Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5045/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **BHP Billiton Iron Ore Pty Ltd**

1.3. Property details

Property: *Iron Ore (Mount Goldworthy) Agreement Act 1964*, Mineral Lease 235SA (AML 70/235)
General Purpose Lease 45/278
Local Government Area: East Pilbara
Colloquial name: Goldsworthy Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
42		Mechanical Removal	Abandonment Bund Construction; Drilling Related to Ongoing Monitoring, Remediation Activities and Drainage Control; and Supporting Infrastructure

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 28 June 2012

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 for the whole of Western Australia. Three Beard vegetation associations have been mapped within the application area (GIS Database):

93: Hummock grasslands, shrub steppe; kanji over soft spinifex;
117: Hummock grasslands, grass steppe; soft spinifex; and
175: Short bunch grassland - savanna/grass plain (Pilbara).

A flora and vegetation survey of the application area was conducted in June 2008 by Pilbara Flora (2009). This survey identified the following 18 vegetation communities within the application area (BHP, 2012):

Hills
Hillside Spinifex Grassland - Scattered shrubs over *Acacia adoxa* var. *adoxa* low open shrubland over *Triodia pungens* hummock grassland;

Hillside Spinifex Open Shrubland - *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* subsp. *macrodonta* and *Acacia inaequilatera* high shrubland over *Corchorus parviflorus, Acacia adoxa* var. *adoxa* and *Goodenia candicans* low open shrubland over *Triodia pungens* hummock grassland;

Hillside Spinifex *Eucalyptus odontocarpa* Woodland - *Eucalyptus odontocarpa* low open woodland over *Acacia inaequilatera, Grevillea wickhamii* subsp. *macrodonta* and *Acacia monticola* scattered shrubs over *Acacia adoxa* var. *adoxa, Senna glutinosa* subsp. *glutinosa, Tephrosia rosea* var. *clementii* and *Corchorus parviflorus* low scattered shrubs over *Triodia pungens* hummock grassland;

Hillside Valley Shrubland - *Terminalia canescens* and *Corymbia hamersleyana* low open woodland over *Acacia monticola, Acacia acradenia and Grevillea wickhamii* subsp. *macrodonta* high open Shrubland over *Triodia pungens* hummock grassland;

Colluvial Slopes Spinifex Grassland - *Acacia inaequilatera, Acacia acradenia* and *Grevillea wickhamii* subsp. *macrodonta* scattered tall shrubs over *Triodia pungens or Triodia wiseana* hummock grassland;

Colluvial Slopes Spinifex Shrubland - *Corymbia hamersleyana* scattered low trees over *Acacia adoxa* var. *adoxa, Acacia acradenia, Acacia monticola* and *Grevillea wickhamii* subsp. *macrodonta* high open shrubland over *Jacksonia aculeata, Tephrosia monophylla* and *Triumfetta chaetocarpa* low scattered shrub over *Triodia pungens* open hummock grassland;

Rocky Narrow Valley - *Terminalia canescens* and *Atalaya hemiglauca* low woodland over *Acacia tumida* var. *pilbarensis s*cattered tall shrubs over *Cymbopogon ambiguous and Eriachne mucronata* very open tussock

grassland / *Triodia pungens* open hummock grassland; and

Rocky Hillside *Terminalia canescens* Low Woodland - *Terminalia canescens* and *Atalaya hemiglauca* low woodland over *Cyperus cunninghamii* and *Acacia monticola* open shrubland over *Acacia adoxa* var. *adoxa* low open shrubland over *Cymbopogon ambiguus, Enneapogon robustissimus* and *Eriachne mucronata* open tussock grassland / *Triodia pungens* hummock grassland.

Sandplain

Sandplain Spinifex Shrubland Open Woodland - *Corymbia hamersleyana, Corymbia zygophylla* and *Dolichandrone heterophylla* low open woodland over *Acacia ancistrocarpa* and *Acacia tumida* var. *pilbarensis* closed scrub over *Acacia stellaticeps, Corchorus elachocarpus, Bonamia pannosa, Jacksonia aculeata, Ptilotus astrolasius* var. *astrolasius* and *Tephrosia rosea* var. *glabrior* ms low shrubland over *Triodia schinzii* hummock grassland / *Cenchrus ciliaris, Aristida holathera* var. *holathera* and *Eragrostis eriopoda* open tussock grassland;

Sandplain *Corymbia flavescens* Open Woodland - *Corymbia flavescens* and *Corymbia hamersleyana* open woodland over *Acacia ancistrocarpa, Acacia acradenia* and *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia pungens* and *Triodia schinzii* closed hummock grassland; and

Sandplain Shrubland with *Eucalyptus odontocarpa* - *Corymbia hamersleyana* scattered low trees over *Eucalyptus odontocarpa* low woodland over *Acacia acradenia, Grevillea wickhamii* subsp. *macrodonta* and *Petalostylis labicheoides* high shrubland over *Triodia pungens* and *Triodia wiseana* hummock grassland.

