Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3589/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Robe River Mining Co Pty Ltd**

1.3. Property details

Property: Section 91 Licence 00338-2008_3_70 under the *Land Administration Act 1997*
Iron Ore (Robe River) Agreement Act 1964
Local Government Area: Shire of Roebourne
Colloquial name: 7 Mile to Cape Lambert 220KV Overhead Transmission Line

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
65		Mechanical Removal	Geotechnical works, construction of a transmission line and associated activities.

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 26 May 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia. Three Beard vegetation associations have been mapped within the application area (GIS Database).

- 127: Bare areas; mud flats;

- 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana*; and

- 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex.

Biota Environmental Sciences conducted a flora and vegetation survey of the application area between 26 to 30 March 2008, 22 to 27 April 2008 and 28 May to 1 June 2008. Twenty vegetation types were identified and described for the application area (Biota Environmental Sciences, 2008).

Vegetation of Broad Flat Plains

- ApAbAstCEcCEs: *Acacia pyrifolia, Acacia bivenosa* tall open shrubland over *Acacia stellaticeps* low open shrubland over *Cenchrus ciliaris* and *Cenchrus setiger* tussock grassland.

- AbTw: *Acacia bivenosa* tall shrubland over *Triodia wiseana* hummock grassland.

- AxERAxERIbTIa: *Acacia xiphophylla* open heath over *Eragrostis xerophila, Eriachne benthamii* open tussock grassland with *Triodia lanigera* very open hummock grassland.

Vegetation of Clayey Plains

- AbAaAiTw: *Acacia bivenosa, A. ancistrocarpa, A. inaequilatera* tall shrubland over *Triodia wiseana* hummock grassland on stony clay plains.

- SPv: *Sporobolus virginicus* tussock grassland.

- ERAx: *Eragrostis xerophila* tussock grassland. (This vegetation occurred regularly along the application area and is consistent with the Roebourne Plains coastal grasslands Priority Ecological Community (PEC) (Biota Environmental Sciences, 2008).

Vegetation of the Drainage Lines

- EvMgAcAamTaCEc: *Eucalyptus victrix, Melaleuca glomerata* low open forest *Acacia coriacea* subsp. *coriacea, Acacia ampliceps* tall open shrubland over *Triodia angusta* very open hummock grassland and *Cenchrus ciliaris* tussock grassland.

- MliAcTeTsCEc: *Melaleuca linophylla, Acacia coriacea* subsp. *coriacea* low woodland over *Triodia epactia, Triodia schinzii* hummock grassland over *Cenchrus ciliaris* open tussock grassland.

- EvAcEUa: *Eucalyptus victrix, Acacia coriacea* subsp. *coriacea* tall shrubland over *Eulalia aurea* tussock grassland.

- ChTeCHf: *Corymbia hamersleyana* low open woodland over *Triodia epactia* hummock grassland and *Chrysopogon fallax* scattered tussock grasses.

Vegetation of Low Rises

- Tw: *Triodia wiseana* hummock grasslands.

Vegetation of Slopes

- AstTeTs: *Acacia stellaticeps* low open shrubland over *Triodia epactia*, *Triodia schinzii* hummock grassland.

- AstTw: *Acacia stellaticeps* low shrubland over *Triodia wiseana* hummock grassland.

Vegetation of Plains

- ChAstTsTe: *Corymbia hamersleyana* low open woodland over *Acacia stellaticeps* low open shrubland over *Triodia schinzii, T. epactia* hummock grassland.

- ChAtuGwAstTeTw: *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis, Grevillea wickhamii* tall shrubland over *Acacia stellaticeps* open shrubland over *Triodia epactia, T. wiseana* open hummock grassland.

- ERAx: *Eragrostis xerophila* tussock grassland.

Vegetation of Hills and Slopes

- Te: *Triodia epactia* hummock grassland.

- AbAiTw: *Acacia bivenosa, A. inaequilatera* open shrubland over *Triodia wiseana* hummock grassland.

