



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3452/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Co Pty Ltd

1.3. Property details

Property: *The Iron Ore (Cleveland-Cliffs) Agreement Act 1964*, Special Lease for Mining Operations 3116/4622, Document I 123390 L, Lot 63 on Deposited Plan 54397;
The Iron Ore (Cleveland-Cliffs) Agreement Act 1964, Special Lease for Mining Operations 3116/4623, Document I 123396 L, Lot 65 on Deposited Plan 241547

Local Government Area: Shire of Roebourne
Colloquial name: Cape Lambert Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
12		Mechanical Removal	Removal of Powerlines

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. One Beard Vegetation Association has been mapped within the application area (GIS Database; Shepherd, 2007).

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

The application area was surveyed by Western Botanical staff on 20-22 May, 9-10 August and 19 September 2008 (Western Botanical, 2008). The following vegetation types were identified within the application area:

Sandy Coastal Plains

AstTs: *Acacia stellaticeps* low open shrubland over *Triodia schinzii* hummock grassland;

AtTe: *Acacia trudgeniana* scattered tall shrubs over *Triodia epactia* open hummock grassland;

CcSv: *Cenchrus ciliaris* and *Sporobolus virginicus* tussock grassland;

MTe: *Melaleuca lasiandra* high shrubland over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* open tussock grassland;

CP: Flat coastal plain with *Acacia stellaticeps* or *Acacia bivenosa* open shrubland over *Scaevola spinescens* and *Rhagodia eremaea* scattered low shrubs over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock grassland;

Sandy Coastal Dunes

AbCc: *Acacia bivenosa* open shrubland over *Cenchrus ciliaris* open tussock grassland;

AcAbCc: *Acacia coriacea* ssp. *coriacea* and *Acacia bivenosa* open shrubland over *Cenchrus ciliaris* open tussock grassland;

SDu: Secondary dunes with *Acacia coriacea* ssp. *coriacea* tall shrubland over *Crotalaria cunninghamii*, *Scaevola sericophylla* and *Scaevola spinescens* low open shrubland over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock to open tussock grassland;

Low Lying Saline Drainages

Saline Drain: Seasonally or tidally inundated area with some salt tolerant species present, mostly samphire low open shrublands comprising *Halosarcia holacnemoides* and *H. indica* ssp. *leiostachya*;

SIZ: Saline interzone of *Acacia ampliceps* tall shrubland, with *Sesbania cannabina* tall open herb land over *Sporobolus virginicus* tussock to closed tussock grassland;

SD: Low-lying saline drainage with *Halosarcia holacnemoides* ssp. *tenuis* and *H. indica* ssp. *leiostachya* low

samphire shrubland or open heath with *Frankenia ambita* and *Muellerolimon salicorniaceum* low open shrubland;

UVRC: Rocky coastal and tidal areas - bare of vegetation;

Rocky Hills

AcAtTe: *Acacia coriacea* ssp. *coriacea* and *Acacia trudgeniana* scattered tall shrubs over *Triodia epactia* hummock grassland;

GpTw: *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia wiseana* hummock grassland;

Te: *Triodia epactia* hummock grassland;

Tw: *Triodia wiseana* hummock grassland, occasionally with *Acacia bivenosa*, *Acacia inaequilatera* or *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs;

RH: Rocky hillcrests and upper slope habitats inland from the coast with *Triodia wiseana* and/or *Triodia epactia* hummock grassland (Western Botanical, 2008).

Eight weed species were recorded within the application area. These included; Buffel Grass (*Cenchrus ciliaris*), Purpletop Chloris (*Chloris barbata*), Summer Grass (*Digitaria ciliaris*), Kapok Bush (*Aerva javanica*), Mimosa Bush (*Vachellia farnesiana*), Verano Stylo (*Stylosanthes hamata*), Stinking Passion Flower (*Passiflora foetida* ssp. *hispida*) and Common Sowthistle (*Sonchus oleraceus*) (Western Botanical, 2008).

Clearing Description	Robe River Mining Co Pty Ltd is proposing to clear up to 12 hectares of native vegetation within an area of 163.2 hectares (Robe, 2009). The proposed program is to remove the existing powerlines, which were originally installed by SEC (western Power), to make way for the new Port B Stockyard (Robe, 2009). The lines and poles will be removed using cranes and earthmoving equipment (Robe, 2009).
Vegetation Condition	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994) To Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).
Comment	The application area is located in the Pilbara region, approximately 3.5 kilometres west of Point Samson (GIS Database). The vegetation condition was derived from a vegetation survey conducted by Western Botanical (2008).