Drainage Line

Drainage Line Colluvial Hillside - *Eucalyptus odontocarpa* low woodland over *Acacia acradenia, Acacia monticola, Acacia tumida* var. *pilbarensis and Petalostylis labicheoides* closed scrub over *Triodia pungens* closed hummock grassland;

Drainage Line Rocky Hillside - *Corymbia hamersleyana* low open woodland over *Acacia acradenia, Acacia monticola* and *Grevillea wickhamii* subsp. *macrodonta* closed scrub over *Triodia pungens* hummock grassland;

Drainage Line Medium Creek - *Acacia tumida* var. *pilbarensis, Grevillea wickhamii* subsp. *macrodonta* and *Petalostylis labicheoides* open scrub over *Triodia pungens* hummock grassland;

Disturbed areas

Mine Drainage Area - Completely Degraded;

Regrowth Infrastructure Areas - Variable, shrublands and barren areas;

Rehabilitation Infrastructure Areas - *Acacia ancistrocarpa, Acacia inaequilatera, Acacia acradenia, Acacia stellaticeps, Acacia tumida* var. *pilbarensis, Cenchrus ciliaris, Corymbia hamersleyana, Cucumis maderaspatanus, Cymbopogon ambiguus, Eucalyptus odontocarpa, Grevillea wickhamii* subsp. *macrodonta, Petalostylis labicheoides, Pterocaulon sphaeranthoides, Ptilotus exaltatus* var. *exaltatus, Senna notabilis, Triodia angusta, Triodia pungens*; and

Rehabilitation OSA - Variable structure, typically shrublands and grasslands with patchy coverage and barren areas.

Clearing Description

BHP Billiton Iron Ore Pty Ltd is proposing to clear up to 42 hectares of native vegetation within a broader boundary of approximately 572 hectares for the purpose of constructing abandonment bunds, drilling related to ongoing monitoring, remediation activities and drainage control and supporting infrastructure.

Clearing will be conducted by a dozer/excavator and the vegetation and topsoil will be stockpiled for later use in rehabilitation.

Vegetation Condition

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994);

To

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

The application area is located within the Pilbara region of Western Australia and is situated approximately 95 kilometres east of Port Hedland.

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 proposed clearing is located approximately 95 kilometres east of Port Hedland in the Chichester and Roebourne subregions of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). At a broad scale the vegetation of the Chichester subregion can be described as shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands on plains, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002). The Roebourne subregion is characterised by quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *Acacia pyrifolia* and *Acacia inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands. Ephemeral drainage lines support

Eucalyptus victrix or *Corymbia hamersleyana* woodlands (CALM, 2002).

A flora and vegetation survey of the application area and surrounding areas was conducted by Pilbara Flora (2009) in June 2008. This survey identified 188 flora taxa from 40 families and 88 genera within the survey area (Pilbara Flora, 2009). Very few flora surveys have been conducted within the Goldsworthy area, however, from those that have been conducted it appears as though the Goldsworthy area holds relatively low species diversity in comparison to the rest of the Pilbara (Pilbara Flora, 2009).

According to available databases there are no Threatened or Priority Ecological Communities within the application area (GIS Database).

The flora and vegetation survey conducted by Pilbara Flora (2009) identified one Priority 2 listed flora species, *Euphorbia clementii*, at one location within the application area. This species is known from five records at the West Australian Herbarium (2012) in the northern section of the Pilbara bioregion. BHP (2012) has planned their program to avoid this species. Potential impacts to the conservation of this species may be minimised by the implementation of a flora management condition.

Three introduced flora species, *Aerva javanica, Calotropis procera* and *Cenchrus ciliaris*, were recorded within the application area during the flora survey conducted by Pilbara Flora (2009). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. One of these species, *Calortopis procera*, is listed as a 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food. It is listed as both a P1 and P3 in the Shire of East Pilbara. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No high value fauna habitats were located within the application area, however three fauna habitats have been assessed as having the potential to support conservation significant fauna species (BHP, 2012). Five conservation significant fauna species, Western Pebble-mound Mouse, Pilbara Olive Python, Northern Quoll, Peregrine Falcon and Rainbow Bee-eater, have been assessed as potentially occurring within the area (BHP, 2012).