- EHsFbCspGpDaCEc: *Ehretia saligna* var. *saligna* and *Ficus brachypoda* scattered low trees over *Capparis spinosa* var. *nummularia* and *Grevillea pyramidalis* scattered shrubs over *Dicliptera armata* scattered low shrubs and *Cenchrus ciliaris* very open tussock grassland.

Vegetation of Broad Drainage Lines

- ChAtuTeCEc: *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis* tall open shrubland over *Triodia epactia* very open hummock grassland over *Cenchrus ciliaris* very open tussock grassland.

Clearing Description

Robe River Mining Co Pty Ltd (Robe River) has applied to clear up to 65 hectares of native vegetation within an application area of approximately 770.38 hectares for the purpose of geotechnical investigations and construction of the 7 Mile to Cape Lambert 220KV Overhead Transmission Line.

Clearing for geotechnical investigations will occur across the entire length of the application area and will involve track clearing (41 tracks, each 300 metres long by 5 metres wide) and up to 41 drill pads (10 metres by 10 metres) (Robe River, 2010).

Clearing for the construction of the transmission line will involve up to 165 tower construction pads (between 40 metres x 40 metres and 60 metres x 60 metres) and an access road which runs between each tower over the length of the transmission line. Each tower will be spaced between approximately 200-650 metres apart.

At the completion of the construction activities the tower pads will require a permanent cleared footprint of 10 metres by 10 metres for transmission towers, 15 metres x 15 metres for tension towers and the access track will be retained to allow for inspection and maintenance activities (Robe River, 2010; Robe River, 2011).

Vegetation will be cleared using a dozer with blade down. All cleared topsoil and vegetation will be stockpiled for use in rehabilitation.

Vegetation Condition

Pristine: No obvious signs of disturbance (Keighery, 1994);

To

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

Comment

Vegetation condition has been provided by Biota Environmental Sciences (2008).

Clearing permit CPS 3589/1 for the 7 Mile to Cape Lambert Transmission Line Project was originally granted on 7 October 2010. This clearing permit is being amended to increase the area applied to clear from 45 hectares to 65 hectares, and decrease the clearing permit boundary from 1,018 hectares to 770.38 hectares. The purpose for which the permit was issued will remain unchanged.

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

Biota Environmental Sciences (2008) surveyed the application area in two sections: Transmission Line Corridor survey area and Mt Welcome survey area. A total of 237 flora species from 116 genera belonging to 41 families were recorded from the Transmission Line Corridor survey area including a total of 16 weed species (from 15 genera and 11 families). A total of 159 flora species from 87 genera belonging to 35 families were recorded from the Mt Welcome survey area including a total of three weed species from three genera and three families). A total of 109 flora species were recorded in both survey areas and 287 flora species were recorded in total (Biota Environmental Sciences, 2008). No Declared Rare Flora or Priority Flora species were recorded (Biota Environmental Sciences, 2008).

A total of twenty vegetation types were identified across the application area (Biota Environmental Sciences, 2008). The condition of the vegetation ranged from 'Pristine' to 'Very Good', and disturbances include impacts from grazing and weed species (Biota Environmental Sciences, 2008). The number of vegetation units within the application area does not indicate a high level of diversity in vegetation as it is common for long and narrow corridors to intersect numerous land systems (five within the application area), landforms and vegetation types (Biota Environmental Sciences, 2008).

Two Priority Ecological Communities (PEC's) intercept the application area (DEC, 2010; GIS Database). These are the Priority 1 Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands) and Priority 3 Horseflat land system of the Roebourne Plains.