3. Assessment of application against clearing principles

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

Comments	<p>Proposal is not likely to be at variance to this Principle</p> <p>The application area occurs within the Chichester (PIL1) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by plains supporting a shrub steppe of <i>Acacia inaequilatera</i> over <i>Triodia wiseana</i> hummock grasslands, while <i>Eucalyptus leucophloia</i> tree steppes occur on ranges (CALM, 2002).</p> <p>A vegetation survey of the application area and surrounding vegetation identified 174 flora species belonging to 96 genera from 44 families (Western Botanical, 2008). This species richness is considered to be typical for the Pilbara area (Western Botanical, 2008).</p> <p>Two habitat types were recorded over the survey area;</p> <ul style="list-style-type: none">• Open <i>Acacia</i> or <i>Grevillea</i> shrublands over <i>Triodia wiseana</i> or <i>T. epactia</i> hummock grasses on stony hills; and• Open shrublands of mainly <i>Acacia</i> species over soft spinifex (<i>Triodia epactia</i> and/or <i>T. schinzi</i>) hummock grasses or mixed tussock grasses on sandy or silty alluvial plains (Western Botanical, 2008). <p>These habitat types were observed to be both common and widespread in the Pilbara bioregion, and are unlikely to be of higher biodiversity than the surrounding areas. The proposed clearing is unlikely to have a significant impact on the biological diversity of the region, or comprise of a high level of biological diversity (Western Botanical, 2008).</p> <p>Eight weed species were recorded within the application area (Western Botanical, 2008). These were Buffel Grass (<i>Cenchrus ciliaris</i>), Purpletop Chloris (<i>Chloris barbata</i>), Summer Grass (<i>Digitaria ciliaris</i>), Kapok Bush (<i>Aerva javanica</i>), Mimosa Bush (<i>Vachellia farnesiana</i>), Verano Stylo (<i>Stylosanthes hamata</i>), Stinking Passion Flower (<i>Passiflora foetida</i> ssp. <i>hispida</i>) and Common Sowthistle (<i>Sonchus oleraceus</i>) (Western Botanical, 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. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. None of these species are listed as 'Declared Plant' species under the <i>Agriculture and Related Resources Protection Act 1976</i> by the Department of Agriculture and Food (DAFWA). Should the permit be granted, it is recommended that appropriate conditions be imposed on the permit for the purpose of weed management.</p>
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Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology CALM (2002)
Western Botanical (2008)
GIS Database
- Interim Biogeographic Regionalisation of Australia

(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

Two broad habitat types were recorded within the application area. These were;

- Open *Acacia* or *Grevillea* shrublands over *Triodia wiseana* or *T. epactia* hummock grasses on stony hills; and
- Open shrublands of mainly *Acacia* species over soft spinifex (*Triodia epactia* and/or *T. schinzi*) hummock grasses or mixed tussock grasses on sandy or silty alluvial plains (Western Botanical, 2008).

Apart from the rocky hills vegetation types identified within the application area, there are no other fauna habitats identified within the application area considered as necessary for the on-going maintenance of any significant fauna habitat. The relatively small scale of the proposed development and the lack of specialised habitat suggest that the proposal represents a low risk of significant impact to any conservation significant species.

The fauna habitats identified within the application area are not considered as necessary for the on-going maintenance of any significant fauna habitat. It is likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding area, and Pilbara region.

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

Methodology Western Botanical (2008)

(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 GIS databases there are no known records of Declared Rare Flora (DRF) or Priority Flora within the application area (GIS Database). The nearest record of priority flora is a population of *Terminalia supranitifolia* (P1) located approximately 35 kilometres west of the application area (GIS Database).

A flora survey was conducted over the application area by staff from Western Botanical on 20-22 May, 9-10 August and 19 September 2008 (Western Botanical, 2008). The application area was traversed on foot and by vehicle (Western Botanical, 2008).

No DRF species were recorded during the survey (Western Botanical, 2008) however; the Priority 1 species *Tephrosia rosea* var. *venulosa* was identified.

Tephrosia rosea var. *venulosa* is an erect shrub, which prefers red sands near creeks (Western Australian Herbarium, 2009). Western Botanical (2008) recorded *Tephrosia rosea* var. *venulosa* in the TeTs vegetation unit and in disturbed areas on Cape Lambert, adjacent to the survey area. While, these vegetation units occur within the survey area, *Tephrosia rosea* var. *venulosa* was not recorded from within the area applied for the removal/demolition of the redundant power lines (Western Botanical, 2008).

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

Methodology Western Australian Herbarium (2009)
Western Botanical (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

A search of available databases reveals that there are no Threatened or Priority Ecological Communities (TEC's or PEC's) within the application area (GIS Database).

