation extent remaining (Shepherd et al., 2001; GIS Database).

Biota Environmental Sciences (2005) identified and described 13 vegetation communities within the Mesa G survey area which included the application area and surrounding vegetation, and recorded a total of 200 species from 104 genera (Biota Environmental Sciences, 2005). No Declared Rare Flora was recorded within the application area (Biota Environmental Sciences, 2005). Only two Priority Flora species, *Abutilon trudgenii* and *Sida* sp. Wittenoom, were recorded within the application area (Biota Environmental Sciences, 2005). Biota Environmental Sciences (2005) state that the Mesa G area is relatively species poor in comparison to areas further east in the Hamersley Range, and is not considered to have high conservation value for flora. The clearing application area for the exploration proposal comprises of the eastern half of the Mesa G survey area (Robe River Pty Ltd, 2008; Biota Environmental Sciences, 2005). Vegetation mapping by Biota Environmental Sciences (2005) indicates that nine of the thirteen vegetation communities that were recorded within the wider Mesa G survey area were recorded within the application area, therefore, it is likely that the total number of species within the application area may actually be less than the total number recorded within the entire Mesa G survey area.

Biota Environmental Sciences (2008) identified two primary fauna habitats within the Mesa G survey area based on vegetation structure and landform. These are:

- 1. Stony Hills and Plains;** and
- 2. Creeklines and Floodplains.**

The fauna habitats identified within the application area does not appear restricted to the immediate area and are not considered critical habitat for any fauna species (Biota Environmental Sciences, 2005).

No introduced flora species were recorded within the application area (Biota Environmental Sciences, 2005). Eight introduced flora species were recorded within three survey sites and two releve sites in the west of the Mesa G survey area, approximately 3 kilometres west of the application area (Biota Environmental Sciences, 2005). Vegetation mapping indicates that the introduced flora was recorded in close proximity to the Robe River, or other drainage areas (Biota Environmental Sciences, 2005). To minimise the risk of introducing introduced flora species into the application area, the Assessing Officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of weed management.

The landform features, floristic diversity and vegetation communities that have been recorded within the application area are considered widespread and typical within the Pilbara region (Biota Environmental Sciences, 2005). The proposed clearing of 20 hectares within an application area of 248 hectares is unlikely to impact on an area that comprises of a high level of biological diversity, or significantly impact on the

biological diversity of the Pilbara region.

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

- Methodology**
- Biota Environmental Sciences (2005)
 - Kendrick (2001)
 - Robe River Pty Ltd (2008)
 - Shepherd et al. (2001)
 - GIS Database:
 - Interim Biogeographic Regionalisation of Australia (subregions)
 - Interim Biogeographic Regionalisation of Australia
 - Towns
 - Topographic Contours, Statewide

(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 fauna survey and habitat assessment of the Mesa G study area between 12 May and 19 May 2004, which included the vegetation within the application area, as well as the surrounding area (Biota Environmental Sciences, 2005).

Prior to undertaking the field survey, Biota Environmental Sciences conducted a search of the Western Australian Museum's online database between the coordinates 22.34S, 115.51E and 22.57S, 117.26E to identify fauna species that may occur within the Mesa G survey area, as well as the Department of Environment and Conservation's (DEC) Threatened Fauna Database between the coordinates 22.3347S, 115.504E and 22.5756S, 117.266E to identify conservation significant fauna that may occur within the application area (Biota Environmental Sciences, 2005). This search identified 7 Amphibian, 78 Avian, 35 Mammalian and 95 Reptilian species that may occur within the application area (Biota Environmental Sciences, 2005).

Based on the results of the DEC Threatened Fauna Database search, the following species of conservation significance have the potential to occur within the application area (Biota Environmental Sciences, 2005):

- Northern Quoll (*Dasyurus hallucatus*): Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*; listed as 'Endangered' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Orange Leaf-nosed Bat (*Rhinonictis aurantius*): Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*; listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Night Parrot (*Pezoporus occidentalis*): Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*; listed as 'Endangered' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Pilbara Olive Python (*Liasis olivaceus barroni*): Schedule 1 (Fauna that is rare or is likely to become extinct) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*; listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999*;
- Peregrine Falcon (*Falco peregrinus*): Schedule 4 (Other specially protected fauna) of the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*;
- Ramphotyphlops ganeii (*Ramphotyphlops ganeii*): DEC Priority 1;
- Pilbara Dragonfly (*Antipodogomphus hodgkini*): DEC Priority 2;
- Pilbara Damselfly (*Nososticta pilbara*): DEC Priority 2;
- Long-tailed Dunnart (*Sminthopsis longicaudata*): DEC Priority 4;
- Ghost Bat (*Macroderma gigas*): DEC Priority 4;
- Lakeland Downs Mouse (*Leggadina lakedownensis*): DEC Priority 4;
- Western Pebble-mound Mouse (*Pseudomys chapmani*): DEC Priority 4;
- Star Finch (western) (*Neochmia ruficauda subclarescens*): DEC Priority 4;
- Fortescue Grunter (*Leiopotherapon aheneus*): DEC Priority 4; and
- *Notoscincus butleri*: DEC Priority 4.