Robe River (2010) has confirmed that the western portion of the application area intercepts the Roebourne Plains gilgai grasslands PEC at two locations. Robe River (2010) has advised that up to two geotechnical investigation sites (totalling approximately 0.16 hectares of disturbance) and up to seven tower construction pads may be located within the Roebourne Plains gilgai grasslands community. Total disturbance from the geotechnical and construction activities will total approximately 2.2 hectares (Robe River, 2011). Information provided by the applicant indicates that approximately 1,114 hectares of this PEC has been mapped in the Karratha area (Robe River, 2010). Based on the mapped extent of the PEC in the local area, the proposed clearing is not likely to have a significant impact on the conservation of the Roebourne Plains gilgai grasslands PEC.

The Horseflat land system of the Roebourne Plains comprises the remainder of the Horseflat land system (not including the Roebourne Plains gilgai grasslands and chenopod association of the Roebourne Plains area) (DEC, 2009). This community has an extent from Cape Preston to Whim Creek and threats include grazing and weed invasion (DEC, 2009). Biota Environmental Sciences (2008) has indicated that the vegetation community **ERAx - *Eragrostis xerophila* tussock grassland** is representative of the Horseflat land system PEC (not including the areas representing the Priority 1 Roebourne Plains gilgai grasslands PEC). Vegetation mapping of the application area indicates that the vegetation community **ERAx** covers an extensive area over the western half of the application area. According to the available GIS datasets and rangeland mapping by Van Vreeswyk et al. (2004), the Horseflat land system covers a broad area outside of the application area in the Roebourne sub-region. The proposed clearing is unlikely to significantly impact on the conservation of the Horseflat land system PEC.

Shepherd (2009) reports that approximately 99.89% of the pre-European vegetation remains within the Pilbara bioregion, and the vegetation types identified within the application area are relatively typical of such habitats in the Karratha to Cape Lambert localities (Biota Environmental Sciences, 2008). The presence of the PEC's within the application raises the diversity of the vegetation from a floristic perspective. Given the availability of similar landforms and vegetation types outside of the application area, the vegetation within the application area is not considered to represent an area of high biodiversity when compared to similar and higher quality vegetation communities in the local and regional area.

A total of 16 weed species were recorded in the application area (Biota Environmental Sciences, 2008). 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 areas may cause the spread of weed species.

Potential impacts to the biodiversity of the area as a result of the proposed clearing may be minimised by the implementation of weed management and rehabilitation conditions.

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

Methodology Biota Environmental Sciences (2008)
DEC (2009)
DEC (2010)
Robe River (2010)
Robe River (2011)
Shepherd (2009)
Van Vreeswyk et al. (2004)
GIS Database:
- Threatened Ecological Communities Buffered

(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**
According to Shepherd (2009) approximately 99.89% of the pre-European vegetation remains within the Pilbara bioregion. The primary habitats present within the application area are considered widespread and abundant in the local and regional area (Biota Environmental Sciences, 2008). Whilst fauna may utilise the vegetation within the application area from time to time, the fauna habitats are not considered rare or restricted to the application area.

Approximately 165 towers spaced between 200-650 metres apart will be constructed between Cape Lambert and the 7 Mile Power Station west of Karratha, and an access/construction track will be cleared along the length of the application area (Robe River, 2011). It is unlikely that the clearing will fragment the landscape or cause any major impediments to fauna movements.

The proposed clearing is unlikely to result in a significant impact on fauna or the availability of fauna habitat in the local or regional area.

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

Methodology Biota Environmental Sciences (2008)
Robe River (2011)
Shepherd (2009)

(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) within the application area (GIS database). The nearest record of DRF is located approximately 215 kilometres south-east of the application area (GIS Database). No DRF were recorded during the flora survey of the application area and none would be expected to occur (Biota Environmental Sciences, 2008).

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

Methodology Biota Environmental Sciences (2008)
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**
According to available datasets no Threatened Ecological Communities (TEC's) have been recorded within the application area (GIS Database). The nearest TEC is recorded approximately 170 kilometres south, south-east of the application area (GIS Database).

None of the vegetation communities are representative of a TEC (Biota Environmental Sciences, 2008).