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

Methodology

BHP (2012)
CALM (2002)
Pilbara Flora (2009)
West Australian Herbarium (2012)
GIS Database:
- IBRA WA (regions – subregions)
- Threatened Ecological Sites 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

No site fauna surveys have been conducted over the application area, however a database search was undertaken by BHP (2012). From this survey a total of 22 conservation significant fauna species were identified as potentially occurring within the application area (BHP, 2012). Of these 22 species, the following five were considered as having some potential of occurring within the application area:

- Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4) – considered highly likely to occur within the application area (BHP, 2012). The majority of the clearing is proposed for areas outside of the core habitat for this species (BHP, 2012). Additionally, prior to clearing for any new tracks, BHP (2012) will conduct a conservation significant fauna species search along the proposed route and any locations recorded will be avoided where possible. Given the non-congituous nature of the majority of this clearing and the widespread nature of this species within the Pilbara bioregion, it is considered unlikely that the proposed clearing will impact on the conservation of this species.

- Pilbara Olive Python (*Liasis olivaceus barroni*) (Vulnerable) – occurs within deep gorges, caves, crevices and waterholes. One vegetation association, Narrow Rocky Gully, may be suitable for this species, however it only makes up 1.47 hectares of the 572 hectare application area (BHP, 2012). It is therefore considered unlikely that the proposed clearing will impact on the conservation of this species.

- Northern Quoll (*Dasyurus hallucatus*) (Endangered) – two vegetation types within the application area, Rocky Narrow Valley and Rocky Hillside *Terminalia canescens* Low Woodland, have been identified as having 'Low' to 'Moderate' Northern Quoll habitat (BHP, 2012). No activities are proposed for these areas and given there are no high quality habitats for this species within the application area, the proposed clearing is considered unlikely to impact on the conservation of this species.

- Peregrine Falcon (*Falco peregrinus*) (Schedule 4) – no suitable roosting or breeding sites, such as large trees, cliffs or breakaways, are present within the application area (BHP, 2012). This species may forage within the application area, however it has the ability to egress away from areas being disturbed (BHP, 2012). It is

therefore considered unlikely that the proposed clearing will impact on the conservation of this species.

- Rainbow Bee-eater (*Merops ornatus*) (Migratory) – may visit the application area for roosting and foraging purposes (BHP, 2012). The majority of the application area is considered as unsuitable as it is comprised of waste-rock and stony hillsides, not soft sandy and loamy soils required by this species for nesting (BHP, 2012). The Rainbow Bee-eater may forage within the application area, however it has the ability to egress from areas being disturbed (BHP, 2012). It is therefore considered unlikely that the proposed clearing will impact on the conservation of this species.

Core habitat for the majority of conservation significant species is not present within the application area. One species, Western Pebble-mound Mouse, is considered likely to occur within the application area. Given this species is common throughout the Pilbara, it is considered unlikely that the proposed clearing will impact the conservation of this species.

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

Methodology BHP (2012)

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no records of Threatened Flora species within the application area (GIS Database). A flora survey of the application area conducted by Pilbara Flora (2009) did not locate any Threatened Flora species within the application area.

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

Methodology Pilbara Flora (2009)
GIS Database:
- Threatened and Priority Flora

(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 Databases there are no Threatened Ecological Communities (TEC) within the application area (GIS database). The nearest known TEC is approximately 195 kilometres east-north-east of the application area (GIS Database). At this distance there is little likelihood of any impacts to the TEC as a result of the proposed clearing.

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

Methodology GIS Database:
- Threatened and Priority Flora

(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 is located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Government of Western Australia (2011) reports that approximately 99.58% of the pre-European vegetation remains within the Pilbara bioregion.

The vegetation in the application area has been broadly mapped as Beard vegetation associations:

93: Hummock grasslands, shrub steppe; kanji over soft spinifex;
117: Hummock grasslands, grass steppe; soft spinifex; and
175: Short bunch grassland - savanna/grass plain (Pilbara).