During the field survey a total of 46 Avian, 6 Mammalian and 23 Reptilian species were recorded within the wider Mesa G survey area (Biota Environmental Sciences, 2005). No species of conservation significance were recorded within the application area or wider Mesa G survey area.

Biota Environmental Sciences (2005) identified two primary fauna habitats within the wider Mesa G survey area based on vegetation structure and landform. These are:

1. **Stony Hills and Plains;** and
2. **Creeklines and Floodplains.**

The application area is located on the hilltop of Mesa G, and as a result is likely to predominately be characterised by the fauna habitat type 'Stony Hills and Plains'. A minor drainage line which is located in the

west of the application area is likely to form a small area of the habitat type 'Creeklines and Floodpains'.

Land system information provided by Van Vreeswyk et al. (2004) and subregional information by Kendrick (2001) indicates that the fauna habitat 'Stony Hills and Plains' is common throughout the Hamersley subregion. Mesa landforms are abundant in the Pannawonica locality, and the Hamersley Ranges form an extensive landform feature throughout much of the western Pilbara. Vegetation mapping by Shepherd et al. (2001) indicates that similar vegetation communities and habitat types to 'Stony Hills and Plains' are likely to be found across comparable landform features in the Pannawonica locality and throughout the western Pilbara region.

The vegetation types of the 'Creeklines and Floodpains' habitat within the minor drainage line are **C5** and **C6**, and these are considered common in the area, but not abundant in terms of area due to restriction to gully habitats (Biota Environmental Sciences, 2005). Biota Environmental Sciences (2005) deem these vegetation types to have low conservation significance for fauna habitat, as the vegetation types are likely to be widespread and common throughout the Pilbara region, and do not comprise of any significant conservation values habitat features required by fauna. Although a small area of the habitat type 'Creeklines and Floodpains' was recorded within the application area, large areas of this habitat type is located in the vicinity of the Robe River which is located approximately 250 metres south-east of the application area (GIS Database). Biota Environmental Sciences (2005) consider the 'Creeklines and Floodpains' habitat within vicinity of the Robe River to be of moderate conservation significance, as the vegetation community (**C4**) recorded within this area is likely to provide significant foraging habitat for a number of faunal assemblages, including those species of conservation significance listed above. The application area is located approximately 250 metres north of the Robe River, and as a result will not impact on the habitat values of vegetation community **C4**.

The fauna habitats identified within the application area does not appear restricted to the immediate area and are not considered critical habitat for any of the fauna species of conservation significance listed above (Biota Environmental Sciences, 2005).

Robe River Pty Ltd (2008) has advised that the proposed clearing is for infill resource drilling and that drill pads (20 metres x 20 metres in size) will be 50 metres by 100 metres apart. The Assessing Officer acknowledges that a proposed infill drilling program of this scale is likely to cause additional disturbance and fragmentation to the vegetation in the local area. While some fauna species may utilise the vegetation within the application areas from time to time, the proposed clearing will be localised to areas used for drill pads and access tracks and any displaced fauna should be able to immediately relocate to vegetated areas adjacent to the cleared areas.

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

Methodology Biota Environmental Sciences (2005)
Kendrick (2001)
Robe River Pty Ltd (2008)
Shepherd et al. (2001)
Van Vreeswyk et al. (2004)

(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 vegetation and flora survey of the application area and surrounding vegetation was undertaken by Biota Environmental Sciences in May 2004 (Biota Environmental Sciences, 2005). No species of DRF were recorded within the survey area, and none would be expected to occur based on their habitat preference and known distribution (Biota Environmental Sciences, 2005).

Two Priority Flora species, *Abutilon trudgenii* ms. (Priority 3) and *Sida* sp. Wittenoom (Priority 3), were recorded within the Mesa G survey area (Biota Environmental Sciences, 2005). The Department of Environment and Conservation's Florabase indicates that the conservation status for *Abutilon trudgenii* ms. has been downgraded to 'Not Threatened' (Western Australian Herbarium, 1998 - 2009). As a result, the proposed clearing activities are not likely to impact on the distribution or conservation status for this species.