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

Methodology Biota Environmental Sciences (2008)
GIS Database:
- Threatened Ecological Sites Buffered

(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 99.89% of the pre-European vegetation remains (see table) (GIS database; Shepherd, 2009).

The vegetation of the clearing application area has been mapped as Beard vegetation associations 127: Bare areas; mud flats, 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana* and 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex (GIS Database). According to Shepherd (2009) in excess of 96% of these vegetation associations remain at both the state and bioregional level (see table).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and Beard vegetation associations 127, 157 and 589 is of "Least Concern" (Department of Natural Resources and Environment, 2002) (see table).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193	17,785,001	~99.89%	Least Concern	~6.32%
Beard vegetation associations - State					
127	742,644	717,069	~96.56%	Least Concern	~7.99%
157	502,729	501,514	~99.76%	Least Concern	~17.95%
589	809,754	809,634	~99.99%	Least Concern	~1.60%
Beard vegetation associations - Bioregion					
127	180,401	177,739	~98.52%	Least Concern	N/A
157	198,634	198,519	~99.94%	Least Concern	~5.69%
589	730,718	730,683	~100%	Least Concern	~1.77%

* Shepherd (2009)
** 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 (2009)
GIS Database:
- IBRA WA (regions - 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). The application area intercepts the Nickol River which is described as a major, non-perennial watercourse, as well as numerous minor, non-perennial watercourses (GIS Database).

Based on the above, the proposed clearing is at variance to this Principle. However, the vegetation communities growing in association with these watercourses are not unique and are considered common and widespread in the local area and Pilbara bioregion within similar watercourses (GIS Database). The proposed clearing is not likely to significantly impact on the conservation or functioning of vegetation communities growing in association with these watercourses.

Methodology GIS Database:
- Hydrography, linear

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

Comments

Proposal may be at variance to this Principle

According to the available datasets the application area intersects the Horseflat, Ruth, Macroy, River, Mallina, Boolgeeda, Rocklea and Uaroo land systems (GIS Database).

The Horseflat land system comprises of gilgaied clay plains supporting tussock grasslands and minor grassy snakewood shrublands (Van Vreeswyk et al., 2004). Parts of this land system are moderately to highly susceptible to erosion if vegetation is depleted, though other units with clay soils and stony mantles are inherently resistant (Van Vreeswyk et al., 2004).

The Ruth land system is characterised by hills and ridges of volcanic and other rocks supporting hard spinifex (occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). Surface mantles are likely to comprise abundant pebbles and cobbles of volcanic rocks, shales or chert (Van Vreeswyk et al., 2004). This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Macroy land system is characterised by stony plains and occasional tor fields based on granite supporting hard and soft spinifex grasslands (Van Vreeswyk et al., 2004). The Macroy land system has low or very low erosion hazard (Vreeswyk et al., 2004).

The River land system comprises of active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands. The system is largely stabilised by buffel and spinifex and accelerated erosion is uncommon. However, susceptibility to erosion is high or very high if vegetative cover is removed (Vreeswyk et al., 2004).

The Mallina land system is characterised by sandy surfaced alluvial plains supporting soft spinifex (and occasionally hard spinifex) grasslands (Vreeswyk et al., 2004). Alluvial plains are moderately to highly susceptible to erosion if vegetative cover is seriously depleted (Vreeswyk et al., 2004).

The Boolgeeda land system is characterised by stony lower slopes and plains below large range hill systems that support spinifex grasslands and Mulga shrublands (Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) report that the Boolgeeda land system is not susceptible to erosion.

The Rocklea land system comprises of basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. The system has very low erosion hazard (Van Vreeswyk et al., 2004).

The Uaroo land system comprises of broad sandy plains supporting shrubby hard and soft spinifex grasslands (Van Vreeswyk et al., 2004). Occasionally some erosion and pasture decline is evident on drainage tracts, but generally the system is not susceptible to erosion or significant vegetation degradation (Van Vreeswyk et al., 2004).