The nearest TEC is located approximately 184 kilometres south of the application area (Themeda Grasslands). While the nearest PEC is located approximately 11 kilometres south of the application area (Roebourne Plains Coastal Grasslands). At this distance there is little likelihood of any impact to the TEC or PEC from the proposed clearing.

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

Methodology GIS Database
- Threatened Ecological Sites

(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 application area falls within the Pilbara IBRA bioregion (GIS Database). Shepherd (2007) reports that approximately 99.95% of the pre-European vegetation still exists in this bioregion.

The vegetation in the application area is recorded as Beard Vegetation Association: 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana* (GIS Database; Shepherd, 2007).

According to Shepherd (2007) approximately 99.9% of this Beard Vegetation Association remains within the Pilbara bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,187.89	17,794,646.75	~99.95%	Least Concern	~6.32%
IBRA Subregion - Chichester	8,373,874.43	8,373,620.84	~100%	Least Concern	~3.95%
Beard vegetation associations - State					
157	502,729	501,514	~99.8%	Least Concern	~17.9%
Beard vegetation associations - Bioregion					
157	198,633	198,518	~99.9%	Least Concern	~5.7%

* Shepherd (2007)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (2007)
GIS Database
- Interim Biogeographic Regionalisation for 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

According to available GIS Databases, there are no permanent watercourses within the application area, however, there are several minor, non-perennial watercourses within the application area (GIS Database).

Based on vegetation mapping conducted by Western Botanical (2008) there would appear to be riparian vegetation present within the application area (Western Botanical, 2008). Four of the seventeen vegetation associations found within the application area are associated with drainage areas (Western Botanical, 2008):

- Saline Drain;
- SIZ: Saline interzone;
- SD: Low-lying saline drainage; and
- UVRC: Rocky coastal and tidal areas.

The saline interzones were found to typically contain *Acacia ampliceps* and *Sesbania cannabina* shrublands, while the saline drainages were dominated by samphire low shrublands, with the areas closest to the coast bare of vegetation (Western Botanical, 2008).

The application area is located in a semi-desert-tropical region (CALM, 2002). This region has an average annual rainfall of approximately 280.9 millimetres falling mainly during the summer months, and an average

annual evaporation rate of approximately 3,200 millimetres (BoM, 2009). Hence, the presence of surface water resulting from significant rain events is relatively short-lived. Therefore, the watercourses present are expected to be dry except following heavy rainfall which is usually associated with tropical cyclone events (CALM, 2002).

Based on the above, the proposed clearing is at variance to this Principle. However, as the minor drainage lines located within the application area are only likely to flow following significant rainfall, the proposed clearing is unlikely to result in any significant impact to any watercourse or wetland provided natural surface water flow patterns are not disturbed.

Methodology BoM (2009)
CALM (2002)
Western Botanical (2008)
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

The application area has been surveyed by the Department of Agriculture and Food (DAFWA) (Van Vreeswyk et al., 2004). The application area is composed of the following land systems (GIS Database):

- Littoral Land System;
- Rocklea Land System; and
- Ruth Land System.

The Littoral Land System is described as bare coastal mudflats with mangroves on seaward fringes, samphire flats, sandy islands, coastal dunes and beaches (Van Vreeswyk et al, 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'coastal dunes' and 'samphire flats' land units. The coastal dunes of this land system are highly susceptible to wind erosion if vegetative cover is lost. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Western Botanical, 2008).

The Rocklea Land System is described as basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al, 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'lower slopes', 'drainage floors and channels' and 'hills, ridges, plateaux and upper slopes' land units. This land system has a very low erosion risk. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Western Botanical, 2008).

The Ruth Land System is described as hills and ridges of volcanic and other rocks supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al, 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'sandplains' and 'lower slopes and stony plains' land units. This land system is not susceptible to erosion. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Western Botanical, 2008).

The application area is located within an acid sulfate soil (ASS) risk area (GIS Database). DAFWA considered this proposal and advised the Department of Mines and Petroleum that it presents a low risk to land degradation, however, there is a likelihood that subsoil disturbance will occur in areas where ASS risk has been identified (DAFWA, 2009). Provided the proposed clearing does not expose the subsoil or involve dewatering in areas where ASS risks have been identified, then environmental acidity is unlikely to arise (DAFWA, 2009). If disturbance of ASS is unavoidable then ASS should be neutralised and reburied taking care to ensure that the subsoil is not left exposed to air (DAFWA, 2009).

Based on the above, the proposed clearing may be at variance to this Principle. Should a permit be granted, it is recommended that an appropriate condition be imposed on the permit for the purpose of retaining and spreading vegetative material and topsoil.