Sida sp. Wittenoom is a medium sized shrub that is known from numerous populations throughout the western and eastern Pilbara (Western Australian Museum, 2009). The species was recorded from four locations on a stony plain within the westernmost section of the Mesa G survey area, and botanists observed that the species was abundant at the locations where it was recorded (Biota Environmental Sciences, 2005). No populations of *Sida* sp. Wittenoom were recorded within the application area (Biota Environmental Sciences, 2005). The proposed clearing activities are not likely to impact on the distribution or conservation status for this species.

Biota Environmental Sciences (2005) note that Trudgen (2002) (as cited in Biota Environmental Sciences, 2005) recorded an undescribed spinifex (*Triodia*) species from the mesas in the Robe Valley. This species was mainly located along the rocky upper edges of the mesas, and occasionally on the rocky crests (Biota

Environmental Sciences, 2005). Trudgen (2002) (as cited in Biota Environmental Sciences, 2005) describes this *Triodia* as common on mesas in the Robe Valley, but moderately geographically restricted and also habitat restricted (Biota Environmental Sciences, 2005). Given the species restricted distribution, *Triodia* sp. nov. is considered to be of moderate conservation significance.

During the May 2004 survey of the application area and wider Mesa G area, Biota Environmental Sciences (2005) recorded *Triodia* sp. nov. in narrow bands around the edge of the flat-topped mesa at the eastern end of Mesa G. Thirty-five records of *Triodia* sp. nov., however, the populations are essentially continuous (Biota Environmental Sciences, 2005). Of the thirty-five records only five are located within the application area (Biota Environmental Sciences, 2005).

The proposed exploration clearing activities are unlikely to significantly impact on the populations of *Triodia* sp. nov. that have been recorded within and adjoining the application area, or impact on the conservation of the species given that *Triodia* sp. nov. is considered common on the mesas in the Robe Valley.

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

Methodology Biota Environmental Sciences (2005)
Western Australian Herbarium (1998 - 2009)
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 records of Threatened Ecological Communities (TEC's) within the application area (GIS database). The nearest known TEC is located approximately 96 kilometres east, north-east of the application area (GIS database).

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

Methodology 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 falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region in which approximately 99.9% of the pre-European vegetation remains (see table) (GIS database; Shepherd et al., 2001).

The vegetation of the application area has been mapped as Beard vegetation association 82: Hummock grasslands, shrub steppe; *Grevillea refracta* & *Hakea* over soft spinifex. Beard vegetation association 605: Hummock grasslands, shrub steppe; *Acacia pachycarpa* & waterwood over soft spinifex and Beard vegetation association 620: Hummock grasslands, shrub steppe; snakewood over soft spinifex (GIS Database, Shepherd et al., 2001). According to Shepherd et al., (2001) approximately 100% of Beard vegetation associations 82, 605 and 620 remain at both the state and regional level (see table).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and for Beard vegetation associations 82, 605 and 620 is of "Least Concern" (Department of Natural Resources and Environment, 2002).

Shepherd et al. (2001) indicates that a small percentage of Beard vegetation association 82 and a very small percentage of Beard vegetation association 605 are protected within conservation reserves. None of Beard vegetation 620 appears to be protected within any conservation reserves (see table) (Shepherd et al., 2001). The Assessing Officer notes that the Pilbara bioregion remains largely uncleared (Shepherd et al., 2001), therefore, the conservation of the vegetation associations within the bioregion are 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 – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
82	2,565,930	2,565,930	~100	Least Concern	10.2
605	114,119	114,119	~100	Least Concern	0.2
620	15,540	15,540	~100	Least Concern	0.0
Beard veg assoc. – Bioregion					
82	2,563,610	2,563,610	~100	Least Concern	10.2
605	114,119	114,119	~100	Least Concern	0.2
620	15,540	15,540	~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 a region 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 (subregions)
- 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; Biota Environmental Sciences, 2005). Geographic information indicates that there is one minor, non-perennial watercourse within the western portion of the application area (GIS Database). Topographic information and aerial imagery indicates that this watercourse is likely to channel surface water flows from higher areas of the mesa following significant rainfall events (GIS Database).

Biota Environmental Sciences (2005) has classed two vegetation types growing in association with the non-perennial watercourse as '**Vegetation of Creeklines and Floodplains**'. The vegetation types have been described as:

C5: *Eucalyptus leucophloia*, *Corymbia hamersleyana* scattered low trees to low open woodland over *Petalostylis labicheoides*, *Grevillea wickhamii* subsp. *hispidula* tall open shrubland over *Acacia acradenia* open heath over *Triodia wiseana* mid-dense hummock grassland. This vegetation occurred in gullies in the Mesa G area; and

C6: *Corymbia hamersleyana*, *Eucalyptus leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis*, *Petalostylis labicheoides* tall open scrub over *Triodia wiseana* open hummock grassland. This vegetation occurred in rocky creeks at Mesa G, particularly through gorges (Biota Environmental Sciences, 2005).