Several portions of the application area intercept land systems that are moderately to highly susceptible to erosion if the vegetative cover is removed. There is a risk of wind and/or water erosion occurring should these areas remain exposed. Potential erosion impacts as a result of the proposed clearing may be minimised by the implementation of a rehabilitation condition to ensure vegetative cover is re-established.

The application area does not intercept any areas categorised as 'high to moderate' Acid Sulphate Soil (ASS) risk apart from a very small area in the central portion of the application area (GIS Database). The proposed clearing activities are not likely to pose a significant ASS risk.

No other land degradation hazards are expected to occur as a result of the proposed works.

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

Methodology Van Vreeswyk et al. (2004)
GIS Database:
- Acid Sulfate Soil Risk Map, Pilbara Coastline
- Rangeland Land System Mapping

(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

According to available datasets the application area is not located within a Department of Environment and Conservation (DEC) managed conservation area (GIS Database). Millstream-Chichester National Park is situated approximately 45 kilometres south of the application area (GIS Database). With the local area and Pilbara bioregion largely uncleared, the vegetation under application is not considered an important ecological linkage to the Millstream-Chichester National Park.

Several un-named Nature Reserves are located on islands and peninsulas off-shore from Karratha (GIS Database). These will not be impacted on by the proposed clearing.

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

Methodology

GIS Database:
- DEC Tenure

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

Comments

Proposal is not likely to be at variance to this Principle

There are no permanent wetlands or watercourses within or adjacent to the application area (GIS Database). The application area intersects the Nickol River which is described as a major, non-perennial watercourse. The Nickol River is only likely to support surface water following significant rainfall events. 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 is Roebourne Water Reserve which is located approximately 13 kilometres south-east of the application area at the closest point (GIS Database). Given the distance separating the application area and the nearest water supply area, the proposed clearing is unlikely to impact on the water quality of the Roebourne Water Reserve.

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

Methodology

GIS Database:
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

(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 application area is located within the Coastal Catchment Area which covers a total area of approximately 744,302 hectares (GIS Database). The proposed clearing of native vegetation is not likely to impact on the drainage characteristics of the catchment, or the local area.

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

Methodology

GIS Database:
- Hydrographic Catchments - Catchments

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

Comments

There is one Native Title Claim (W99/014) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure 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 numerous 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. Robe River (2010) has advised that heritage surveys will be undertaken and that any sites identified will be avoided.

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.

The amended clearing permit application was advertised on 11 April 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the amended proposal.

Clearing permit CPS 3589/1 for the 7 Mile to Cape Lambert Transmission Line Project was originally granted on 7 October 2010. This clearing permit is being amended to increase the area applied to clear from 45 hectares to 65 hectares, and decrease the clearing permit boundary from 1,018 hectares to 770.38 hectares. The purpose for which the permit was issued will remain unchanged.

Methodology Robe River (2010)
GIS Database:
- Native Title Determined
- Sites of Aboriginal Significance

4. References

Biota Environmental Sciences (2008) Interim Karratha to Cape Lambert Transmission Line Corridor: Native Vegetation Clearing Permit Report, prepared by Biota Environmental Sciences, prepared for Rio Tinto Iron Ore, July 2008.

DEC (2009) Priority Ecological Communities for Western Australia, Species and Communities Branch, Department of Environment and Conservation, Western Australia, 22 December 2009.

DEC (2010) Advice for Clearing Permit Application CPS 3589/1. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP), received 10 May 2010, Pilbara Region, Department of Environment and Conservation, Western Australia.

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.

Robe River (2010) Documentation Accompanying Clearing Permit Application for CPS 3589/1, Prepared by Robe River Ltd, February 2010.

Robe River (2011) Supporting Information to Assessing Officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP). Received 19 April 2011.

Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.

Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004) Technical Bulletin - An inventory and condition survey of rangelands in Pilbara Region, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
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 Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

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.