Methodology DAFWA (2009)
Van Vreeswyk et al. (2004)
Western Botanical (2008)
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

The proposed clearing is not located within a conservation reserve (GIS Database). The nearest known conservation reserve is an un-named C-class nature reserve, located approximately 17.5 kilometres north-west (GIS Database).

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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The groundwater salinity within the application area is approximately 1,000 - 3,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Given the size of the area to be cleared (12 hectares) compared to the size of the Pilbara Groundwater Province (5,557,665 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no known groundwater dependent ecosystems within the application area (GIS Database).

The application area is located within a *Rights in Water Irrigation Act, 1914* (RIWI Act) Surface Water Management Area (DoW, 2009; GIS Database). The proponent is required to obtain a Permit in order to take or divert surface water within this area. The area is located in a RIWI Act Groundwater Area (DoW, 2009; GIS Database). The proponent is required to obtain permits to abstract groundwater in this area.

The application area is located within a semi-desert tropical environment (CALM, 2002). Low annual rainfall (approximately 280.9 millimetres), high evaporation rates (3,200 millimetres/year) and the absence of permanent water bodies and watercourses in the application area (GIS Database; BoM, 2009) would suggest that this area is not prone to flooding under normal rainfall conditions. The small size of the proposed clearing area within the above climate is unlikely to result in significant changes to surface water flows.

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

Methodology BoM (2009)
CALM (2002)
DoW (2009)
GIS Database
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Hydrography - Linear
- Potential Groundwater Dependent Ecosystems
- Public Drinking Water Source Area
- RIWI Act, Surface Water Areas
- RIWI Act, Groundwater Areas

(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 experiences a semi-desert tropical climate with an average annual rainfall of 280.9 millimetres recorded from the nearest weather station at Karratha airport approximately 30 kilometres south-west of the application area (CALM, 2002; BoM, 2009).

Local flooding occurs seasonally within the Pilbara region as a result of cyclonic activity and sporadic thunderstorm events (Rio Tinto, 2009). The small size of the application area (12 hectares) is unlikely to significantly alter the intensity of flooding within the application area and surrounding areas.

The application area is located within the Coastal catchment area (GIS Database). However, the small area to be cleared (12 hectares) in relation to the size of the Coastal catchment area (744,301 hectares) (GIS Database) is not likely to increase the potential for flooding within the application area, local area or within the catchment (GIS Database).

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

Methodology BoM (2009)
CALM (2002)
Rio Tinto (2009)
GIS Database
- Hydrographic Catchments - Catchments

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

Comments

The application area is located within a *Rights in Water and Irrigation Act 1914* (RIWI Act) Surface Water Management Area (GIS Database). The proponent is required to obtain a Permit in order to take or divert surface water within this area (DoW, 2009). The application area is located in a RIWI Act Groundwater area. The proponent is required to obtain permits to abstract groundwater in this area.

There is one Native Title Claim (WC99_014) over the area under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. 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*.

There are numerous registered Aboriginal sites of significance within and in close proximity to the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

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

No public submissions were received in regard to this Clearing Permit application.

Methodology DoW (2009)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. Assessor's comments

Comment

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

It is recommended that should a permit be granted, conditions be imposed on the permit for the purpose of weed management, retention and spreading of vegetative material and topsoil, record keeping and permit reporting.

5. References

- BoM (2009) Bureau of Meteorology Website - Climate Averages by Number, Averages for KARRATHA AERO.
http://www.bom.gov.au/climate/averages/tables/cw_004083.shtml (Accessed 30 November 2009)
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 1 (PIL1 - Chichester subregion) Department of Conservation and Land management, Western Australia
- DAFWA (2009) Land Degradation Advice. Advice to assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP), received (7 December 2009). Department of Agriculture and Food, 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.
- DoW (2009) Water Quality Advice. Advice to assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP), received (5 January 2010). Department of Water, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Rio Tinto (2009) Flora and Vegetation Survey for Multiple Areas at Tom Price & Supporting Documentation to a Native Vegetation Clearing Permit Application. Unpublished Report dated September 2009. Rio Tinto, Western Australia
- Robe (2009) Application for Purpose Clearing Permit: Removal of Powerlines - L3116 4622 Railway Area and L3116 4623 Industrial Area (Cape Lambert) - Supporting Documentation
- Shepherd, D.P. (2007). 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. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia
- Western Australian Herbarium (2009) - FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 30 November 2009)
- Western Botanical (2008) Cape Lambert Operations Power Line Demolition Corridor: Native Vegetation Clearing Permit

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.
DMP	Department of Mines and Petroleum, 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.