Biota Environmental Sciences (2005) consider vegetation types **C5** and **C6** to be of moderate conservation significance. The Assessing Officer notes that 12 of the 14 vegetation types identified within the Mesa G survey area were considered to be of moderate conservation significance, whilst two were considered to be of high conservation significance (Biota Environmental Sciences, 2005).

Based on the above, the proposed clearing is at variance to this Principle. However, given the extent of mesa formations throughout the Pannawonica locality and the extensive range system throughout the Hamersley subregion, it is considered likely that vegetation types **C5** and **C6** would be common within similar landform features in the local area and in the broader Pilbara region, but not abundant in terms of area due to their restriction to gully habitats (Biota Environmental Sciences, 2005). The Assessing Officer considers that the

proposed clearing of 20 hectares for exploration purposes is not likely to significantly impact on this vegetation or the remaining extent of vegetation types C5 and C6 throughout the Pilbara region.

Methodology Biota Environmental Sciences (2005)
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 is not likely to be at variance to this Principle**

According to the Department of Agriculture's Technical Bulletin No. 92 "An inventory and condition survey of the rangelands of the Pilbara Region, Western Australia", the application area is comprised of the Newman Land System (Van Vreeswyk et al., 2004).

The Newman Land System consists of rugged jaspilitic ranges, plateaux, ridges and mountains that characterise and typify much of the Pilbara (Van Vreeswyk et al., 2004). The majority of the vegetation appears to occur on the landform unit 'ridges, mountains and hills', 'slopes (low, mid and upper)' and 'stony plains' (Van Vreeswyk et al., 2004; Biota Environmental Sciences, 2005; GIS Database). The soils consist of rocky outcrops and dense stony mantles, with little soil development, and dark reddish brown stony silt loams (Payne et al., 1988). The Newman Land System has stony surface materials which are likely to show high resistance to erosion (Van Vreeswyk et al., 2004). The proposed clearing may expose surface mantles which may cause an increase in surface water runoff, however, given the stony nature of the surface materials water and/or wind erosion is unlikely to occur.

The application area is located approximately 20 kilometres south-west of Pannawonica which experiences mean annual rainfall of 400.9 millimetres and mean annual evaporation of approximately 3,400 millimetres (Bureau of Meteorology, 2008; GIS Database). Majority of the application area is located on the stony hills and plains of Mesa G which lies towards the western end of the Hamersley Plateau, however, the Assessing Officer notes that the low lying Robe River is located approximately 250 metres south-east of the application area at its closest point (Biota Environmental Sciences, 2005; GIS Database). Given the low rainfall to high evaporation rate for the application area, the proposed clearing of 20 hectares of native vegetation within an application area of approximately 248.6 hectares is unlikely to significantly increase water infiltration into the soil which could otherwise alter groundwater levels, or significantly increase surface water runoff which could otherwise inundate vegetation in low-lying areas. The proposed clearing of 20 hectares for mineral exploration across Mesa G is unlikely to cause water logging on or off site.

The application area is located within the Robe River catchment which covers a total area of approximately 757,138 hectares (GIS Database). Groundwater salinities within the application area and adjoining areas have been recorded in the range of 500 - 1,000 milligrams/Litre Total Dissolved Solids (GIS Database). With the application area located on the top of a mesa landform, there is likely to be a considerable depth to ground water which would minimise the risk of salinisation caused by the rising of saline ground water tables. In addition, given the low rainfall to high evaporation rate for the application area, the proposed clearing of native vegetation is unlikely to significantly increase water infiltration into the soil which could otherwise lead to significant rises to ground water levels. The proposed clearing is unlikely to cause land salinisation either on-site or off-site.

Robe River Pty Ltd has applied to clear up to 20 hectares of native vegetation within an application area of approximately 248.6 hectares for the purpose of infill drilling for the Mesa G drilling program (Robe River Pty Ltd, 2008). The proposed activities will involve clearing for up to 246 drill pads (20 metres by 20 metres in size, and 50 metres by 100 metres apart), 246 sumps (6 metres by 3.5 metres in size) and access tracks (22 kilometres in length by 4 metres in width) (Robe River Pty Ltd, 2008). The extent of the drilling program is likely to disturb and fragment the vegetation within the application area. To minimise the risk soil erosion and further land degradation within the application area, the Assessing Officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of rehabilitation.