According to the Government of Western Australia (2011) approximately 99.88%, 94.65% and 99.92% of Beard vegetation associations 93, 117 and 175, respectively, remain within the Pilbara bioregion (see table on next page).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,427	17,729,352	~99.58	Least Concern	~6.32
Beard vegetation associations - State					
93	3,044,310	3,040,641	~99.88	Least Concern	~0.42
117	919,519	879,981	~95.70	Least Concern	~12.69
175	526,203	523,800	~99.54	Least Concern	~4.22
Beard vegetation associations - Bioregion					
93	3,042,114	3,038,472	~99.88	Least Concern	~0.42
117	76,104	72,036	~94.65	Least Concern	~11.34
175	507,033	506,626	~99.92	Least Concern	~4.38

* Government of Western Australia (2011)
** Department of Natural Resources and Environment (2002)

The vegetation within the application area is not considered to be a remnant of native 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)
Government of Western Australia (2011)
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**
According to available databases there are no permanent wetlands or watercourses within the application area (GIS Database). A number of minor non-perennial drainage lines traverse the application area (BHP, 2012). Three vegetation communities associated with drainage lines were recorded within the application area (BHP, 2012). Minor non-perennial drainage lines are common throughout the Pilbara and the vegetation communities identified growing in association with the drainage lines of the application area are not considered to be unusual. Additionally the low impact, non-contiguous nature of the proposed clearing is not likely to significantly impact on vegetation associated with drainage lines.

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

Methodology BHP (2012)
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 intersects the following two land systems (GIS Database):

The Capricorn land system is characterised by hills and ridges of sandstone and dolomite supporting shrubby hard and soft spinifex grasslands (Van Vreeswyk et al., 2004). This land system is resistant to erosion due to its stony nature (Van Vreeswyk et al., 2004).

The Nita land system is characterised by sandplains supporting shrubby soft spinifex grasslands with occasional trees (Van Vreeswyk et al., 2004). Wind erosion is known to occur after fires, however it is usually stabilised rapidly following rain and consequent regeneration of vegetation (Van Vreeswyk et al., 2004). Therefore, should the land be left cleared for a prolonged period of time, wind erosion may occur.

Potential wind erosion impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition and a rehabilitation condition.

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

Methodology Van Vreeswyk et al. (2004)
GIS Database:
- 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 at variance to this Principle**
The application area is not located within a conservation reserve (GIS Database). The nearest conservation reserve is the Meentheena Former Leasehold located approximately 100 kilometres south east of the application area (GIS Database).

Based on the above, the proposed clearing is not 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**
The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the De Grey River Water Reserve, approximately 2.5 kilometres south of the application area (GIS Database). It is unlikely that the proposed clearing will impact on the quality of the De Grey River Water Reserve.

The groundwater salinity within the application area is between 1,000 – 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Given the proposed clearing is for 42 hectares within the Pilbara Groundwater Province (5,557,665 hectares), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no permanent wetlands or watercourses within the application area (GIS Database). It is therefore considered unlikely that the proposed clearing will impact on the quality of any surface water.

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

Methodology GIS Database:
- Groundwater Provinces
- Groundwater Salinity, Statewide
- 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 experiences a semi-desert-tropical climate with an average annual rainfall of approximately 313.3 millimetres recorded at nearby Port Hedland weather station (CALM, 2002; BoM, 2012). The proposed activities consist of widely spaced access tracks and drill pads interspersed by broad areas of natural environment (BHP, 2012). Therefore the proposed clearing is considered unlikely to cause, or exacerbate, the incidence or intensity of flooding.

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

Methodology BHP (2012)
BoM (2012)
CALM (2002)

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

Comments

There is one Native Title Claim (WC99/26) over the area under application (GIS Database). This claim has been registered with the 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 no registered 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 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 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 clearing permit application was advertised on 21 May 2012 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the proposed clearing.

Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Determined by the Federal Court

4. References

BHP (2012) Goldsworthy Project - Supporting Documentation for Vegetation Clearing Permit Application. Unpublished report dated April 2012. BHP Billiton Iron Ore Pty Ltd.

BoM (2012) BoM Website - Climate Averages by Number, Averages for PORT HEDLAND AIRPORT. www.bom.gov.au/climate/averages/tables.shtml (Accessed 14 June 2012)

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management

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.

Government of Western Australia (2011) 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Pilbara Flora (2009) Flora and Vegetation Survey of the Goldsworthy Minesite. Unpublished report prepared for BHP Billiton Iron Ore Pty Ltd dated January 2009.

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 (2012) FloraBase - The Western Australian Flora. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/ (Accessed 14/06/2012).

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.