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

Methodology Biota Environmental Sciences (2005)
Bureau of Meteorology (2008)
Robe River Pty Ltd (2008)
Van Vreeswyk et al. (2004)
GIS Database:
- Groundwater Salinity, Statewide
- Rainfall, Mean Annual
- Evaporation Isoleths
- 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

The application area is not located within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation area is Cane River Conservation Park which is located approximately 37 kilometres south-west of the application area (GIS database). The proposed clearing is not likely to impact on the conservation values of Cane River Conservation Park.

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

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

There are no permanent watercourses or wetlands within the application area (GIS Database), however, the Robe River is located approximately 250 metres south-east of the application area at its closest point (GIS Database). The Robe River is major non-perennial watercourse that is likely to sustain flows for short periods following significant rainfall events (GIS Database). Water quality within the Robe River when it is flowing is likely to be considered poor, as it would be high in sediments which are collected during runoff from the Robe River catchment area. Robe River Pty Ltd proposes to clear up 20 hectares of native vegetation within an application area of approximately 248.6 hectares for the purpose of mineral production (Robe River Pty Ltd, 2008). The land system associated with the application area has high resistance to erosion (Van Vreeswyk et al., 2004; Payne et al., 1988), thereby reducing the risk of sediment export which may result in sedimentation and turbidity in any nearby watercourses. The proposed clearing is unlikely to cause deterioration in the quality of surface water in the local area.

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA's are the Millstream Water Reserve which is located approximately 74 kilometres east of the application area and Cane River Water Reserve which is located approximately 74 kilometres west of the application area (GIS Database). The proposed clearing activities will involve clearing up to 20 hectares of native vegetation for access tracks and drill pads across an application area of approximately 248.6 hectares. Given the distance separating the application area and the nearest water supply areas, the proposed clearing is unlikely to impact on the water quality of the Millstream Water Reserve and Cane River Water Reserve.

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

Methodology Robe River Pty Ltd (2008)
Payne et al. (1988)
Van Vreeswyk et al. (2004)
GIS Database:
- Public Drinking Water Source Areas (PDWSAs)
- Hydrography, linear_1

(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

Pannawonnica which is situated approximately 20 kilometres north-west of the application area experiences mean annual rainfall of approximately 400.9 millimetres, with the majority of rainfall received between December and March (Bureau of Meteorology, 2008). Local flooding can be expected to occur seasonally in the Pilbara region as a result of heavy rainfall triggered by cyclonic activity and sporadic thunderstorms. The Pilbara landscape is characterised by an abundance of ephemeral watercourses which are responsible for quickly dispersing floodwaters after significant rainfall events, thereby reducing peak flood heights (GIS database).

The application area is located on a mesa hill formation towards the western end of the Hamersley Plateau (Biota Environmental Sciences, 2005). Topographic information indicates that there are no low lying areas, or permanent wetlands or watercourses within the application area (GIS Database). Aerial imagery submitted with the clearing permit application and geographic information indicates that the Robe River is located approximately 250 metres south-east of the application area at its closest point (GIS Database).

The application area is situated within the Robe River catchment which covers an area of approximately 757,138 hectares (GIS Database). Robe River Pty Ltd has applied to clear up to 20 hectares of native vegetation within an application area of 248.6 hectares (Robe River Pty Ltd, 2008). It is unlikely that the proposed clearing of 20 hectares for drill pads and access tracks will create a catchment area that would significantly increase surface water runoff to low lying areas, or impact on the drainage patterns in the local

area. The proposed clearing of native vegetation is unlikely to cause or increase the incidence of flooding or result in an increase in peak flood height.

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

Methodology Bureau of Meteorology (2008)
Biota Environmental Sciences (2005)
Robe River Pty Ltd (2008)
GIS Database:
- Topographic Contours, Statewide
- Hydrography, linear (hierarchy)
- Hydrography, linear_1
- Hydrographic Catchments – Catchments

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

Comments

There is one Native Title Claim over the area under application (WC99-012). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the 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 are four known Aboriginal sites of significance within the application area (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. Robe River Pty Ltd has confirmed that the application area will be subject to a heritage survey and that any heritage sites will be avoided during the clearing activities (Robe River Pty Ltd, 2008).

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 licences or approvals are required for the proposed works.

One direct interest submission was received stating no objection to the proposal.

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

4. Assessor's comments

Comment

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

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of rehabilitation, weed management, recording areas cleared and reporting against the permit conditions.

5. References

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6. Glossary

Acronyms:

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

Definitions:

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

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified,

over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

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

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

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

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.